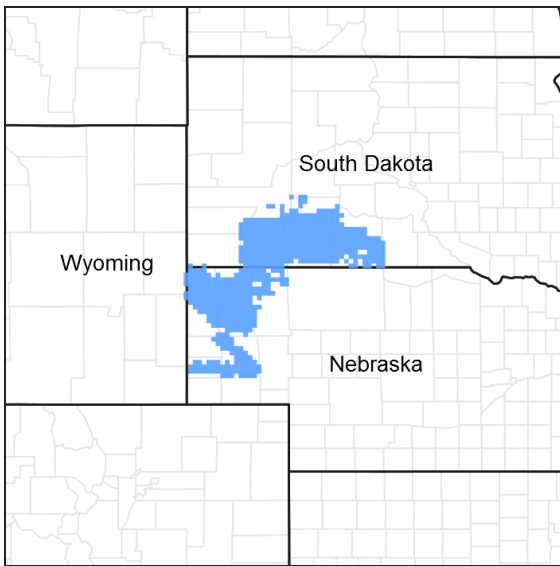


# Ecological site R064XY026NE Loamy Overflow

Accessed: 04/29/2024

## 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

GX064X01X015	<b>Loamy 14-17" PZ</b>
GX064X01X036	<b>Loamy 17-20" PZ</b>
R064XY037NE	<b>Thin Upland</b>

## Similar sites

R064XY027NE	<b>Clayey Overflow</b> [Less bluestems; more western wheatgrass.]
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**Table 1. Dominant plant species**

Tree	Not specified
Shrub	Not specified

Herbaceous	(1) <i>Andropogon gerardii</i> (2) <i>Pascopyrum smithii</i>
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## Physiographic features

This site occurs on nearly level areas that receive additional water from overflow of intermittent streams or runoff from adjacent slopes.

**Table 2. Representative physiographic features**

Landforms	(1) Flood plain (2) Stream terrace (3) Swale
Flooding duration	Very brief (4 to 48 hours) to brief (2 to 7 days)
Flooding frequency	Rare to frequent
Ponding frequency	None
Elevation	884–1,219 m
Slope	0–5%
Water table depth	107–183 cm
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 14 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 70° F (Keeline 3 W, WY) 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 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)	143 days
Freeze-free period (average)	163 days
Precipitation total (average)	508 mm

## Influencing water features

B6, C6  
(Rosgen System)

## Soil features

The soils of this site are very deep, moderately well to well drained soils that formed in alluvium. These soils have slow to moderate permeability. The surface layer will vary from 3 to 15 inches deep and have one of the following textures: very fine sandy loam, loam, silt loam, and silty clay loam. These areas receive additional water from overflow of intermittent streams or runoff from adjacent slopes. Available water capacity is typically high. The general fertility level and organic content of these soils is medium to high. This site 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 not restrictive to water movement and root penetration.

These soils are mainly susceptible to water erosion. Headcuts may develop if adequate vegetative cover is not maintained. A drastic loss of the soil surface layer 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) Loam
Family particle size	(1) Loamy
Drainage class	Moderately well drained to well drained
Permeability class	Slow to moderate
Soil depth	183 cm
Surface fragment cover <=3"	0%
Surface fragment cover >3"	0%
Available water capacity (0-101.6cm)	15.24–20.32 cm
Calcium carbonate equivalent (0-101.6cm)	0–25%
Electrical conductivity (0-101.6cm)	0–8 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)	0–10%
Subsurface fragment volume >3" (Depth not specified)	0–5%

