

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

**Site Name:** Sandy

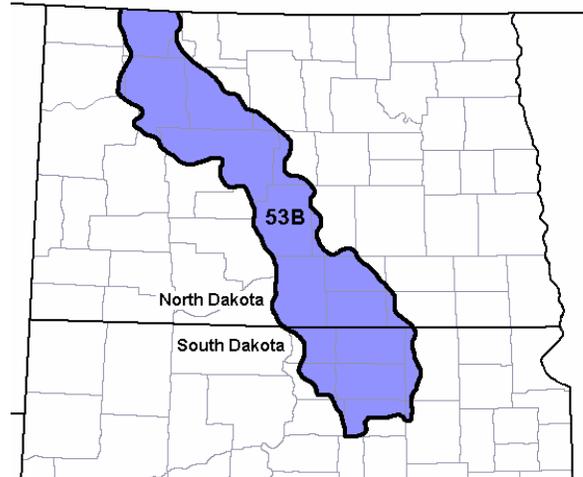
**Site Type:** Rangeland

**Site ID:** R053BY008ND

**Major Land Resource Area (MLRA):** 53B – Central Dark Brown Glaciated Plains

For more information on MLRA's, refer to the following Web site:

[http://www.soilinfo.psu.edu/soil\\_lrr/](http://www.soilinfo.psu.edu/soil_lrr/).



### Physiographic Features

This site occurs on nearly level to steep uplands.

**Landform:** outwash plain, till plain, stream terrace

**Aspect:** not applicable

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1600	2000
<b>Slope (percent):</b>	0	45
<b>Water Table Depth (inches):</b>	80	80
<b>Flooding:</b>		
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Ponding:</b>		
<b>Depth (inches):</b>	None	None
<b>Frequency:</b>	None	None
<b>Duration:</b>	None	None
<b>Runoff Class:</b>	Negligible	Medium

### Climatic Features

MLRA 53B is considered to have a continental climate – cold winters and hot summers, low humidity, light rainfall, and much sunshine. Extremes in temperature are characteristic. The climate is the result of this MLRA's location in the geographic center of North America. There are few natural barriers on the northern Great Plains. The air masses move unobstructed across the plains and account for rapid changes in temperature.

Annual precipitation ranges from 15 to 20 inches per year. The normal average annual temperature is about 41°F. January is the coldest month with average temperatures ranging from about 4°F (Powers Lake, North Dakota (ND)), to about 10°F (Pollock, South Dakota (SD)). July is the warmest month with temperatures averaging from about 67°F (Powers Lake, ND), to about 72° F (Pollock, SD). The

range of normal average monthly temperatures between the coldest and warmest months is about 62°F. This large annual range attests to the continental nature of this MLRA's climate. 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 native cool-season plants begins in late March and continues to early to mid-July. Native warm-season plants begin growth in mid-May and continue to the end of August. Green up of cool-season plants can occur in September and October when adequate soil moisture is present.

	<u>Minimum</u>	<u>Maximum</u>
<b>Frost-free period (days):</b>	110	135
<b>Freeze-free period (days):</b>	129	156
<b>Mean Annual Precipitation (inches):</b>	15	20
<b>Average Monthly Precipitation (inches) and Temperature (°F):</b>		

	Precip. Min.	Precip. Max	Temp. Min.	Temp. Max.
January	0.41	0.48	-6.8	21.5
February	0.41	0.57	0.7	28.9
March	0.57	1.09	12.0	39.7
April	1.31	2.01	27.0	57.4
May	1.98	2.92	38.6	70.8
June	3.17	3.80	48.4	79.3
July	2.38	2.84	52.9	86.2
August	1.82	2.17	50.8	85.6
September	1.37	1.67	39.9	74.2
October	0.62	1.30	28.3	61.2
November	0.53	0.74	13.7	41.2
December	0.43	0.43	0.3	27.2

Climate Stations		Period	
Station ID	Location or Name	From	To
ND3376	Garrison 1 NNW	1948	2001
SD4891	Leola	1948	2001
ND6383	New Town 4 W	1952	1985
SD6712	Pollock	1948	2001
ND7281	Powers Lake	1948	2001
SD7277	Roscoe	1948	2001

For local climate stations that may be more representative, refer to <http://www.wcc.nrcs.usda.gov>.

## Influencing Water Features

No significant water features influence this site.

## Representative Soil Features

These are moderately deep to very deep and well to somewhat excessively drained soils. Soil textures include moderately coarse and moderately coarse over moderately fine and moderately coarse over sandy or sandy skeletal (24 to 40 inches to sand or sand and gravel). Saturated hydraulic conductivity is moderately rapid to moderate and available water capacity is low to

moderate. These soils are friable and susceptible to wind erosion. Low available water capacity influences the soil-water-plant relationship. This site is on nearly level to very steep outwash plains, stream terraces and till plains. Slope ranges from 0 to 45 percent. 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. Subsurface soil layers are non-restrictive to water movement and root penetration.

Major soil series correlated to this ecological site can be found in Section II of the Natural Resources Conservation Service (NRCS) Field Office Technical Guide or the following Web sites:  
<http://www.nrcs.usda.gov/technical/efotg/>.

**Parent Material Kind:** eolian deposits, alluvium, glaciofluvial deposits  
**Parent Material Origin:** mixed  
**Surface Texture:** fine sandy loam, sandy loam, coarse sandy loam  
**Surface Texture Modifier:** none  
**Subsurface Texture Group:** sandy  
**Surface Fragments ≤3" (% Cover):** 0  
**Surface Fragments >3" (%Cover):** 0  
**Subsurface Fragments ≤3" (% Volume):** 0-20  
**Subsurface Fragments >3" (% Volume):** 0-10

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	well	somewhat excessively
<b>Permeability Class:</b>	moderate	moderately rapid
<b>Depth to first restrictive layer (inches):</b>	20	80
<b>Electrical Conductivity (mmhos/cm)*:</b>	0	2
<b>Sodium Absorption Ratio*:</b>	0	0
<b>Soil Reaction (1:1 Water)*:</b>	6.1	8.4
<b>Soil Reaction (0.1M CaCl<sub>2</sub>)*:</b>	NA	NA
<b>Available Water Capacity (inches)*:</b>	4	7
<b>Calcium Carbonate Equivalent (percent)*:</b>	0	20

\* - These attributes represent from 0-40 inches or to the first restrictive layer.

