

# Ecological site R064XY035NE Clayey 17-20 PZ

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## General information

**Provisional.** A provisional ecological site description has undergone quality control and quality assurance review. It contains a working state and transition model and enough information to identify the ecological site.



**Figure 1. Mapped extent**

Areas shown in blue indicate the maximum mapped extent of this ecological site. Other ecological sites likely occur within the highlighted areas. It is also possible for this ecological site to occur outside of highlighted areas if detailed soil survey has not been completed or recently updated.

## Classification relationships

Level IV Ecoregions of the Conterminous United States: 25a – Pine Ridge Escarpment, 43h – White River Badlands, and 43i – Keya Paha Tablelands.

## Associated sites

R064XY027NE	<b>Clayey Overflow</b>
GX064X01X036	<b>Loamy 17-20" PZ</b>
R064XY037NE	<b>Thin Upland</b>
R064XY039NE	<b>Shallow Clay</b>

## Similar sites

GX064X01X036	<b>Loamy 17-20" PZ</b> [Less green needlegrass; more needleandthread.]
R064XY027NE	<b>Clayey Overflow</b> [More big bluestem; higher production.]

**Table 1. Dominant plant species**

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) <i>Pascopyrum smithii</i> (2) <i>Nassella viridula</i>

## Physiographic features

This site occurs on nearly level to steeply sloping uplands.

**Table 2. Representative physiographic features**

Landforms	(1) Alluvial fan (2) Plain (3) Stream terrace
Flooding frequency	None
Ponding frequency	None
Elevation	884–1,219 m
Slope	0–20%
Aspect	Aspect is not a significant factor

## Climatic features

MLRA 64 is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature may also abound. The climate is the result of this MLRA's location near the geographic center of North America. There are few natural barriers on the northern Great Plains and air masses move freely across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 17 to 20 inches per year. The normal average annual temperature is about 47° F. January is the coldest month with average temperatures ranging from about 21° F (Wood, SD) to about 25° F (Hemingford, NE). July is the warmest month with temperatures averaging from about 72° F (Hemingford, NE) to about 76° F (Wood, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 55° F. This large annual range attests to the continental nature of this area's climate. Hourly winds are estimated to average about 11 miles per hour annually, ranging from about 13 miles per hour during the spring to about 10 miles per hour during the summer. Daytime winds are generally stronger than nighttime and occasional strong storms may bring brief periods of high winds with gusts to more than 50 miles per hour.

Growth of cool season plants begins in early to mid March, slowing or ceasing in late June. Warm season plants begin growth about mid May and continue to early or mid September. Green up of cool season plants may occur in September and October when adequate soil moisture is present.

**Table 3. Representative climatic features**

Frost-free period (average)	140 days
Freeze-free period (average)	162 days
Precipitation total (average)	483 mm

## Influencing water features

No riparian areas or wetland features are directly associated with this site.

## Soil features

The common features of soils in this site are the silty clay to clay textured subsoils and slopes of 0 to 20 percent.

The soils in this site are well drained and formed in alluvium, colluvium, and residuum derived primarily from shale. The silt loam to clay surface layer is 3 to 7 inches thick. The soils have a moderately slow to slow infiltration rate. When dry these soils crack. When wet surface compaction can occur with heavy traffic. This site typically should show slight to no evidence of rills, wind scoured areas or pedestalled plants. Water flow paths are broken, irregular in appearance or discontinuous with numerous debris dams or vegetative barriers. The soil surface is stable and intact. Sub-surface soil layers are non-restrictive to water movement and root penetration.

These soils are mainly susceptible to water erosion. The hazard of water erosion increases on slopes greater than about 5 percent. Loss of 50 percent or more of the surface layer of the soils on this site can result in a shift in species composition and/or production.

More information can be found in the various soil survey reports. Contact the local USDA Service Center for soil survey reports that include more detail specific to your location.

