

## United States Department of Agriculture Natural Resources Conservation Service

### Ecological Site Description

**Site Name:** Wet Land

**Site Type:** Rangeland

**Site ID:** R054XY036ND

**Major Land Resource Area (MLRA):** 54 – Rolling Soft Shale Plain

For more information on MLRA's refer to the following web site: [http://www.essc.psu.edu/soil\\_info/soil\\_ Irr/](http://www.essc.psu.edu/soil_info/soil_ Irr/).



### Physiographic Features

This site occurs on gently undulating to rolling sedimentary uplands and floodplains.

**Landform:** depression, flood plain, oxbow

**Aspect:** NA

	<u>Minimum</u>	<u>Maximum</u>
<b>Elevation (feet):</b>	1600	3600
<b>Slope (percent):</b>	0	1
<b>Water Table Depth (inches):</b>	1	>72
<b>Flooding:</b>		
<b>Frequency:</b>	None	Occasional
<b>Duration:</b>	None	Long
<b>Ponding:</b>		
<b>Depth (inches):</b>	0	12
<b>Frequency:</b>	Occasional	Frequent
<b>Duration:</b>	Long	Very long
<b>Runoff Class:</b>	Negligible	Low

### Climatic Features

MLRA 54 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 14 to 18 inches per year. The normal average annual temperature is about 42°F. January is the coldest month with average temperatures ranging from about 13°F (Beach, North Dakota (ND),) to about 16°F (Bison, South Dakota (SD)). July is the warmest month with temperatures averaging from about 69°F (Beach, ND,) to about 72°F (Timber Lake, SD). The range of normal average monthly temperatures between the coldest and warmest months is about 57°F. This large annual range attests to the continental nature of this MLRA'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 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>	119	136
<b>Freeze-free period (days):</b>	139	157
<b>Mean Annual Precipitation (inches):</b>	14	18

**Average Monthly Precipitation (inches) and Temperature (°F):**

	<b>Precip. Min.</b>	<b>Precip. Max</b>	<b>Temp. Min.</b>	<b>Temp. Max.</b>
January	0.41	0.54	2.2	23.8
February	0.37	0.61	8.7	30.4
March	0.51	1.07	17.1	40.0
April	1.13	1.88	28.9	56.8
May	1.98	2.83	40.5	69.3
June	2.83	3.29	49.8	78.3
July	2.05	2.25	54.6	85.2
August	1.49	2.07	53.0	84.3
September	1.29	1.45	42.0	73.4
October	0.89	1.35	31.6	60.4
November	0.48	0.61	19.0	41.5
December	0.42	0.55	8.1	29.0

<b>Climate Stations</b>		<b>Period</b>	
<b>Station ID</b>	<b>Location or Name</b>	<b>From</b>	<b>To</b>
ND0590	Beach	1949	1999
MT7560	Sidney	1949	1999
SD8307	Timber Lake	1948	1999
ND2183	Dickinson FAA AP	1948	1999

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

**Influencing Water Features**

<b>Wetland Description:</b>	<b>System</b>	<b>Subsystem</b>	<b>Class</b>	<b>Sub-class</b>
Cowardin, et al., 1979	Palustrine	N/A	Persistent Emergent Wetland	Permanently or Semi-permanently or Seasonally Flooded or Saturated

**Representative Soil Features**

The common features of soils in this site are the silt loam to clay-textured subsoil and slopes of zero to one percent. The soils in this site are very poorly drained and formed in alluvium. The silt loam to silty clay surface layer is 5 to 15 inches thick. The soils have a slow to very slow infiltration rate. This site should show no evidence of rills, wind scoured areas or pedestalled plants. The soil surface is stable and intact. Subsurface soil layers are non-restrictive to water movement and root penetration.

**Site Type: Rangeland**  
**MLRA: 54 – Rolling Soft Shale Plain**

**Wet Land**  
**R054XY036ND**

These soils are not susceptible to water erosion. Ponded water conditions and slow permeability strongly influences the soil-water-plant relationship.

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:

North Dakota: <http://www.nd.nrcs.usda.gov>.

South Dakota: <http://www.sd.nrcs.usda.gov>.

Montana: <http://www.mt.nrcs.usda.gov>.