## **Plant Communities**

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

This site developed under Northern Great Plains climatic conditions, and included natural influence of large herbivores and occasional fire. Changes will occur in the plant communities due to management actions and/or climatic conditions. Due to the nature of the soils, the site is considered moderately resilient. Under continued adverse impacts, a moderate decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments the site can more readily return to the Historic Climax Plant Community (HCPC).

The plant community upon which interpretations are primarily based is the HCPC. The HCPC 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. Subclimax plant communities, states, transitional pathways, and thresholds have been determined through similar studies and experience.



**Plant Community Composition and Group Annual Production**

COMMON/GROUP NAME	SYMBOL	Prairie Sandreed/Needlegrass/ Western Wheatgrass (HPC)			
		Group	lbs./acre	% Comp	
<b>GRASSES &amp; GRASS-LIKES</b>			2125 - 2250	85 - 90	
		<b>1</b>	<b>250 - 500</b>	<b>10 - 20</b>	
prairie sandreed	CALO	1	250 - 500	10 - 20	
little bluestem	SCSC	1	0 - 125	0 - 5	
<b>NEEDLEGRASSES</b>		<b>2</b>	<b>250 - 500</b>	<b>10 - 20</b>	
needleandthread	HECOC8	2	125 - 375	5 - 15	
green needlegrass	NAV4	2	0 - 250	0 - 10	
porcupine grass	HESP11	2	0 - 125	0 - 5	
<b>WHEATGRASSES</b>		<b>3</b>	<b>125 - 250</b>	<b>5 - 10</b>	
western wheatgrass	PASM	3	125 - 250	5 - 10	
<b>BLUESTEM</b>		<b>4</b>	<b>125 - 250</b>	<b>5 - 10</b>	
sand bluestem	ANHA	4	0 - 125	0 - 5	
big bluestem	ANGE	4	75 - 250	3 - 10	
<b>GRAMA</b>		<b>4</b>	<b>125 - 250</b>	<b>5 - 10</b>	
blue grama	BOGR2	4	125 - 250	5 - 10	
hairy grama	BOH2	4	0 - 125	0 - 5	
<b>OTHER NATIVE GRASSES</b>		<b>5</b>	<b>75 - 200</b>	<b>3 - 8</b>	
Scribner panicum	DIOLS	5	25 - 50	1 - 2	
sand dropseed	SPCR	5	25 - 50	1 - 2	
sideoats grama	BOCU	5	0 - 125	0 - 5	
prairie junegrass	KOMA	5	25 - 50	1 - 2	
plains muhly	MUCU3	5	0 - 25	0 - 1	
Canada wildrye	ELCA4	5	0 - 25	0 - 1	
other perennial grasses	2GP	5	0 - 50	0 - 2	
<b>GRASS-LIKES</b>		<b>6</b>	<b>100 - 175</b>	<b>4 - 7</b>	
threadleaf sedge	CAFI	6	75 - 150	3 - 6	
sun sedge	CAINH2	6	50 - 75	2 - 3	
Penn sedge	CAPE6	6	0 - 25	0 - 1	
other grass-like	2GL	6	0 - 25	0 - 1	
<b>FORBS</b>		<b>7</b>	<b>125 - 250</b>	<b>5 - 10</b>	
American vetch	VIAM	7	0 - 25	0 - 1	
catclaw sensitive briar	MINU6	7	0 - 25	0 - 1	
cinquefoil	POTEN	7	0 - 25	0 - 1	
cutweed sagewort	ARLU	7	25 - 50	1 - 2	
false gromwell	ONMO	7	0 - 50	0 - 2	
gayfeather	LIATR	7	25 - 50	1 - 2	
goldenrod	SOLID	7	25 - 50	1 - 2	
green sagewort	ARDR4	7	25 - 50	1 - 2	
groundplum milkvetch	ASCR2	7	25 - 25	1 - 1	
hairy goldaster	HEV4	7	25 - 50	1 - 2	
Hood's phlox	PHHO	7	0 - 25	0 - 1	
Lambert crazyweed	OXLA3	7	0 - 25	0 - 1	
penstemon	PENST	7	25 - 50	1 - 2	
prairie clover	DALEA	7	25 - 50	1 - 2	
prairie coneflower	RACO3	7	25 - 25	1 - 1	
purple coneflower	ECAN2	7	0 - 25	0 - 1	
rush skeletonweed	LYJU	7	0 - 25	0 - 1	
scarlet globemallow	SPCO	7	0 - 25	0 - 1	
scurfpea	PSORA2	7	25 - 50	1 - 2	
spiderwort	TRADE	7	25 - 25	1 - 1	
stiff sunflower	HEPA19	7	25 - 25	1 - 1	
wavyleaf thistle	CIUN	7	0 - 25	0 - 1	
western ragweed	AMPS	7	25 - 50	1 - 2	
western wallflower	ERCAC	7	25 - 25	1 - 1	
western yarrow	ACMI2	7	25 - 25	1 - 1	
other perennial forbs	2FP	7	0 - 25	0 - 1	
<b>SHRUBS</b>		<b>8</b>	<b>50 - 125</b>	<b>2 - 5</b>	
rose	ROSA5	8	25 - 25	1 - 1	
leadplant	AMCA6	8	50 - 75	2 - 3	
serrate eveningprimrose	CASE12	8	0 - 25	0 - 1	
yucca	YUGL	8	0 - 25	0 - 1	
fringed sagewort	ARFR4	8	25 - 50	1 - 2	
cactus	OPUNT	8	0 - 25	0 - 1	
western snowberry	SYOC	8	0 - 75	0 - 3	
other shrubs	2SHRUB	8	0 - 50	0 - 2	
<b>Annual Production lbs./acre</b>			<b>LOW</b>	<b>RV</b>	<b>HIGH</b>
<b>GRASSES &amp; GRASS-LIKES</b>			1435 -	2225	- 2995
<b>FORBS</b>			120 -	188	- 275
<b>SHRUBS</b>			45 -	88	- 130
<b>TOTAL</b>			1600 -	2500	- 3400