**Table 4. Representative soil features**

Surface texture	(1) Silt loam (2) Silty clay loam (3) Clay
Family particle size	(1) Clayey
Drainage class	Well drained
Permeability class	Slow to moderately slow
Soil depth	51–203 cm
Surface fragment cover ≤3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	10.16–17.78 cm
Calcium carbonate equivalent (0-101.6cm)	0–15%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–10
Soil reaction (1:1 water) (0-101.6cm)	6.1–9
Subsurface fragment volume ≤3" (Depth not specified)	0–13%
Subsurface fragment volume >3" (Depth not specified)	0–6%

## Ecological dynamics

This site developed under Northern Great Plains climatic conditions, light to severe grazing by bison and other large herbivores, sporadic natural or man-caused wildfire (often of light intensities), and other biotic and abiotic factors that typically influence soil/site development. Changes will occur in the plant communities due to short-term weather variations, impacts of native and/or exotic plant and animal species, and management actions. While the following plant community descriptions describe more typical transitions between communities that will occur, severe disturbances, such as periods of well-below average precipitation, can cause significant shifts in plant communities and/or species composition. Encroachment may occur from associated sites. Ponderosa pine and Rocky Mountain juniper have the potential to shift site characteristics. These shifts can alter the site dynamics and potential. These species may occur in small amounts on several plant communities.

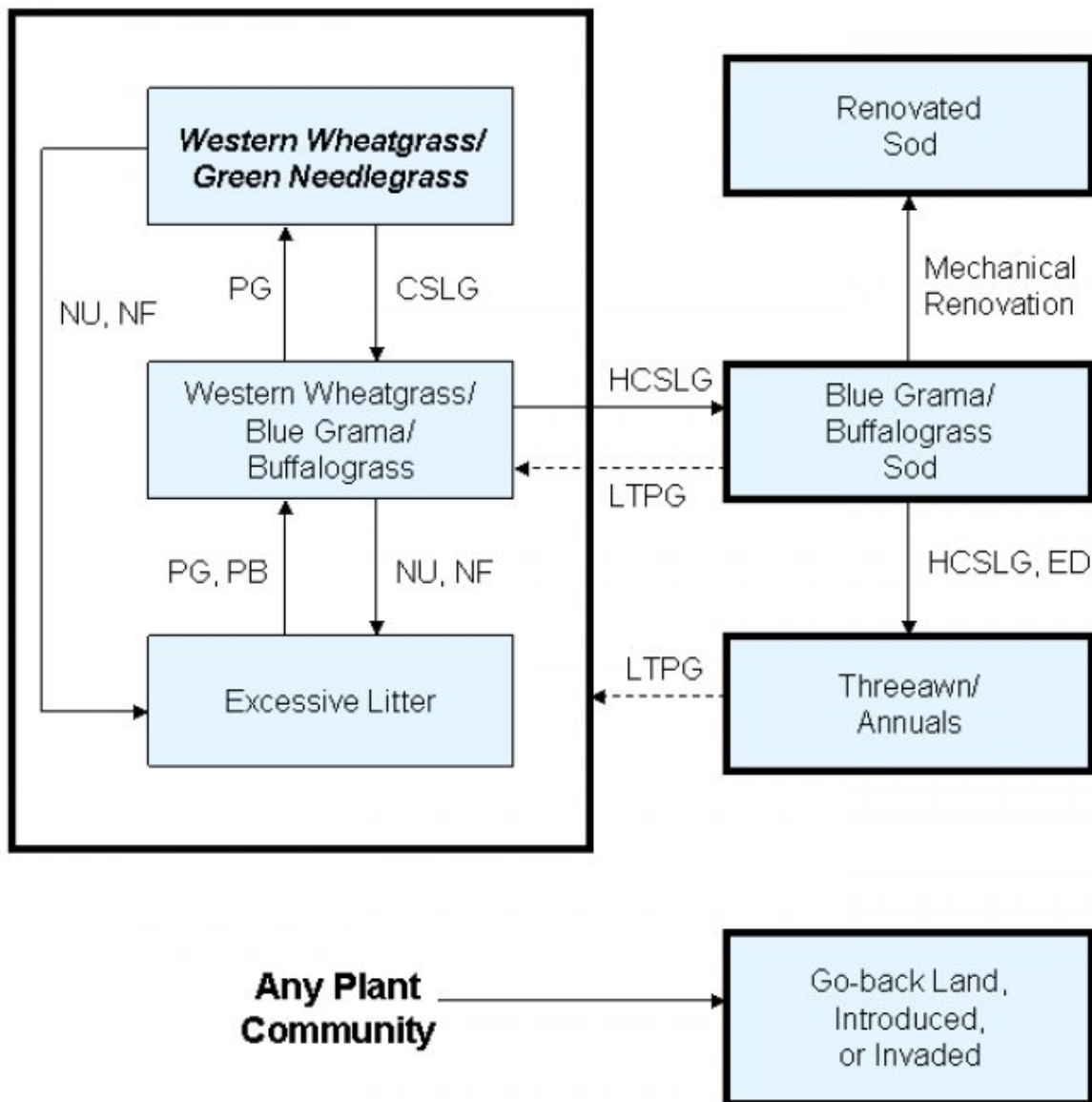
Continuous season-long grazing (during the typical growing season of May through October) and/or repeated seasonal grazing (e.g., every spring, every summer) without adequate recovery periods following each grazing