## 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 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.

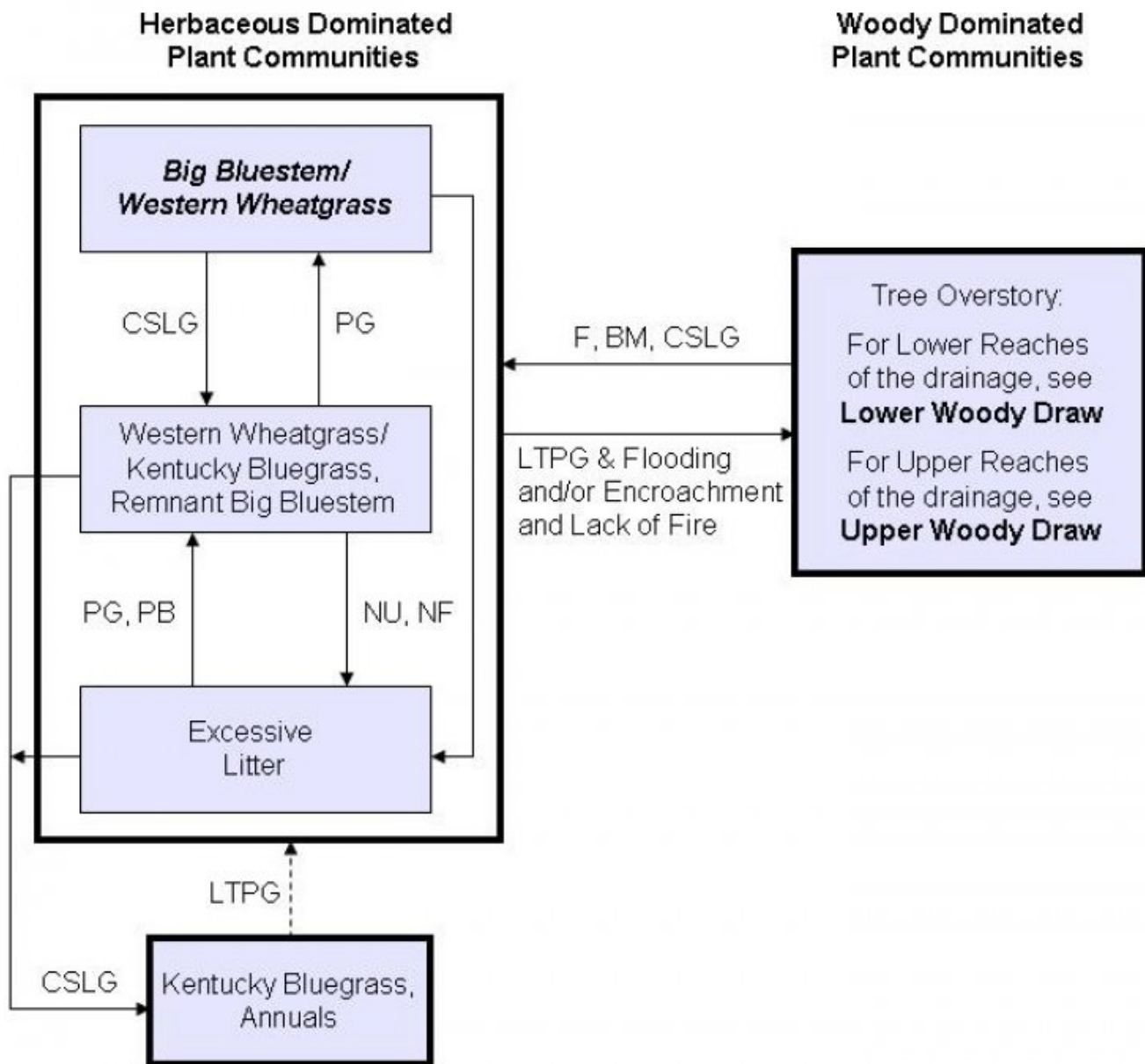
Continuous season-long grazing (during the typical growing season of May through October) and/or repeated seasonal grazing (e.g., every spring, every summer) without adequate recovery periods following each grazing occurrence causes this site to depart from the Big Bluestem/Western Wheatgrass Plant Community. Western

wheatgrass increases initially and will eventually decrease with continuous grazing. Grasses such as big bluestem, prairie cordgrass and switchgrass will decrease in frequency and production. Introduced species such as Kentucky bluegrass, cheatgrass and smooth brome grass invade the site as a result of inadequate recovery periods between grazing events and overstocking. Where trees dominate the site, woody regeneration will decline and grasses and forbs will become dominant in the understory. It is thought that the climax is an herbaceous dominated site on higher landscape positions where trees encroach from the adjacent Thin Breaks site, and flooding events are infrequent. Loamy Overflow sites occupying lower landscape positions or plant communities adjacent to riparian areas will typically be dominated by a mixed hardwood overstory.