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. RV = Representative value.

Plant Community Composition and Group Annual Production

COMMON/GROUP NAME	SYMBOL	Prairie Sandreed/Needlegrass/ Western Wheatgrass (HCPC)			Needleandthread/Prairie Sandreed/Kentucky Bluegrass			Needleandthread/Blue Grass/Sedge			Kentucky Bluegrass		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
<b>GRASSES &amp; GRASS-LIKES</b>			2125 - 2375	85 - 95		1870 - 2090	85 - 95		850 - 950	85 - 95		1200 - 1440	75 - 90
<b>WARM-SEASON GRASSES</b>		<b>1</b>	<b>250 - 500</b>	<b>10 - 20</b>	<b>1</b>	<b>44 - 220</b>	<b>2 - 10</b>	<b>1</b>	<b>0 - 50</b>	<b>0 - 5</b>	<b>1</b>	<b>0 - 48</b>	<b>0 - 3</b>
prairie sandreed	CALO	1	250 - 500	10 - 20	1	44 - 220	2 - 10	1	0 - 50	0 - 5	1	0 - 48	0 - 3
little bluestem	SCSC	1	0 - 125	0 - 5	1	0 - 66	0 - 3	1	0 - 10	0 - 1			
<b>NEELEDGRASSES</b>		<b>2</b>	<b>250 - 500</b>	<b>10 - 20</b>	<b>2</b>	<b>220 - 440</b>	<b>10 - 20</b>	<b>2</b>	<b>20 - 150</b>	<b>2 - 15</b>	<b>2</b>	<b>32 - 160</b>	<b>2 - 10</b>
needleandthread	HECOC8	2	125 - 375	5 - 15	2	220 - 440	10 - 20	2	20 - 150	2 - 15	2	32 - 160	2 - 10
green needlegrass	NAV4	2	0 - 250	0 - 10	2	0 - 110	0 - 5	2	0 - 20	0 - 2	2	0 - 48	0 - 3
porcupine grass	HESP11	2	0 - 125	0 - 5	2	0 - 66	0 - 3						
<b>WHEATGRASSES</b>		<b>3</b>	<b>125 - 250</b>	<b>5 - 10</b>	<b>3</b>	<b>110 - 220</b>	<b>5 - 10</b>	<b>3</b>	<b>20 - 80</b>	<b>2 - 8</b>	<b>3</b>	<b>0 - 80</b>	<b>0 - 5</b>
western wheatgrass	PASM	3	50 - 250	2 - 10	3	44 - 220	2 - 10	3	20 - 80	2 - 8	3	0 - 80	0 - 5
slender wheatgrass	ELTR7	3	50 - 250	2 - 10	3	44 - 220	2 - 10	3	0 - 50	0 - 5	3	0 - 80	0 - 5
<b>BLUESTEM</b>		<b>4</b>	<b>125 - 250</b>	<b>5 - 10</b>	<b>4</b>	<b>0 - 44</b>	<b>0 - 2</b>	<b>4</b>			<b>4</b>		
sand bluestem	ANHA	4	0 - 125	0 - 5	4	0 - 22	0 - 1						
big bluestem	ANGE	4	75 - 250	3 - 10	4	0 - 44	0 - 2						
<b>GRAMA</b>		<b>5</b>	<b>125 - 250</b>	<b>5 - 10</b>	<b>5</b>	<b>110 - 220</b>	<b>5 - 10</b>	<b>5</b>	<b>100 - 200</b>	<b>10 - 20</b>	<b>5</b>	<b>0 - 80</b>	<b>0 - 5</b>
blue grama	BOGR2	5	125 - 250	5 - 10	5	110 - 220	5 - 10	5	100 - 200	10 - 20	5	0 - 80	0 - 5
hairy grama	BOH2	5	0 - 125	0 - 5	5	0 - 110	0 - 5	5	0 - 100	0 - 10	5	0 - 48	0 - 3
<b>OTHER NATIVE GRASSES</b>		<b>6</b>	<b>75 - 200</b>	<b>3 - 8</b>	<b>6</b>	<b>66 - 176</b>	<b>3 - 8</b>	<b>6</b>	<b>30 - 70</b>	<b>3 - 7</b>	<b>6</b>	<b>16 - 112</b>	<b>1 - 7</b>
Scribner panicum	DIOLS	6	25 - 50	1 - 2	6	22 - 88	1 - 4	6	10 - 40	1 - 4	6	0 - 32	0 - 2
sand dropseed	SPCR	6	25 - 50	1 - 2	6	22 - 110	1 - 5	6	20 - 70	2 - 7	6	16 - 80	1 - 5
sideoats grama	BOCU	6	0 - 125	0 - 5									
prairie junegrass	KOMA	6	25 - 50	1 - 2	6	22 - 44	1 - 2	6	0 - 20	0 - 2	6	0 - 32	0 - 2
plains muhly	MUCU3	6	0 - 25	0 - 1									
Canada wildrye	ELCA4	6	0 - 25	0 - 1	6	0 - 22	0 - 1				6	0 - 16	0 - 1
other perennial grasses	2GP	6	0 - 125	0 - 5	6	0 - 110	0 - 5	6	0 - 50	0 - 5	6	0 - 80	0 - 5
<b>GRASS-LIKES</b>		<b>7</b>	<b>75 - 175</b>	<b>3 - 7</b>	<b>7</b>	<b>66 - 220</b>	<b>3 - 10</b>	<b>7</b>	<b>150 - 250</b>	<b>15 - 25</b>	<b>7</b>	<b>16 - 80</b>	<b>1 - 5</b>
threadleaf sedge	CAF1	7	50 - 150	2 - 6	7	44 - 220	2 - 10	7	50 - 250	5 - 25	7	16 - 80	1 - 5
sun sedge	CAINH2	7	25 - 75	1 - 3	7	22 - 66	1 - 3	7	10 - 50	1 - 5	7	0 - 32	0 - 2
Penn sedge	CAPE6	7	0 - 25	0 - 1	7	0 - 22	0 - 1	7	0 - 20	0 - 2	7	0 - 16	0 - 1
other grass-like	2GL	7	0 - 75	0 - 3	7	0 - 66	0 - 3	7	0 - 100	0 - 10	7	0 - 48	0 - 3
<b>NON-NATIVE GRASSES</b>		<b>8</b>			<b>8</b>	<b>110 - 330</b>	<b>5 - 15</b>	<b>8</b>	<b>20 - 50</b>	<b>2 - 5</b>	<b>8</b>	<b>400 - 640</b>	<b>25 - 40</b>
Kentucky bluegrass	POPR	8			8	44 - 330	2 - 15	8	10 - 50	1 - 5	8	160 - 560	10 - 35
smooth bromegrass	BRIN2	8			8	0 - 176	0 - 8	8	0 - 50	0 - 5	8	80 - 400	5 - 25