occurrence causes this site to depart from the Western Wheatgrass/Green Needlegrass Plant Community. Blue grama and buffalograss will increase and eventually develop into a sod. Western wheatgrass will increase initially and then begin to decrease. Green needlegrass, needleandthread, porcupine grass, sideoats grama, big bluestem and little bluestem will decrease in frequency and production. Excessive defoliation can cause threeawns and annuals to increase and dominate the site. Extended periods of non-use and/or lack of fire will result in excessive litter and a plant community dominated by cool season grasses such as western wheatgrass, bluegrass and cheatgrass.

Interpretations are primarily based on the Western Wheatgrass/Green Needlegrass Plant Community. It has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been used. Plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience.

The following is a diagram that illustrates the common plant communities that can occur on the site and the transition pathways between communities. The ecological processes will be discussed in more detail in the plant community descriptions following the diagram.

### **State and transition model**



**CSLG** - Continuous season-long grazing (grazing a unit for an entire growing season); **ED** - Excessive defoliation; **HCSLG** - Heavy, continuous season-long grazing; **LTPG** - Long-term prescribed grazing; **NU, NF** - Non-use and no fire for extended periods of time; **PB** - Prescribed burning; **PG** - Prescribed grazing (planned, controlled harvest of vegetation with grazing or browsing animals – see FOTG, Section IV, 528).

## Community 1.1

### Western Wheatgrass/Green Needlegrass

Interpretations are based primarily on the Western Wheatgrass/Green Needlegrass Plant Community (this is also considered to be climax). This plant community can be found on areas that are properly managed with grazing and/or prescribed burning, and sometimes on areas receiving occasional short periods of rest. The potential vegetation is about 85% grasses or grass-like plants, 10% forbs, and 5% woody plants. The community is dominated by cool season grasses. The major grasses include western wheatgrass, green needlegrass, needleandthread, and porcupine grass. Other grasses include sideoats grama, sedges, and buffalograss. This plant community is extremely resilient and well adapted to the Northern Great Plains climatic conditions. The diversity in plant species allows for high drought tolerance. This is a sustainable plant community in regards to site/soil stability, watershed function, and biologic integrity.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1239	2018	2903
Forb	106	168	230
Shrub/Vine	–	56	118
<b>Total</b>	<b>1345</b>	<b>2242</b>	<b>3251</b>

Figure 5. Plant community growth curve (percent production by month). NE6401, Pine Ridge/Badlands, cool-season dominant. Cool-season dominant.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		5	15	28	30	10	2	5	5		