Interpretations are primarily based on the Big Bluestem/Western Wheatgrass 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**



**BM** - Brush management (fire, chemical, mechanical); **CSLG** - Continuous season-long grazing (grazing a unit for an entire growing season); **F** - Fire; **LTPG** - Long-term prescribed grazing; **NF** - No fire; **NU** - Non use; **PG** - Prescribed grazing (planned, controlled harvest of vegetation with grazing or browsing animals – see FOTG, Section IV, 528).

Figure 4. Loamy Overflow

## Big Bluestem/Western Wheatgrass

### Community 1.1

#### Big Bluestem/Western Wheatgrass

Interpretations are based primarily on the Big Bluestem/Western Wheatgrass Plant Community (this is also considered to be climax). Potential vegetation is about 85% grasses or grass-like plants, 10% forbs, and 5% shrubs. The plant community is dominated by both warm and cool season grasses. The major grasses include big bluestem and western wheatgrass. Other grasses and grass-likes include switchgrass and sedges. Forbs consist of American licorice, American vetch, aster species, and goldenrod. Woody species included in the plant community are western snowberry and rose. The potential is relatively low for tree establishment or regeneration. This plant community is productive and diverse. 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	2275	2993	3234
Forb	163	252	364
Shrub/Vine	28	101	174
Tree	–	17	39
<b>Total</b>	<b>2466</b>	<b>3363</b>	<b>3811</b>

Figure 6. Plant community growth curve (percent production by month). NE6408, Pine Ridge/Badlands, lowland cool-season/warm-season co-dominant. Cool-season, warm-season co-dominant, lowland.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		5	12	20	25	19	11	5	3		

## State 2

### Western Wheatgrass/Kentucky Bluegrass, Big Bluestem Remnant

#### Community 2.1

#### Western Wheatgrass/Kentucky Bluegrass, Big Bluestem Remnant

This plant community is a result continuous season-long grazing. Western wheatgrass has increased. Big bluestem has decreased but remains in remnant amounts. Other grasses and grass-likes include switchgrass, sand dropseed, tall dropseed and sedges. The potential is low for any woody regeneration. Kentucky bluegrass has invaded and is beginning to dominate the plant community. Production and diversity has declined compared to the Big Bluestem/Western Wheatgrass Plant Community. Loss of warm season grasses has negatively impacted energy flow and nutrient cycling. Water infiltration can be reduced due to the shallow root system, characteristic of Kentucky bluegrass.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1872	2242	2466
Shrub/Vine	22	142	280
Forb	123	194	280
<b>Total</b>	<b>2017</b>	<b>2578</b>	<b>3026</b>

Figure 8. Plant community growth curve (percent production by month). NE6407, Pine Ridge/Badlands, cool-season dominant, warm-season sub-dominant. Cool-season dominant, warm-season sub-dominant, lowland.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		5	8	25	30	15	10	2	5		

**State 3**  
**Kentucky Bluegrass, Annuals**

**Community 3.1**  
**Kentucky Bluegrass, Annuals**

This plant community developed under continuous season-long grazing. It is dominated by Kentucky bluegrass, annual brome and other annual grasses and forbs. The dominant forbs include common mullein, western ragweed, scurfpeas, cudweed sagewort, and verbenas. Dominant shrubs in this community include snowberry, and rose. Compared to the Western Wheatgrass/Kentucky Bluegrass, Remnant Big Bluestem Plant Community, Kentucky bluegrass increases significantly and western wheatgrass and big bluestem has decreased significantly. Plant diversity and productivity has declined. This plant community is resistant to change, and if disturbed, it is resilient. Bluegrass will increase under grazing pressure. Cool, moist climatic conditions will also tend to increase bluegrass production. Soil erosion is low. Compared to the Big Bluestem/Western Wheatgrass Plant Community, infiltration is reduced, and runoff increases. Once this plant community is reached, time and external resources will be needed to see any immediate recovery in the diversity.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	448	919	1278
Forb	106	168	230
Shrub/Vine	6	34	62
<b>Total</b>	<b>560</b>	<b>1121</b>	<b>1570</b>

Figure 10. Plant community growth curve (percent production by month). NE6406, Pine Ridge/Badlands, lowland cool-season dominant. Cool-season dominant, lowland.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		5	13	28	28	12	5	6	3		