crested wheatgrass	AGCR	8			8	0 - 110	0 - 5	8	0 - 20	0 - 2	8	0 - 80	0 - 5
cheatgrass	BRTE	8			8	0 - 110	0 - 5	8	0 - 50	0 - 5	8	0 - 160	0 - 10
<b>FORBS</b>		<b>9</b>	<b>125 - 250</b>	<b>5 - 10</b>	<b>9</b>	<b>110 - 220</b>	<b>5 - 10</b>	<b>9</b>	<b>50 - 100</b>	<b>5 - 10</b>	<b>9</b>	<b>80 - 240</b>	<b>5 - 15</b>
American vetch	VIAM	9	0 - 25	0 - 1	9	0 - 22	0 - 1						
annual sunflower	HEAN3	9			9	0 - 66	0 - 3	9	0 - 20	0 - 2	9	0 - 80	0 - 5
catclaw sensitive briar	MINU6	9	0 - 25	0 - 1									
common dandelion	TAOF	9			9	0 - 44	0 - 2	9	10 - 30	1 - 3	9	16 - 48	1 - 3
cudweed sagewort	ARLU	9	25 - 50	1 - 2	9	22 - 88	1 - 4	9	10 - 20	1 - 2	9	16 - 64	1 - 4
curlycup gumweed	GRSQ	9			9	0 - 44	0 - 2	9	0 - 20	0 - 2	9	0 - 16	0 - 1
false gromwell	ONMO	9	0 - 50	0 - 2	9	0 - 22	0 - 1						
gayfeather	LIATR	9	25 - 50	1 - 2	9	22 - 44	1 - 2	9	0 - 10	0 - 1	9	0 - 32	0 - 2
goldenrod	SOLID	9	25 - 50	1 - 2	9	22 - 66	1 - 3	9	10 - 30	1 - 3	9	16 - 48	1 - 3
green sagewort	ARDR4	9	25 - 50	1 - 2	9	22 - 66	1 - 3	9	10 - 50	1 - 5	9	16 - 80	1 - 5
groundplum milkvetch	ASCR2	9	0 - 25	0 - 1	9	0 - 22	0 - 1						
hairy goldaster	HEVI4	9	25 - 50	1 - 2	9	0 - 22	0 - 1						
Lambert crazyweed	OxLA3	9	0 - 25	0 - 1	9	0 - 22	0 - 1	9	0 - 10	0 - 1	9	0 - 16	0 - 1
penstemon	PENST	9	25 - 50	1 - 2	9	0 - 22	0 - 1						
prairie clover	DALEA	9	25 - 50	1 - 2	9	22 - 44	1 - 2	9	0 - 20	0 - 2	9	0 - 32	0 - 2
prairie coneflower	RACO3	9	0 - 25	0 - 1	9	0 - 22	0 - 1	9	0 - 20	0 - 2	9	0 - 32	0 - 2
purple coneflower	ECAN2	9	0 - 25	0 - 1	9	0 - 22	0 - 1				9	0 - 16	0 - 1
Rocky Mountain beeplant	CLSE	9			9	0 - 22	0 - 1	9	0 - 30	0 - 3	9	0 - 48	0 - 3
rush skeletonweed	LYJU	9	0 - 25	0 - 1	9	0 - 22	0 - 1	9	0 - 10	0 - 1	9	0 - 16	0 - 1
scurfpea	PSORA2	9	25 - 50	1 - 2	9	22 - 66	1 - 3	9	10 - 30	1 - 3	9	16 - 48	1 - 3
serrate eveningprimrose	CASE12	9	0 - 25	0 - 1	9	0 - 22	0 - 1						
spiderwort	TRADE	9	0 - 25	0 - 1							9	0 - 16	0 - 1
stiff sunflower	HEPA19	9	0 - 25	0 - 1									
sweetclover	MELIL	9			9	0 - 110	0 - 5	9	0 - 80	0 - 8	9	0 - 160	0 - 10
wavyleaf thistle	CIUN	9	0 - 25	0 - 1	9	0 - 22	0 - 1	9	0 - 10	0 - 1	9	0 - 16	0 - 1
western ragweed	AMPS	9	25 - 50	1 - 2	9	22 - 66	1 - 3	9	10 - 40	1 - 4	9	16 - 48	1 - 3
western salsify	TRDU	9			9	0 - 44	0 - 2	9	0 - 40	0 - 4	9	0 - 48	0 - 3
western yarrow	ACMIO	9	0 - 25	0 - 1	9	0 - 22	0 - 1	9	0 - 20	0 - 2	9	0 - 16	0 - 1
other perennial forbs	2FP	9	0 - 125	0 - 5	9	0 - 110	0 - 5	9	0 - 50	0 - 5	9	0 - 80	0 - 5
other annual forbs	2FA	9			9	0 - 110	0 - 5	9	0 - 50	0 - 5	9	0 - 80	0 - 5
<b>SHRUBS</b>		<b>10</b>	<b>50 - 125</b>	<b>2 - 5</b>	<b>10</b>	<b>44 - 110</b>	<b>2 - 5</b>	<b>10</b>	<b>20 - 50</b>	<b>2 - 5</b>	<b>10</b>	<b>32 - 160</b>	<b>2 - 10</b>
cactus	OPUNT	10	0 - 25	0 - 1	10	0 - 22	0 - 1	10	0 - 10	0 - 1	10	0 - 16	0 - 1
fringed sagewort	ARFR4	10	25 - 50	1 - 2	10	22 - 88	1 - 4	10	10 - 50	1 - 5	10	16 - 112	1 - 7
leadplant	AMCA6	10	25 - 75	1 - 3	10	0 - 22	0 - 1						
rose	ROSA5	10	0 - 25	0 - 1	10	22 - 66	1 - 3	10	10 - 30	1 - 3	10	16 - 64	1 - 4
western snowberry	SYOC	10	0 - 75	0 - 3	10	0 - 66	0 - 3	10	0 - 20	0 - 2	10	0 - 64	0 - 4
yucca	YUGL	10	0 - 25	0 - 1	10	0 - 22	0 - 1	10	0 - 10	0 - 1	10	0 - 16	0 - 1
other shrubs	2SHRUB	10	0 - 75	0 - 3	10	0 - 66	0 - 3	10	0 - 30	0 - 3	10	0 - 48	0 - 3
<b>Annual Production lbs./acre</b>			LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH		LOW RV HIGH
<b>GRASSES &amp; GRASS-LIKES</b>			1435 - 2225 - 2995		1455 - 1958 - 2460		440 - 890 - 1340		895 - 1344 - 1785				
<b>FORBS</b>			120 - 188 - 275		105 - 165 - 225		45 - 75 - 105		75 - 160 - 250				
<b>SHRUBS</b>			45 - 88 - 130		40 - 77 - 115		15 - 35 - 55		30 - 96 - 165				
<b>TOTAL</b>			1600 - 2500 - 3400		1600 - 2200 - 2800		500 - 1000 - 1500		1000 - 1600 - 2200				