## State 2

### Western Wheatgrass/Blue Grama/Buffalograss

#### Community 2.1

#### Western Wheatgrass/Blue Grama/Buffalograss

This plant community evolved under continuous season-long grazing or from over utilization during extended drought periods. The potential plant community is made up of approximately 80% grasses and grass-like species, 10% forbs, and 10% shrubs. Dominant grasses include western wheatgrass, blue grama, and buffalograss. Grasses of secondary importance include sedge, sideoats grama, green needlegrass, and needleandthread. Forbs commonly found in this plant community include fringed sagewort, cudweed sagewort, prairie coneflower, and western yarrow. Shrub canopy ranges from 0% to 10%. When compared to the Western Wheatgrass/Green Needlegrass Plant Community, blue grama and buffalograss have increased. Green needlegrass and sideoats grama have decreased, and production of mid and tall warm-season grasses has also been reduced. This plant community is moderately resistant to change. The herbaceous species present are well adapted to grazing; however, species composition can be altered through long-term overgrazing. If the herbaceous component is intact, it tends to be resilient if the disturbance is not long-term.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	975	1596	2432
Shrub/Vine	–	90	185
Forb	34	108	185
<b>Total</b>	<b>1009</b>	<b>1794</b>	<b>2802</b>

Figure 7. Plant community growth curve (percent production by month).  
NE6403, Pine Ridge/Badlands, cool-season/warm-season co-dominant.  
Cool-season, warm-season co-dominant.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		5	10	20	25	20	10	5	5		

### State 3 Blue Grama/Buffalograss Sod

#### Community 3.1 Blue Grama/Buffalograss Sod

This plant community evolved under heavy continuous season long grazing or from over utilization during extended drought periods. The potential plant community is made up of approximately 80% grasses and grass-like species, 10% forbs, and 10% shrubs. Dominant grasses include blue grama and buffalograss. Grasses of secondary importance include sedge and western wheatgrass. Forbs commonly found in this plant community include fringed sagewort, wild parsley and scarlet globemallow. Shrub canopy ranges from 0% to 10%. When compared to the Western Wheatgrass/Green Needlegrass Plant Community, blue grama and buffalograss are dominant on this plant community. Cool season grasses have decreased significantly. This vegetation state is very resistant to change. The herbaceous species present are well adapted to grazing; however, composition can be altered through long-term prescribed grazing.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	611	1042	1362
Forb	56	123	191
Shrub/Vine	6	67	129
<b>Total</b>	<b>673</b>	<b>1232</b>	<b>1682</b>

Figure 9. Plant community growth curve (percent production by month).  
NE6405, Pine Ridge/Badlands, warm-season dominant. Warm-season  
dominant.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		3	7	15	20	30	15	5	5		

### State 4 Excessive Litter

#### Community 4.1 Excessive Litter

This plant community developed under the absence of grazing and fire. At first, excessive litter builds up shading out some plants. Other plants become decadent with low vigor. Bunch grasses often develop dead centers, and rhizomatous grasses form small colonies due to the lack of tiller stimulation. Eventually, the interspaces between plants increase in size leaving more soil surface exposed. Dominant grasses include bluegrass and western wheatgrass. Other species include dropseed and threadleaf sedge. Dominant forbs include sweetclover, cudweed sagewort and mare's tail. The dominant shrub is snowberry. Compared to the Western Wheatgrass/Green Needlegrass Plant Community, non-native species, cool-season grasses and sedges have increased. Rodent disturbance (from mice and gophers) results in an increase of soil disturbance. Noxious weeds such as Canada thistle or leafy spurge may invade the site if a seed source is present. Plant diversity is moderate to high.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	885	1404	1692
Shrub/Vine	–	78	163
Forb	11	86	163
<b>Total</b>	<b>896</b>	<b>1568</b>	<b>2018</b>

Figure 11. Plant community growth curve (percent production by month). NE6401, Pine Ridge/Badlands, cool-season dominant. Cool-season dominant.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		5	15	28	30	10	2	5	5		

## Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Western Wheatgrass</b>			673–1121	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	673–1121	–
2	<b>Big Bluestem</b>			0–224	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	0–224	–
3	<b>Little Bluestem</b>			0–224	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0–224	–
4	<b>Needlegrasses</b>			336–785	
	green needlegrass	NAVI4	<i>Nassella viridula</i>	224–560	–
	needle and thread	HECOC8	<i>Hesperostipa comata</i> ssp. <i>comata</i>	112–336	–
	porcupinegrass	HESP11	<i>Hesperostipa spartea</i>	112–336	–
5	<b>Short Grasses &amp; Grass-Likes</b>			112–336	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	45–179	–
	sedge	CAREX	<i>Carex</i>	45–112	–
6	<b>Other Native Grasses</b>			112–336	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	112–224	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–112	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–112	–
	threeawn	ARIST	<i>Aristida</i>	0–67	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–67	–
<b>Forb</b>					
8	<b>Forbs</b>			112–224	
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	22–112	–
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0–112	–
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	0–112	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	22–112	–
	scarlet beeblossom	GACO5	<i>Gaura coccinea</i>	0–67	–



	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–67	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–67	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	22–67	–
	onion	ALLIU	<i>Allium</i>	0–45	–
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	0–45	–
	blacksamson echinacea	ECAN2	<i>Echinacea angustifolia</i>	0–45	–
	dotted blazing star	LIPU	<i>Liatris punctata</i>	0–45	–
	desertparsley	LOMAT	<i>Lomatium</i>	0–45	–
	leafy wildparsley	MUDI	<i>Musineon divaricatum</i>	22–45	–
	beardtongue	PENST	<i>Penstemon</i>	0–45	–
	scurfpea	PSORA2	<i>Psoralidium</i>	0–45	–
	white heath aster	SYER	<i>Symphyotrichum ericoides</i>	0–45	–
	spiderwort	TRADE	<i>Tradescantia</i>	0–45	–
	vetch	VICIA	<i>Vicia</i>	0–45	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0–22	–
<b>Shrub/Vine</b>					
9	<b>Shrubs</b>			0–112	
	leadplant	AMCA6	<i>Amorpha canescens</i>	0–112	–
	snowberry	SYMPH	<i>Symphoricarpos</i>	0–112	–
	rose	ROSA5	<i>Rosa</i>	0–67	–
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0–45	–
	pricklypear	OPUNT	<i>Opuntia</i>	0–45	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (&lt;.5m)</i>	0–45	–

Table 10. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Western Wheatgrass</b>			269–628	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	269–628	–
2	<b>Big Bluestem</b>			0–90	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	0–90	–
3	<b>Little Bluestem</b>			0–90	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0–90	–
4	<b>Needlegrasses</b>			179–359	
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	90–179	–
	green needlegrass	NAVI4	<i>Nassella viridula</i>	90–179	–
	porcupinegrass	HESP11	<i>Hesperostipa spartea</i>	0–143	–
5	<b>Short Grasses &amp; Grass-Likes</b>			269–448	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	179–359	–
	sedge	CAREX	<i>Carex</i>	90–179	–
6	<b>Other Native Grasses</b>			36–179	
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	36–143	–
	threeawn	ARIST	<i>Aristida</i>	18–90	–

	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–54	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–54	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–54	–
	dropseed	SPORO	<i>Sporobolus</i>	0–36	–
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	0–18	–
7	<b>Non-Native Grasses</b>			0–90	
	cheatgrass	BRTE	<i>Bromus tectorum</i>	0–54	–
	bluegrass	POA	<i>Poa</i>	0–54	–
<b>Forb</b>					
8	<b>Forbs</b>			36–179	
	sweetclover	MELIL	<i>Melilotus</i>	0–179	–
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	36–143	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–90	–
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0–90	–
	Canadian horseweed	COCA5	<i>Conyza canadensis</i>	0–90	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	18–90	–
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	0–90	–
	scurfpea	PSORA2	<i>Psoralegium</i>	0–90	–
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	0–90	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	18–90	–
	white heath aster	SYER	<i>Symphotrichum ericoides</i>	0–90	–
	goatsbeard	TRAGO	<i>Tragopogon</i>	0–54	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–54	–
	onion	ALLIU	<i>Allium</i>	0–54	–
	blacksamson echinacea	ECAN2	<i>Echinacea angustifolia</i>	0–54	–
	dotted blazing star	LIPU	<i>Liatris punctata</i>	0–54	–
	beardtongue	PENST	<i>Penstemon</i>	0–54	–
	desertparsley	LOMAT	<i>Lomatium</i>	0–36	–
	vetch	VICIA	<i>Vicia</i>	0–36	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0–36	–
	leafy wildparsley	MUDI	<i>Musineon divaricatum</i>	18–36	–
	spiderwort	TRADE	<i>Tradescantia</i>	0–36	–
<b>Shrub/Vine</b>					
9	<b>Shrubs</b>			0–179	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0–90	–
	snowberry	SYMPH	<i>Symphoricarpos</i>	0–90	–
	leadplant	AMCA6	<i>Amorpha canescens</i>	0–54	–
	pricklypear	OPUNT	<i>Opuntia</i>	0–54	–
	rose	ROSA5	<i>Rosa</i>	0–54	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (&lt;.5m)</i>	0–36	–