**State 4**  
**Excessive Litter**

**Community 4.1**  
**Excessive Litter**

This plant community developed under extended periods of non-use and no fire. Initially, the dominant grasses include western wheatgrass and big bluestem. Other grasses and grass-likes may include switchgrass, dropseeds, and sedges. With continued non-use and no fire, the plant community becomes dominated by Kentucky bluegrass, western wheatgrass and annual grasses. Forbs include common mullein, western ragweed, scurfpeas, cudweed sagewort, and verbenas. Shrubs in this community include rose and western snowberry. Warm season grasses have decreased along with production and vigor. Soil erosion is low.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	908	1551	2074
Shrub/Vine	17	99	185
Forb	84	135	185
Tree	–	9	22
<b>Total</b>	<b>1009</b>	<b>1794</b>	<b>2466</b>

Figure 12. Plant community growth curve (percent production by month). NE6406, Pine Ridge/Badlands, lowland cool-season dominant. Cool-season dominant, lowland.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
		5	13	28	28	12	5	6	3		

## 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>Wheatgrass</b>			673–1009	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	673–1009	–
	slender wheatgrass	ELTRT	<i>Elymus trachycaulus ssp. trachycaulus</i>	0–168	–
2	<b>Needlegrass</b>			168–336	
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	168–336	–
	green needlegrass	NAVI4	<i>Nassella viridula</i>	67–168	–
3	<b>Tall Warm-Season Grasses</b>			1009–1345	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	1009–1513	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	168–504	–
	prairie cordgrass	SPPE	<i>Spartina pectinata</i>	0–34	–
4	<b>Native Grasses and Grass-likes</b>			168–336	
	sedge	CAREX	<i>Carex</i>	168–336	–
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	67–168	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	34–168	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0–168	–
	composite dropseed	SPCOC2	<i>Sporobolus compositus var. compositus</i>	34–168	–
	marsh muhly	MURA	<i>Muhlenbergia racemosa</i>	0–135	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–101	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	34–101	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–101	–
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	0–67	–
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0–67	–
<b>Forb</b>					
6	<b>Forbs</b>			168–336	
	Forb, annual	2FA	<i>Forb, annual</i>	0–101	–



	Forb, perennial	2FP	<i>Forb, perennial</i>	0–101	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	0–101	–
	great ragweed	AMTR	<i>Ambrosia trifida</i>	0–101	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	34–101	–
	aster	ASTER	<i>Aster</i>	34–101	–
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0–101	–
	scarlet beeblossom	GACO5	<i>Gaura coccinea</i>	0–101	–
	American licorice	GLLE3	<i>Glycyrrhiza lepidota</i>	34–101	–
	starry false lily of the valley	MAST4	<i>Maianthemum stellatum</i>	0–101	–
	scurfpea	PSORA2	<i>Psoraleidium</i>	0–101	–
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	0–101	–
	goldenrod	SOLID	<i>Solidago</i>	34–101	–
	nettle	URTIC	<i>Urtica</i>	0–101	–
	vervain	VERBE	<i>Verbena</i>	0–101	–
	American vetch	VIAM	<i>Vicia americana</i>	34–101	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	0–67	–
<b>Shrub/Vine</b>					
7	<b>Shrubs</b>			34–168	
	American plum	PRAM	<i>Prunus americana</i>	0–168	–
	chokecherry	PRVI	<i>Prunus virginiana</i>	0–168	–
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	0–168	–
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	34–168	–
	golden currant	RIAU	<i>Ribes aureum</i>	0–101	–
	rose	ROSA5	<i>Rosa</i>	34–101	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (&lt;.5m)</i>	0–101	–
	leadplant	AMCA6	<i>Amorpha canescens</i>	0–101	–
<b>Tree</b>					
8	<b>Trees</b>			0–34	
	Tree	2TREE	<i>Tree</i>	0–34	–
	boxelder	ACNE2	<i>Acer negundo</i>	0–34	–
	common hackberry	CEOC	<i>Celtis occidentalis</i>	0–34	–
	hawthorn	CRATA	<i>Crataegus</i>	0–34	–
	green ash	FRPE	<i>Fraxinus pennsylvanica</i>	0–34	–
	plains cottonwood	PODEM	<i>Populus deltoides ssp. monilifera</i>	0–34	–
	bur oak	QUMA2	<i>Quercus macrocarpa</i>	0–34	–
	American elm	ULAM	<i>Ulmus americana</i>	0–34	–