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. RV = Representative value. Refer to PLANTS database for scientific names and codes: <http://plants.usda.gov>

### Plant Community and Vegetation State Narratives

Following are the narratives for each of the described plant communities. These plant communities may not represent every possibility, but they 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 are 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 (DPC).” According to the USDA NRCS National Range and Pasture Handbook, 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.

#### Prairie Sandreed/Needlegrass/Western Wheatgrass Plant Community

This is the interpretive plant community and is considered to be the HCPC. This community evolved with grazing by large herbivores and occasional prairie fire. It is well suited for grazing by domestic livestock and can be found on areas that are properly managed with prescribed grazing that allows for proper utilization, changes in season of use and adequate recovery periods following each grazing event.

The potential vegetation is about 85 percent grasses or grass-like plants, 10 percent forbs, and 5 percent shrubs. Dominant grasses include prairie sandreed and needleandthread. Other grasses and grass-likes include big bluestem, sand bluestem, blue grama, green needlegrass, porcupine grass, western wheatgrass, and threadleaf, and sun sedge. Significant forbs include penstemon, American vetch, green sagewort, silverleaf scurfpea, and spiderwort. In many areas, western snowberry is the principal shrub and occurs in patchy mosaics. Other shrubs include prairie rose, leadplant, fringed sagewort, and yucca.

This plant community is well adapted to the Northern Great Plains climatic conditions. Individual species can vary greatly in production depending on growing conditions (timing and amount of precipitation and temperature). Community dynamics, nutrient cycle, water cycle, and energy flow are functioning properly. Plant litter is properly distributed with little movement offsite and natural plant mortality is very low. The diversity in species allows for high drought tolerance. Runoff from adjacent sites and moderate or high available water capacity provides a favorable soil-water-plant relationship.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during a normal year.

Growth curve number: ND5303

Growth curve name: Missouri Coteau, cool-season/warm-season co-dominant.

Growth curve description: Cool-season, warm-season co-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	6	21	40	20	6	4	1	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Non-use and no fire for extended periods of time will convert this plant community to the *Needleandthread/Prairie Sandreed/Kentucky Bluegrass Plant Community*.
- Heavy, continuous grazing or heavy early seasonal grazing will convert the plant community to the *Needleandthread/Blue Grama/Sedge Plant Community*.

- Heavy late seasonal grazing will convert the plant community to the *Needleandthread/Prairie Sandreed/Kentucky Bluegrass Plant Community*.
- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

### **Needleandthread/Blue Grama/Sedge Plant Community**

This plant community is the result of long-term, heavy, continuous grazing and/or annual, early spring seasonal grazing. Needleandthread, threadleaf sedge, and blue grama are the dominant species. Other grasses include western wheatgrass, red threeawn, sand dropseed, and prairie Junegrass. Forbs such as western ragweed, green sagewort, hairy goldaster, cudweed sagewort, scarlet globemallow, and sweet clover may also be present.