**Parent Material Kind:** alluvium

**Parent Material Origin:** sedimentary, unspecified

**Surface Texture:** silt loam, silty clay loam, silty clay

**Surface Texture Modifier:** none

**Subsurface Texture Group:** clayey

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

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

**Subsurface Fragments ≤ 3” (% Volume):** 0-5

**Subsurface Fragments > 3” (% Volume):** 0-10

	<u>Minimum</u>	<u>Maximum</u>
<b>Drainage Class:</b>	very poorly	very poorly
<b>Permeability Class:</b>	very slow	moderate
<b>Depth to first restrictive layer (inches):</b>	>72	>72
<b>Electrical Conductivity (mmhos/cm)*:</b>	0	4
<b>Sodium Absorption Ratio*:</b>	0	1
<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>	6	8
<b>Calcium Carbonate Equivalent (percent)*:</b>	0	15

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

## Plant Communities

### Ecological Dynamics of the Site:

The site developed under Northern Great Plains climatic conditions, and included natural influence of large herbivores, occasional fire, and yearly flooding events. 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 highly variable but very stable. Under continued adverse impacts, a slow decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments the site can rapidly recover to the Historic Climax Plant Community (HCPC). High variability of ponding levels and duration is the major cause of the fluctuating plant community. However, management can greatly influence the plant community dynamics during extended drought periods.

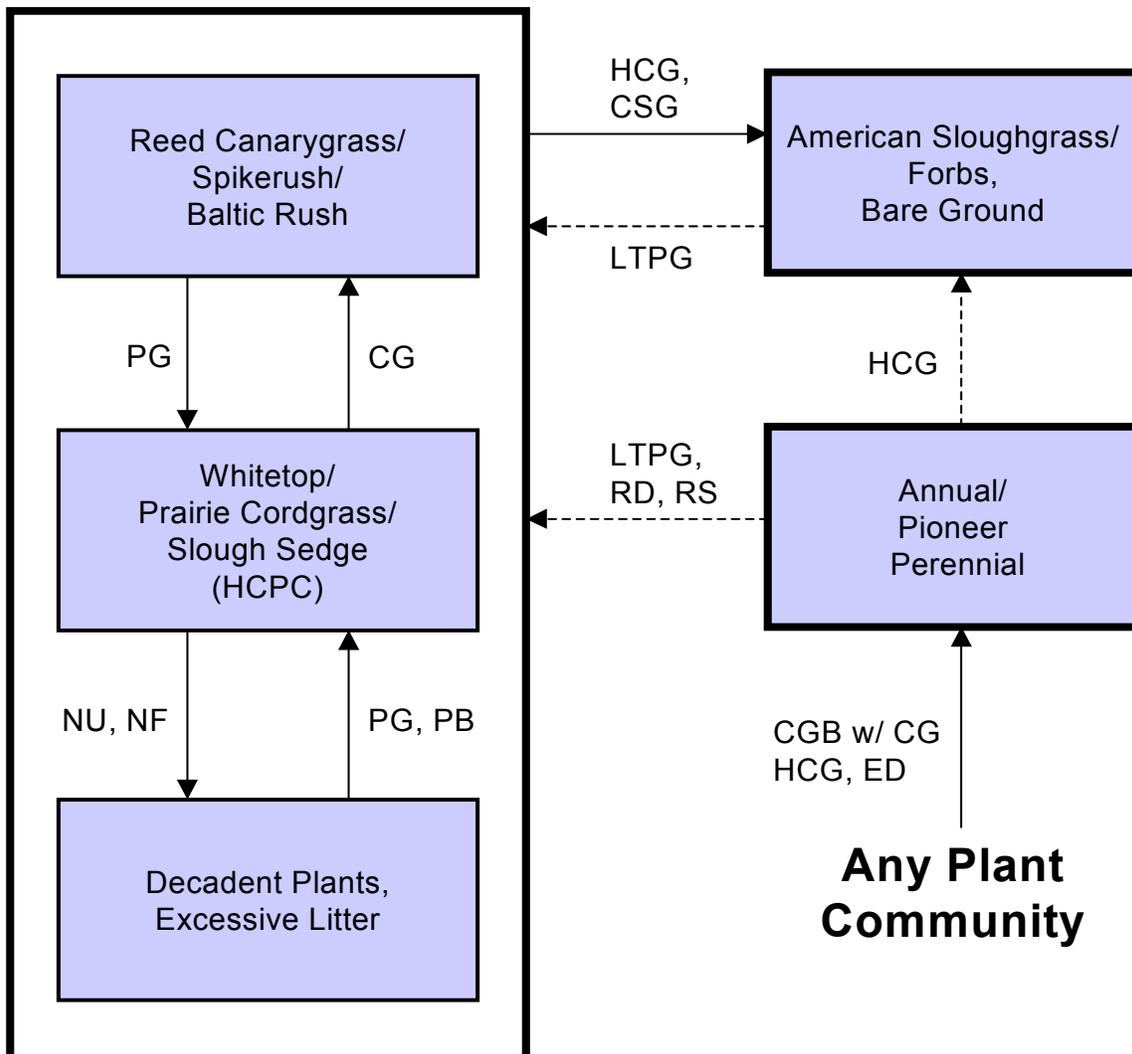
The plant community upon which interpretations are primarily based is the HCPC under normal precipitation periods. The HCPC has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community dynamics ranging from heavily grazed to lightly grazed areas, seasonal use pastures, and historical accounts also have been used.