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>Wheatgrass</b>			773–1031	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	773–1031	–

	slender wheatgrass	ELTRT	<i>Elymus trachycaulus</i> ssp. <i>trachycaulus</i>	0-77	-
2	<b>Needlegrass</b>			26-129	
	needle and thread	HECOC8	<i>Hesperostipa comata</i> ssp. <i>comata</i>	26-129	-
	green needlegrass	NAVI4	<i>Nassella viridula</i>	0-129	-
3	<b>Tall Warm-Season Grasses</b>			129-387	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	129-387	-
	switchgrass	PAVI2	<i>Panicum virgatum</i>	0-129	-
4	<b>Native Grasses and Grass-likes</b>			26-129	
	sedge	CAREX	<i>Carex</i>	26-129	-
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	0-129	-
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0-129	-
	composite dropseed	SPCOC2	<i>Sporobolus compositus</i> var. <i>compositus</i>	26-77	-
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	26-77	-
	Grass, perennial	2GP	<i>Grass, perennial</i>	0-52	-
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	0-52	-
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	26-52	-
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0-52	-
	prairie Junegrass	KOMA	<i>Koeleria macrantha</i>	0-26	-
5	<b>Non-Native Grasses</b>			258-516	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	258-516	-
	smooth brome	BRIN2	<i>Bromus inermis</i>	0-129	-
	cheatgrass	BRTE	<i>Bromus tectorum</i>	26-129	-
<b>Forb</b>					
6	<b>Forbs</b>			129-258	
	Forb, annual	2FA	<i>Forb, annual</i>	26-129	-
	Forb, perennial	2FP	<i>Forb, perennial</i>	26-129	-
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	26-129	-
	American licorice	GLLE3	<i>Glycyrrhiza lepidota</i>	26-129	-
	common mullein	VETH	<i>Verbascum thapsus</i>	26-129	-
	American vetch	VIAM	<i>Vicia americana</i>	26-77	-
	goldenrod	SOLID	<i>Solidago</i>	26-77	-
	scurfpea	PSORA2	<i>Psoraleidum</i>	26-77	-
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	26-77	-
	common yarrow	ACMI2	<i>Achillea millefolium</i>	26-77	-
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	26-77	-
	aster	ASTER	<i>Aster</i>	0-77	-
	scarlet beeblossom	GACO5	<i>Gaura coccinea</i>	26-77	-
	vervain	VERBE	<i>Verbena</i>	26-77	-
	burdock	ARCTI	<i>Arctium</i>	0-52	-
	curly dock	RUCR	<i>Rumex crispus</i>	0-52	-
	nettle	URTIC	<i>Urtica</i>	0-52	-
	starry false lily of the	MAST4	<i>Maianthemum stellatum</i>	0-26	-

	valley				
	false boneset	BREU	<i>Brickellia eupatorioides</i>	0–26	–
	great ragweed	AMTR	<i>Ambrosia trifida</i>	0–26	–
<b>Shrub/Vine</b>					
7	<b>Shrubs</b>			26–258	
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	26–129	–
	rose	ROSA5	<i>Rosa</i>	26–129	–
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	0–77	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (&lt;.5m)</i>	0–52	–
	American plum	PRAM	<i>Prunus americana</i>	0–52	–
	chokecherry	PRVI	<i>Prunus virginiana</i>	0–52	–
	golden currant	RIAU	<i>Ribes aureum</i>	0–26	–
	leadplant	AMCA6	<i>Amorpha canescens</i>	0–26	–