Annual production, and consequently litter amounts, has been reduced substantially. Nutrient cycle, water cycle, and energy flow are becoming impaired. This plant community is at risk of losing all tall warm-season grasses. Wind erosion is a concern where cover has been reduced or eliminated.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during a normal year.

Growth curve number: ND5303

Growth curve name: Missouri Coteau, cool-season/warm-season co-dominant.

Growth curve description: Cool-season, warm-season co-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	2	6	21	40	20	6	4	1	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Heavy, continuous grazing may cause further deterioration resulting in a shift to the *Annual/Pioneer Perennial Plant Community*.
- Non-use (rest) and exclusion of fire over an extended period of time will move this plant community to the *Needleandthread/Prairie Sandreed/Kentucky Bluegrass Plant Community*. This shift may take considerably longer than the corresponding transition from HCPC, depending on how much residual cool-season mid-grasses are present upon initiation of non-use or fire exclusion.
- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.
- Prescribed grazing that includes changing season of use and allowing adequate recovery periods will lead this plant community back to the *Prairie Sandreed/Needlegrass/Western Wheatgrass Plant Community*.

### **Needleandthread/Prairie Sandreed/Kentucky Bluegrass Plant Community**

This plant community develops after an extended period of 10 or more years of non-use by herbivores and exclusion of fire. Non-native grasses, such as Kentucky bluegrass, crested wheatgrass, and smooth brome grass tend to invade and may begin to dominate this plant community.

Needleandthread and prairie sandreed are still the dominant grasses in the early stages of this transition. Other grasses present include Kentucky bluegrass, prairie junegrass, western wheatgrass, green needlegrass, and possibly smooth brome grass and crested wheatgrass. The common forbs

include sweetclover, green sagewort, cudweed sagewort, western salsify, and western ragweed. Western snowberry and prairie rose are the principal shrubs and may increase in density and cover.

Litter buildup reduces plant vigor and density, and native seedling recruitment declines. Due to a lack of tiller stimulation and sunlight, native bunchgrasses typically develop dead centers and native rhizomatous grasses are limited to small colonies. This plant community is dispersed throughout the pasture, encircling spot grazed areas, and areas distant from water sources. This is a typical pattern found in properly stocked pastures grazed season-long.

This plant community is resistant to change without prescribed grazing and/or fire. The combination of both grazing and fire is most effective in moving this plant community towards the HCPC. Soil erosion is low. Runoff is similar to the HCPC. Once this plant community is reached, time, and external resources will be needed to see any immediate recovery in diversity.

The following growth curve shows the estimated monthly percentages of total annual growth of the dominant species expected during a normal year.

Growth curve number: ND5302

Growth curve name: Missouri Coteau, cool-season dominant, warm-season sub-dominant.

Growth curve description: Cool-season dominant, warm-season sub-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	7	23	42	15	5	4	1	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Prescribed grazing or prescribed burning followed by prescribed grazing will move this plant community toward the *Prairie Sandreed/Needlegrass/Western Wheatgrass Plant Community (HCPC)*. This would require long-term management with prescribed grazing and/or prescribed burning under controlled conditions.
- Non-use (rest) and exclusion of fire over an extended period of time will move this plant community to the *Kentucky Bluegrass Plant Community*.
- Heavy, continuous season-long grazing will move this plant community to the *Kentucky Bluegrass Plant Community*.
- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

### **Kentucky Bluegrass Plant Community**

This plant community developed from continued heavy continuous season-long grazing without adequate recovery periods between grazing events or from continued non-use and no fire for extended periods of time. Kentucky bluegrass will tend to dominate this plant community; however, other non-native species such as smooth brome grass and crested wheatgrass may also become prevalent. Needlegrass, sand bluestem, big bluestem, and prairie sandreed are absent or nearly so, and other grasses and grass-like present include sand dropseed, red threeawn, prairie Junegrass, and sun sedge. Forbs commonly found in this plant community include green sagewort, scurfpea, and sweet clover.

When this plant community is reached through extended periods of non-use and no fire, litter buildup reduces native plant vigor and density severely, and native seedling recruitment is rare. Due to a lack

of tiller stimulation and sunlight, native bunchgrasses typically develop dead centers and native rhizomatous grasses are limited to small colonies. This plant community can be dispersed throughout the pasture, encircling spot grazed areas, and areas distant from water sources. This is a sometimes found in properly stocked pastures grazed season-long.

The following growth curve represents monthly percentages of total annual growth of the dominant species during a normal year.

Growth curve number: ND5301

Growth curve name: Missouri Coteau, cool-season dominant.

Growth curve description: Cool-season dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	8	24	45	10	3	5	2	0	0

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Long-term prescribed grazing and/or prescribed burning followed by prescribed grazing may eventually move this plant community through successional stages leading towards the *Prairie Sandreed/Needlegrass/Western Wheatgrass Plant Community (HCPC)*. This would require long-term management under favorable climatic conditions.
- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.
- Heavy continuous grazing will likely shift this plant community to the *Annual/Pioneer Perennial Plant Community*.

### Annual/Pioneer Perennial Plant Community

This plant community develops under severe disturbance and/or excessive defoliation. This can result from heavy livestock or wildlife concentration, and cropping abandonment (go-back land). The dominant vegetation includes pioneer annual grasses, forbs, invaders, and early successional biennial and perennial species. Grasses may include red threeawn, smooth brome, crested wheatgrass, annual brome, needleandthread, sand dropseed, sandbur, and Scribner panicum. The dominant forbs include curlycup gumweed, maretail, salsify, kochia, field bindweed, thistles, western ragweed, pussytoes, prostrate verbena, and other early successional species. Shrubs that may be present include prairie rose, fringed sagewort, and broom snakeweed. Plant species from adjacent ecological sites may become minor components of this plant community. The community also is susceptible to invasion of non-native species due to severe soil disturbances and relatively high percent of bare ground.