Continuous grazing without adequate recovery opportunities between grazing events over several years will cause this site to depart from the HCPC. Species such as reed canarygrass, spikerush,

and Baltic rush will increase in frequency and density. Non-use (rest) and lack of fire will cause litter levels and plant decadence/mortality to increase. Cattails are greatly influenced by the fluctuating water regime.

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.

### Plant Communities and Transitional Pathways



**CG** - continuous grazing without adequate recovery periods; **CGB w/ CG** - cropped go-back with continuous grazing; **CSG** - continuous seasonal grazing; **ED** - excessive defoliation; **HCG** - heavy continuous grazing; **HCPC** - Historic Climax Plant Community; **LTPG** - long-term prescribed grazing (>10 years); **NF, NU** - no fire, non-use; **PB** - prescribed burning; **PG** - prescribed grazing with adequate recovery opportunity; **RD** - removal of disturbance; **RS** - range seeding with prescribed grazing.

## Plant Community Composition and Group Annual Production

		Whitetop/Prairie Cordgrass/ Slough Sedge (HCPC)			
COMMON/GROUP NAME	SYMBOL	Group	lbs./acre	% Comp	
<b>GRASSES</b>		<b>1</b>	<b>2655 - 3245</b>	<b>45 - 55</b>	
whitetop	SCFE	1	1180 - 1475	20 - 25	
prairie cordgrass	SPPE	1	885 - 1180	15 - 20	
northern reedgrass	CASTI3	1	59 - 295	1 - 5	
reed canarygrass	PHAR3	1	59 - 295	1 - 5	
American mannagrass	GLGR	1	59 - 295	1 - 5	
American sloughgrass	BESY	1	59 - 295	1 - 5	
other perennial grasses	2GP	1	0 - 118	0 - 2	
<b>GRASS-LIKES</b>		<b>2</b>	<b>1770 - 2360</b>	<b>30 - 40</b>	
slough sedge	CAAT2	2	885 - 1180	15 - 20	
woolly sedge	CAPE42	2	295 - 590	5 - 10	
spikerush	ELEOC	2	295 - 590	5 - 10	
Baltic rush	JUBA	2	59 - 295	1 - 5	
river bulrush	SCFL11	2	59 - 295	1 - 5	
burreed	SPARG	2	59 - 118	1 - 2	
cattail	TYLA	2	59 - 295	1 - 5	
other grass-likes	2GL	2	59 - 295	1 - 5	
<b>FORBS</b>		<b>3</b>	<b>0 - 295</b>	<b>0 - 5</b>	
American licorice	GLLE3	3	0 - 59	0 - 1	
aster	ASTER	3	0 - 118	0 - 2	
cinquefoil	POTEN	3	0 - 59	0 - 1	
Pennsylvania smartweed	POPE2	3	0 - 118	0 - 2	
smartweed	POLYG4	3	0 - 118	0 - 2	
western dock	RUAQ	3	0 - 118	0 - 2	
other perennial forbs	2FP	3	0 - 118	0 - 2	
<b>Annual Production lbs./acre</b>			<b>LOW</b>	<b>RV</b>	<b>HIGH</b>
<b>GRASSES</b>			3600 -	3688	-3775
<b>GRASS-LIKES</b>			1800 -	2065	-2300
<b>FORBS</b>			0 -	148	-325
<b>TOTAL</b>			5400 -	5900	-6400