Table 11. Community 3.1 plant community composition

				Annual Production	Foliar Cover
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Group	Common Name	Symbol	Scientific Name	(Kg/Hectare)	(%)
<b>Grass/Grasslike</b>					
1	<b>Western Wheatgrass</b>			62–185	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	62–185	–
2	<b>Big Bluestem</b>			0–37	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	0–37	–
3	<b>Little Bluestem</b>			0–62	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0–62	–
4	<b>Needlegrasses</b>			0–123	
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	0–99	–
	green needlegrass	NAVI4	<i>Nassella viridula</i>	0–62	–
	porcupinegrass	HESP11	<i>Hesperostipa spartea</i>	0–25	–
5	<b>Short Grasses &amp; Grass-Likes</b>			247–616	
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	185–308	–
	sedge	CAREX	<i>Carex</i>	123–185	–
6	<b>Other Native Grasses</b>			62–185	
	threeawn	ARIST	<i>Aristida</i>	62–123	–
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	0–62	–
	dropseed	SPORO	<i>Sporobolus</i>	0–62	–
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	12–37	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–37	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–37	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–37	–
7	<b>Non-Native Grasses</b>			37–123	
	cheatgrass	BRTE	<i>Bromus tectorum</i>	37–123	–
	bluegrass	POA	<i>Poa</i>	0–25	–
<b>Forb</b>					
8	<b>Forbs</b>			62–185	
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	37–123	–
	sweetclover	MELIL	<i>Melilotus</i>	0–123	–
	scurfpea	PSORA2	<i>Psoraleidum</i>	0–86	–
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	0–62	–
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	12–62	–
	white heath aster	SYER	<i>Symphyotrichum ericoides</i>	0–62	–
	goatsbeard	TRAGO	<i>Tragopogon</i>	0–62	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	0–62	–
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0–62	–
	Canadian horseweed	COCA5	<i>Conyza canadensis</i>	0–62	–
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	0–62	–
	leafy wildparsley	MUDI	<i>Musineon divaricatum</i>	12–49	–
	beardtongue	PENST	<i>Penstemon</i>	0–37	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	0–37	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	12–37	–

	onion	ALLIU	<i>Allium</i>	0–37	–
	scarlet beeblossom	GACO5	<i>Gaura coccinea</i>	0–37	–
	dotted blazing star	LIPU	<i>Liatris punctata</i>	0–37	–
	deathcamas	ZIGAD	<i>Zigadenus</i>	0–37	–
	desertparsley	LOMAT	<i>Lomatium</i>	0–25	–
	vetch	VICIA	<i>Vicia</i>	0–25	–
	spiderwort	TRADE	<i>Tradescantia</i>	0–12	–
	blacksamson echinacea	ECAN2	<i>Echinacea angustifolia</i>	0–12	–
<b>Shrub/Vine</b>					
9	<b>Shrubs</b>			12–123	
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	12–62	–
	pricklypear	OPUNT	<i>Opuntia</i>	0–62	–
	snowberry	SYMPH	<i>Symphoricarpos</i>	0–37	–
	rose	ROSA5	<i>Rosa</i>	0–25	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (&lt;.5m)</i>	0–25	–
	leadplant	AMCA6	<i>Amorpha canescens</i>	0–25	–