This plant community is resistant to change, as long as soil disturbance or severe vegetation defoliation persists, thus holding back secondary plant succession. Soil erosion is potentially high. Significant economic inputs, management, and time would be required to move this plant community toward a higher successional stage and a more productive plant community. Secondary succession is highly variable, depending upon availability and diversity of a viable seed bank of higher successional species within the existing plant community and neighboring plant communities. This plant community can be renovated to improve the production capability, but management changes would be needed to maintain the new plant community.

Transitional pathways and/or community pathways leading to other plant communities are as follows:

- Removal of disturbance followed by long-term prescribed grazing, including adequate rest periods, will move this community through the successional stages, and may eventually lead to the *Prairie Sandreed/Needlegrass/Western Wheatgrass Plant Community (HCPC)* or associated successional plant communities assuming an adequate seed/vegetative source exists. This process will likely take a long period of time (25+ years).
- Range seeding followed by long-term prescribed grazing can be used to convert this plant community to one that may resemble the *HCPC*.

## **Ecological Site Interpretations**

### **Animal Community – Wildlife Interpretations**

-- Under Development --

**Prairie Sandreed/Needlegrass/Western Wheatgrass Plant Community:**

**Needleandthread/Blue Grama/Sedge Plant Community:**

**Needleandthread/Prairie Sandreed/Kentucky Bluegrass Plant Community:**

**Kentucky Bluegrass Plant Community:**

**Annual/Pioneer Perennial Plant Community:**

**Animal Preferences (Quarterly – 1,2,3,4<sup>†</sup>)**

Common Name	Cattle	Sheep	Horses	Deer	Antelope	Bison	Elk
<b>Grasses &amp; Grass-likes</b>							
big bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
blue grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
Canada wildrye	U D U U	N U N N	U D U U	N U N N	N U N N	U D U U	U D U U
green needlegrass	U P U D	N P N P	U P U D	N P N P	N P N P	U P U D	U P U D
hairy grama	U D P U	D P P D	U D P U	D P P D	D P P D	U D P U	U D P U
little bluestem	U D D U	N D N N	U D D U	N D N N	N D N N	U D D U	U D D U
needleandthread	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
Penn sedge	U P U D	U P N D	U P U D	U D U D	U D U D	U P U D	U P U D
plains muhly	U U D U	U U D U	U U D U	N N N N	N N N N	U U D U	U U D U
porcupine grass	U P U D	N D N U	U P U D	N D N U	N D N U	U P U D	U P U D
prairie junegrass	U D U D	N D N U	U D U D	N D N U	N D N U	U D U D	U D U D
prairie sandreed	U D D U	U D U U	U D D U	U U D U	U U D U	U D D U	U D D U
sand bluestem	U D P D	U D U U	U D P D	U D U U	U D U U	U D P D	U D P D
sand dropseed	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N	N U N N
Scribner panicum	U U D U	N U N N	U U D U	N U N N	N U N N	U U D U	U U D U
sideoats grama	U D P U	U P D U	U D P U	U P D U	U P D U	U D P U	U D P U
sun sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
threadleaf sedge	U D U D	U P N D	U D U D	U D U D	U D U D	U D U D	U D U D
western wheatgrass	U P D U	N D N N	U P D U	N D N N	N D N N	U P D U	U P D U
<b>Forbs</b>							
American vetch	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
catclaw sensitive briar	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
cinquefoil	U U D U	U U U U	U U D U	U U U U	U U U U	U U D U	U U U U
cudweed sagewort	U U U U	U U D U	U U U U	U U D U	U U D U	U U U U	U U D U
false gromwell	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
gayfeather	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
goldenrod	U U D U	N U U N	U U D U	N U U N	N U U N	U U D U	N U U N
green sagewort	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U	U U U U
groundplum milkvetch	U D U U	U D D U	U D U U	U D D U	U D D U	U D U U	U D D U
hairy goldaster	U U D U	N N N N	U U D U	N N N N	N N N N	U U D U	N N N N
Hood's phlox	U D U U	U P P U	U D U U	U P P U	U P P U	U D U U	U P P U
Lambert crazyweed	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T	T T T T
penstemon	U U U U	U P P U	U U U U	U P P U	U P P U	U U U U	U P P U
prairie clover	U D P U	U P P U	U D P U	U P P U	U P P U	U D P U	U P P U
prairie coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
purple coneflower	U U D U	U P P U	U U D U	U P P U	U P P U	U U D U	U P P U
rush skeletonweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
scarlet globemallow	U U D U	U D D U	U U D U	U D D U	U D D U	U U D U	U D D U
scurfpea	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
spiderwort	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
stiff sunflower	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U	U D P U
wavyleaf thistle	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
western ragweed	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	N N N N
western wallflower	U D U U	N U U N	U D U U	N U U N	N U U N	U D U U	N U U N
western yarrow	U U U U	N U U N	U U U U	N U U N	N U U N	U U U U	N U U N
<b>Shrubs</b>							
cactus	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N	N N N N
fringed sagewort	U U U U	U U U U	U U U U	U D D U	U P P D	U U U U	U U U D
leadplant	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U	U P D U
rose	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U	U D D U
serrate eveningprimrose	U U D U	U D P U	U U D U	U D P U	U D P U	U U D U	U D P U
western snowberry	U U U U	U U U U	U U U U	D U D D	U U U U	U U U U	D U U U
yucca	D N N D	D U U D	D N N D	D U U D	D U U D	D N N D	D U U D

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

<sup>†</sup> Quarters: 1 – Jan., Feb., Mar.; 2 – Apr., May, Jun.; 3 – Jul., Aug., Sep.; 4 – Oct., Nov., Dec.