Table 11. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
<b>Grass/Grasslike</b>					
1	<b>Wheatgrass</b>			22–56	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	22–56	–
2	<b>Needlegrass</b>			0–11	
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	0–11	–
3	<b>Tall Warm-Season Grasses</b>			11–22	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	11–22	–
4	<b>Native Grasses and Grass-likes</b>			11–56	
	sedge	CAREX	<i>Carex</i>	11–56	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–34	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	11–34	–
	composite dropseed	SPCOC2	<i>Sporobolus compositus var. compositus</i>	11–22	–
5	<b>Non-Native Grasses</b>			392–560	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	392–560	–
	smooth brome	BRIN2	<i>Bromus inermis</i>	22–168	–
	cheatgrass	BRTE	<i>Bromus tectorum</i>	22–112	–
<b>Forb</b>					
6	<b>Forbs</b>			112–224	
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	56–168	–
	common mullein	VETH	<i>Verbascum thapsus</i>	11–90	–
	Forb, annual	2FA	<i>Forb, annual</i>	22–56	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	11–56	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	11–56	–
	American licorice	GLLE3	<i>Glycyrrhiza lepidota</i>	0–56	–
	scurfpea	PSORA2	<i>Psoraleidium</i>	22–56	–
	curly dock	RUCR	<i>Rumex crispus</i>	0–56	–
	goldenrod	SOLID	<i>Solidago</i>	11–56	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	22–56	–
	aster	ASTER	<i>Aster</i>	22–56	–
	scarlet beeblossom	GACO5	<i>Gaura coccinea</i>	0–34	–
	nettle	URTIC	<i>Urtica</i>	0–34	–
	vervain	VERBE	<i>Verbena</i>	11–34	–
	burdock	ARCTI	<i>Arctium</i>	0–34	–
<b>Shrub/Vine</b>					
7	<b>Shrubs</b>			11–56	
	rose	ROSA5	<i>Rosa</i>	11–56	–
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	11–56	–
	American plum	PRAM	<i>Prunus americana</i>	11–34	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (&lt;.5m)</i>	0–22	–

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>Wheatgrass</b>			90–269	
	western wheatgrass	PASM	<i>Pascopyrum smithii</i>	90–269	–
2	<b>Needlegrass</b>			18–54	
	needle and thread	HECOC8	<i>Hesperostipa comata ssp. comata</i>	0–54	–
	green needlegrass	NAVI4	<i>Nassella viridula</i>	18–54	–
3	<b>Tall Warm-Season Grasses</b>			36–179	
	big bluestem	ANGE	<i>Andropogon gerardii</i>	36–179	–
	switchgrass	PAVI2	<i>Panicum virgatum</i>	18–90	–
4	<b>Native Grasses and Grass-likes</b>			18–90	
	sedge	CAREX	<i>Carex</i>	18–90	–
	composite dropseed	SPCOC2	<i>Sporobolus compositus var. compositus</i>	36–90	–
	sand dropseed	SPCR	<i>Sporobolus cryptandrus</i>	36–90	–
	Canada wildrye	ELCA4	<i>Elymus canadensis</i>	0–54	–
	Grass, perennial	2GP	<i>Grass, perennial</i>	0–54	–
	blue grama	BOGR2	<i>Bouteloua gracilis</i>	0–36	–
	Sandberg bluegrass	POSE	<i>Poa secunda</i>	0–36	–
	little bluestem	SCSC	<i>Schizachyrium scoparium</i>	0–36	–
	sideoats grama	BOCU	<i>Bouteloua curtipendula</i>	0–18	–
5	<b>Non-Native Grasses</b>			269–448	
	Kentucky bluegrass	POPR	<i>Poa pratensis</i>	269–448	–
	cheatgrass	BRTE	<i>Bromus tectorum</i>	36–179	–
	smooth brome	BRIN2	<i>Bromus inermis</i>	18–90	–
<b>Forb</b>					
6	<b>Forbs</b>			90–179	
	common mullein	VETH	<i>Verbascum thapsus</i>	18–179	–
	Forb, annual	2FA	<i>Forb, annual</i>	36–179	–
	Forb, perennial	2FP	<i>Forb, perennial</i>	36–90	–
	Cuman ragweed	AMPS	<i>Ambrosia psilostachya</i>	36–90	–
	burdock	ARCTI	<i>Arctium</i>	0–54	–
	white sagebrush	ARLU	<i>Artemisia ludoviciana</i>	18–54	–
	aster	ASTER	<i>Aster</i>	18–54	–
	American licorice	GLLE3	<i>Glycyrrhiza lepidota</i>	0–54	–
	scurfpea	PSORA2	<i>Psoraleidum</i>	18–54	–
	upright prairie coneflower	RACO3	<i>Ratibida columnifera</i>	18–54	–
	curly dock	RUCR	<i>Rumex crispus</i>	0–54	–
	goldenrod	SOLID	<i>Solidago</i>	18–54	–
	nettle	URTIC	<i>Urtica</i>	0–54	–
	vervain	VERBE	<i>Verbena</i>	18–54	–
	common yarrow	ACMI2	<i>Achillea millefolium</i>	18–54	–