Table 12. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Western Wheatgrass</b>			157–785	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	157–785	–
2	<b>Big Bluestem</b>			0–78	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	0–78	–
3	<b>Little Bluestem</b>			0–78	
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0–78	–
4	<b>Needlegrasses</b>			78–314	
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	16–157	–
	porcupinegrass	HESP11	<i>Hesperostipa spartea</i>	16–157	–
	green needlegrass	NAVI4	<i>Nassella viridula</i>	16–157	–
5	<b>Short Grasses &amp; Grass-Likes</b>			78–235	
	sedge	CAREX	<i>Carex</i>	78–157	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	16–78	–
6	<b>Other Native Grasses</b>			47–157	
	dropseed	SPORO	<i>Sporobolus</i>	31–157	–
	threeawn	ARIST	<i>Aristida</i>	16–78	–
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	31–78	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–78	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–63	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–47	–
	sixweeks fescue	VUOC	<i>Vulpia octoflora</i>	0–47	–
7	<b>Non-Native Grasses</b>			78–628	
	sheepgrass	DRTE	<i>Drymonia tetrasperma</i>	47–174	–

	creatgrass	BRTE	<i>Bromus tectorum</i>	41-471	-
	bluegrass	POA	<i>Poa</i>	47-471	-
<b>Forb</b>					
8	<b>Forbs</b>			78-628	
	sweetclover	MELIL	<i>Melilotus</i>	0-157	-
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	16-126	-
	Canadian horseweed	COCA5	<i>Conyza canadensis</i>	16-126	-
	goatsbeard	TRAGO	<i>Tragopogon</i>	0-110	-
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0-78	-
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0-78	-
	tarragon	ARDR4	<i>Artemisia dracunculus</i>	0-78	-
	prairie sagewort	ARFR4	<i>Artemisia frigida</i>	0-78	-
	scurfpea	PSORA2	<i>Psoralegium</i>	0-78	-
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	0-78	-
	scarlet globemallow	SPCO	<i>Sphaeralcea coccinea</i>	0-78	-
	white heath aster	SYER	<i>Symphyotrichum ericoides</i>	0-78	-
	leafy wildparsley	MUDI	<i>Musineon divaricatum</i>	0-47	-
	beardtongue	PENST	<i>Penstemon</i>	0-47	-
	scarlet beeblossom	GACO5	<i>Gaura coccinea</i>	0-47	-
	dotted blazing star	LIPU	<i>Liatris punctata</i>	0-47	-
	onion	ALLIU	<i>Allium</i>	0-47	-
	Forb, perennial	2FP	<i>Forb, perennial</i>	0-47	-
	blacksamson echinacea	ECAN2	<i>Echinacea angustifolia</i>	0-31	-
	desertparsley	LOMAT	<i>Lomatium</i>	0-31	-
	spiderwort	TRADE	<i>Tradescantia</i>	0-31	-
	vetch	VICIA	<i>Vicia</i>	0-31	-
	deathcamas	ZIGAD	<i>Zigadenus</i>	0-31	-
<b>Shrub/Vine</b>					
9	<b>Shrubs</b>			0-157	
	snowberry	SYMPH	<i>Symphoricarpos</i>	0-78	-
	leadplant	AMCA6	<i>Amorpha canescens</i>	0-47	-
	broom snakeweed	GUSA2	<i>Gutierrezia sarothrae</i>	0-47	-
	pricklypear	OPUNT	<i>Opuntia</i>	0-47	-
	rose	ROSA5	<i>Rosa</i>	0-47	-
	Subshrub (<.5m)	2SUBS	<i>Subshrub (&lt;.5m)</i>	0-31	-

## Hydrological functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic groups C and D. Infiltration varies from very low to moderate, and runoff potential varies from moderate to very high depending on soil hydrologic group, slope and ground cover. In many cases, areas with greater than 75% ground cover have the greatest potential for high infiltration and lower runoff. An example of an exception would be high runoff when short grasses form a strong sod and dominate the site. Areas where ground cover is less than 50% have the greatest potential to have reduced infiltration and higher runoff (refer to Section 4, NRCS National Engineering Handbook for runoff quantities and hydrologic curves).