## Animal Community – Grazing Interpretations

### Hydrology Functions

Water is the principal factor limiting production on this site. The soils are dominated by hydrologic groups A and B, with localized areas in hydrologic group D. Infiltration varies from moderate to moderately rapid and runoff potential varies from very low to low for this site depending on soil hydrologic group, slope and ground cover. In many cases, areas with greater than 75 percent ground cover have the greatest potential for high infiltration and lower runoff. An exception would be where short grasses form a dense sod and dominate the site. Greatest potential for reduced infiltration and high runoff are areas with ground cover of less than 50 percent (refer to Section 4, NRCS National Engineering Handbook, for runoff quantities and hydrologic curves).

### Recreational Uses

This site provides hunting opportunities for upland game species. The wide varieties 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.

### Other Products

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

## Supporting Information

### Associated Sites

(053BY011ND) – Loamy

(053BY007ND) – Sands

(053BY005ND) – Loamy Overflow

(053BY009ND) – Shallow Loamy

### Similar Sites

(053BY011ND) – Loamy (Lo)

[Does not receive additional moisture. Found on dry uplands upslope from Loamy Overflow sites, down slope from Thin Loamy or Shallow Loam sites; similar landscape position as Sandy, Sands, Clayey sites. Will ribbon greater than one inch and up to two inches. Indicator species are western wheatgrass some green needlegrass and blue grama, with fringed sagewort and western snowberry being the dominant shrubs. This site has no prairie sandreed or sand bluestem, less needleandthread and sedges, more blue grama, green needlegrass and western wheatgrass, similar production, similar landscape position, different soil texture.]

(053BY007ND) – Sands (Sa)

[Does not receive additional moisture. Found on dry uplands, upslope from Loamy Overflow sites, down slope from Thin Loamy or Shallow Loamy sites. Similar landscape position as Loamy, Sandy, and Clayey sites. Won't form a ribbon; indicator species are prairie sandreed and sand bluestem evenly mixed, some Canada wildrye, penstemon, and leadplant and western snowberry. This site has more sand bluestem, needleandthread and sedges, less blue grama, green needlegrass and western wheatgrass, slightly more production.]

(053BY014ND) – Thin Sands (TSa)

[Deep entisol found on knobs and ridges of level to choppy sand blown plains; will not ribbon, found upslope from Sands sites; won't ribbon. Indicator species: sand bluestem, prairie sandreed, and needleandthread evenly mixed, some Canada wildrye, penstemon, lemon scurfpea western ragweed, yucca, silky prairie clover, and leadplant. This site has less production, thin "A" horizon, no mollic epipedon, different soil texture, lime within six inches to the surface.]

## Inventory Data References

Information presented here has been derived from NRCS clipping and other inventory data. Also, field knowledge of range-trained personnel was used. All descriptions were peer reviewed and/or field-tested by various private, state, and federal agency specialists. Those involved in developing this site description include: Stan Boltz, NRCS Range Management Specialist; Michael D. Brand, State Land Dept., Director Surface Management; David Dewald, NRCS State Biologist; Paul Drayton, NRCS District Conservationist; Jody Forman, NRCS Range Management Specialist; Dennis Froemke, NRCS Range Management Specialist; Jeff Printz, NRCS State Range Management Specialist; Josh Saunders, NRCS Range Management Specialist; Kevin Sedivec, Extension Rangeland Management Specialist; Darrell Vanderbusch, NRCS Resource Soil Scientist; and Lee Voigt, NRCS Range Management Specialist.

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417	4	1969 – 1976	SD	Campbell

## State Correlation

This site has been correlated with North Dakota and South Dakota in MLRA 53B.

## Field Offices

Aberdeen, SD	Gettysburg, SD	Minot, ND	Steele, ND
Ashley, ND	Ipswich, SD	Mohall, ND	Towner, ND
Bismarck, ND	Jamestown, ND	Mound City, SD	Turtle Lake, ND
Bowbells, ND	LaMoure, ND	Napoleon, ND	Watford City, ND
Ellendale, ND	Leola, SD	Redfield, SD	Williston, ND
Faulkton, SD	Linton, ND	Selby, SD	
Garrison, ND	McClusky, ND	Stanley, ND	

## Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 42a – Missouri Coteau; 42b – Collapsed Glacial Outwash; 42c – Missouri Coteau Slope; 42d – Northern Missouri Coteau; 42f – Southern Missouri Coteau Slope; 42g – Ponca Plains; and 42h – Southern River Breaks.

## Other References

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

USDA, NRCS. National Water and Climate Center, 101 SW Main, Suite 1600, Portland, OR 97204-3224. (<http://wcc.nrcs.usda.gov>)

USDA, NRCS. National Range and Pasture Handbook, September 1997.

**Site Type: Rangeland**  
**MLRA: 53B – Central Dark Brown Glaciated Plains**

**Sandy**  
**R053BY008ND**

USDA, NRCS. National Soil Information System, Information Technology Center, 2150 Centre Avenue, Building A, Fort Collins, CO 80526. (<http://nasis.nrcs.usda.gov>)

USDA, NRCS. 2001. The PLANTS Database, Version 3.1 (<http://plants.usda.gov>). National Plant Data Center, Baton Rouge, LA 70874-4490 USA.

USDA, NRCS, Various Published Soil Surveys.

## **Site Description Approval**

\_\_\_\_\_  
ND, State Range Management Specialist

\_\_\_\_\_  
Date

\_\_\_\_\_  
SD, State Range Management Specialist

\_\_\_\_\_  
Date