	false boneset	BREU	<i>Brickellia eupatorioides</i>	0–36	–
	scarlet beeblossom	GACO5	<i>Gaura coccinea</i>	0–18	–
<b>Shrub/Vine</b>					
7	<b>Shrubs</b>			18–179	
	western snowberry	SYOC	<i>Symphoricarpos occidentalis</i>	18–126	–
	rose	ROSA5	<i>Rosa</i>	18–90	–
	silver buffaloberry	SHAR	<i>Shepherdia argentea</i>	0–36	–
	Subshrub (<.5m)	2SUBS	<i>Subshrub (&lt;.5m)</i>	0–36	–
	American plum	PRAM	<i>Prunus americana</i>	0–36	–
	chokecherry	PRVI	<i>Prunus virginiana</i>	0–36	–
	golden currant	RIAU	<i>Ribes aureum</i>	0–18	–
<b>Tree</b>					
8	<b>Trees</b>			0–18	
	Tree	2TREE	<i>Tree</i>	0–18	–
	boxelder	ACNE2	<i>Acer negundo</i>	0–18	–
	common hackberry	CEOC	<i>Celtis occidentalis</i>	0–18	–
	hawthorn	CRATA	<i>Crataegus</i>	0–18	–
	green ash	FRPE	<i>Fraxinus pennsylvanica</i>	0–18	–
	plains cottonwood	PODEM	<i>Populus deltoides ssp. monilifera</i>	0–18	–
	bur oak	QUMA2	<i>Quercus macrocarpa</i>	0–18	–
	American elm	ULAM	<i>Ulmus americana</i>	0–18	–

## Hydrological functions

Water is the principal factor limiting forage production on this site. This site is dominated by soils in hydrologic group B, with localized areas in hydrologic group C. Infiltration rate is moderately to slow. Runoff potential for this site varies from moderate to 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 where rhizomatous 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 varieties of plants that bloom from spring until fall have an esthetic value that appeals to visitors.

## Wood products

Local or individual fire wood can be utilized from this site.

## Other products

None noted.

## 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

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## Other references

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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	01/05/2010
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:** Typically none or barely visible. Evidence of water flow may be present after high overland flow events or flooding from adjacent streams, but vegetation normally remains intact.
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3. **Number and height of erosional pedestals or terracettes:** None.
- 

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** 0 to 5 percent is typical.
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5. **Number of gullies and erosion associated with gullies:** None typical, however limited headcutting may form after

high runoff or flooding events. Existing gullies should be stabilized with good vegetative cover.

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6. **Extent of wind scoured, blowouts and/or depositional areas:** None typical, but limited deposition may occur after major runoff or flooding events.
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7. **Amount of litter movement (describe size and distance expected to travel):** Litter of small and medium size classes will move after average to high rainfall events. Litter does not travel far, typically being trapped in small bunches by the extensive vegetative cover. Litter movement may be fairly extensive after major runoff or flooding events.
- 
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 5 to 20 inches thick with mollic (dark) colors when moist. Structure typically is medium to fine granular 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- and warm-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: Tall warm-season rhizomatous > Mid cool-season rhizomatous >>
- Sub-dominant: Mid/tall cool-season bunchgrasses >
- Other: Forbs > Shrubs > Short cool-season grasses/grass-likes > Trees
- Additional: In the woody draw areas, deciduous trees may dominate the site. In these areas, the tall, warm-season rhizomatous functional group may be the third most dominant in the herbaceous understory.
- 
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 is typically 50 to 80 percent, and depth of litter ranges from 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 2,200 to 3,400 pounds/acre, with the reference values being 3,000 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, snowberry.

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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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