## Recreational uses

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

## Wood products

No appreciable wood products are present on the site.

## Other products

Seed harvest of native plant species can provide additional income on this site.

## Inventory data references

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range-trained personnel were also used. Those involved in developing this site include: Stan Boltz, Range Management Specialist, NRCS; Jill Epley, Range Management Specialist, NRCS; Rick Peterson, Range Management Specialist, NRCS; David Steffen, Range Management Specialist, NRCS; Jeff Vander Wilt; Range Management Specialist, NRCS; Phil Young, Soil Scientist, NRCS.

Data Source Number of Records Sample Period State County  
SCS-RANGE-417 1 1970 NE Dawes

## Other references

High Plains Regional Climate Center, University of Nebraska, 830728 Chase Hall, Lincoln, NE 68583-0728.  
(<http://hpccsun.unl.edu>)

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224.  
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USDA, NRCS. 2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

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## Contributors

SCB

## Rangeland health reference sheet

Interpreting Indicators of Rangeland Health is a qualitative assessment protocol used to determine ecosystem condition based on benchmark characteristics described in the Reference Sheet. A suite of 17 (or more) indicators are typically considered in an assessment. The ecological site(s) representative of an assessment location must be known prior to applying the protocol and must be verified based on soils and climate. Current plant community cannot be used to identify the ecological site.

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Date	07/20/2009
Approved by	Stan Boltz
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

## Indicators

1. **Number and extent of rills:** None.  

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2. **Presence of water flow patterns:** None, or barely visible and discontinuous.  

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3. **Number and height of erosional pedestals or terracettes:** None.  

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4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 0 to 10 percent is typical.  

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5. **Number of gullies and erosion associated with gullies:** None should be present.  

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

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7. **Amount of litter movement (describe size and distance expected to travel):** Litter should fall in place. Slight amount of movement of smallest size class litter is possible, but not normal.  

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8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of values):** Soil aggregate stability ratings should typically be 5 to 6, normally 6. Surface organic matter adheres to the soil surface. Soil surface fragments will typically retain structure indefinitely when dipped in distilled water.  

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A-horizon should be 3 to 7 inches thick with mollic (dark) colors when moist. Structure typically is medium to fine granular at least in the upper A-horizon.  

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Combination of shallow and deep rooted species (mid & tall rhizomatous and tufted perennial cool-season grasses) with fine and coarse roots positively influences infiltration.  

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None – when dry, B horizons can be hard and appear to be compacted, but no platy structure will be present.  

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12. **Functional/Structural Groups (list in order of descending dominance by above-ground annual-production or live foliar cover using symbols: >>, >, = to indicate much greater than, greater than, and equal to):**

Dominant: Rhizomatous wheatgrasses > mid cool-season bunchgrasses >>

Sub-dominant: Mid warm-season grasses > short warm-season grass >

Other: Tall warm-season grass = Forbs = shrubs > short cool-season bunchgrasses

Additional:

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13. **Amount of plant mortality and decadence (include which functional groups are expected to show mortality or decadence):** Very little evidence of decadence or mortality. Bunch grasses have strong, healthy centers and shrubs are vigorous.
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14. **Average percent litter cover (%) and depth ( in):** Litter cover typically 50 to 70 percent, with depth 0.25 to 0.5 inches.
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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Total annual production ranges from 1,200 to 2,900 pounds/acre, with the reference value being 2,000 pounds/acre (air-dry basis).
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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** State and local noxious weeds, Kentucky bluegrass.
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17. **Perennial plant reproductive capability:** All species exhibit high vigor relative to climatic conditions. Do not rate based solely on seed production. Perennial grasses should have vigorous rhizomes or tillers.
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