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	Whitetop/Prairie Cordgrass/ Slough Sedge (HCPC)			Reed Canarygrass/Spikerush/ Baltic Rush			Decadent Plants, Excessive Litter			American Sloughgrass/ Forbs, Bare Ground		
		Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp	Grp	lbs./acre	% Comp
<b>GRASSES</b>													
whitetop	SCFE	1	1180 - 1475	20 - 25	1	55 - 275	1 - 5	1	245 - 490	5 - 10			
prairie cordgrass	SPPE	1	885 - 1180	15 - 20	1	55 - 275	1 - 5	1	245 - 490	5 - 10			
northern reedgrass	CASTI3	1	59 - 295	1 - 5	1	0 - 110	0 - 2	1	49 - 245	1 - 5			
reed canarygrass	PHAR3	1	59 - 295	1 - 5	1	1100 - 1650	20 - 30	1	245 - 490	5 - 10	1	0 - 50	0 - 2
American mannagrass	GLGR	1	59 - 295	1 - 5	1	275 - 550	5 - 10	1	49 - 245	1 - 5	1	125 - 500	5 - 20
American sloughgrass	BESY	1	59 - 295	1 - 5	1	55 - 275	1 - 5	1	0 - 98	0 - 2	1	500 - 1000	20 - 40
foxtail barley	HOJU				1	55 - 275	1 - 5				1	125 - 500	5 - 20
barnyardgrass	ECCR				1	55 - 275	1 - 5				1	125 - 375	5 - 15
quackgrass	ELRE4				1	0 - 1650	0 - 30				1	0 - 875	0 - 35
other annual grasses	2GA				1	0 - 275	0 - 5	1	0 - 98	0 - 2	1	250 - 375	10 - 15
other perennial grasses	2GP	1	0 - 118	0 - 2	1	0 - 110	0 - 2	1	0 - 98	0 - 2	1	0 - 50	0 - 2
<b>GRASS-LIKES</b>													
slough sedge	CAAT2	2	1770 - 2360	30 - 40	2	2200 - 2750	40 - 50	2	1470 - 2695	30 - 55	2	125 - 375	5 - 15
woolly sedge	CAPE42	2	885 - 1180	15 - 20	2	55 - 275	1 - 5	2	245 - 980	5 - 20	2	0 - 25	0 - 1
spikerush	ELEOC	2	295 - 590	5 - 10	2	275 - 550	5 - 10	2	245 - 980	5 - 20	2	0 - 25	0 - 1
Baltic rush	JUBA	2	59 - 295	1 - 5	2	550 - 825	10 - 15	2	245 - 980	5 - 20	2	25 - 125	1 - 5
river bulrush	SCFL11	2	59 - 295	1 - 5	2	275 - 550	5 - 10	2	49 - 245	1 - 5	2	25 - 250	1 - 10
burreed	SPARG	2	59 - 118	1 - 2	2	55 - 275	1 - 5	2	49 - 245	1 - 5	2	0 - 50	0 - 2
cattail	TYLA	2	59 - 118	1 - 2	2	55 - 110	1 - 2	2	49 - 98	1 - 2	2	0 - 25	0 - 1
other grass-like	2GL	2	59 - 295	1 - 5	2	55 - 275	1 - 5	2	49 - 245	1 - 5	2	0 - 50	0 - 2
<b>FORBS</b>													
American licorice	GLLE3	3	0 - 295	0 - 5	3	165 - 275	3 - 5	3	147 - 245	3 - 5	3	250 - 375	10 - 15
aster	ASTER	3	0 - 59	0 - 1	3	55 - 275	1 - 5	3	98 - 147	2 - 3	3	25 - 50	1 - 2
cinquefoil	POTEN	3	0 - 118	0 - 2	3	55 - 275	1 - 5	3	0 - 98	0 - 2	3	75 - 125	3 - 5
curly dock	RUCR				3	55 - 275	1 - 5	3	98 - 147	2 - 3	3	75 - 200	3 - 8
Pennsylvania smartweed	POPE2	3	0 - 59	0 - 1	3	55 - 275	1 - 5	3	49 - 147	1 - 3	3	125 - 250	5 - 10
smartweed	POLYG4	3	0 - 118	0 - 2	3	55 - 275	1 - 5	3	0 - 98	0 - 2	3	75 - 100	3 - 4
western dock	RUAQ	3	0 - 118	0 - 2	3	55 - 275	1 - 5	3	0 - 98	0 - 2	3	125 - 250	5 - 10
other annual forbs	2FA				3	55 - 275	1 - 5	3	49 - 98	1 - 2	3	25 - 50	1 - 2
other perennial forbs	2FP	3	0 - 118	0 - 2	3	165 - 275	3 - 5	3	98 - 147	2 - 3	3	125 - 250	5 - 10
<b>Annual Production lbs./acre</b>													
<b>GRASSES</b>		LOW RV HIGH			LOW RV HIGH			LOW RV HIGH			LOW RV HIGH		
<b>GRASS-LIKES</b>		3600 - 3688 - 3775			2640 - 2805 - 3000			2555 - 2622 - 2650			160 - 1938 - 2700		
<b>FORBS</b>		1800 - 2065 - 2300			2200 - 2475 - 2700			1700 - 2083 - 2500			120 - 250 - 400		
<b>TOTAL</b>		0 - 148 - 325			160 - 220 - 300			145 - 196 - 250			220 - 313 - 400		
		5400 - 5900 - 6400			5000 - 5500 - 6000			4400 - 4900 - 5400			500 - 2500 - 3500		

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 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.

#### Whitetop/Prairie Cordgrass/Slough Sedge Plant Community

This is the interpretive plant community and is considered to be the HCPC. This plant community evolved with grazing by large herbivores, infrequent wild fires, and periodic flooding events and is suited for grazing by domestic livestock. This plant community can be found on areas that are grazed and where the grazed plants receive adequate periods of rest during the growing season in order to recover.

Historically, fires occurred infrequently. The potential vegetation is about 55 percent grasses, 40 percent grass-likes, and 5 percent forbs. The major grasses and grass-likes include whitetop, prairie cordgrass, slough sedge, woolly sedge, and spikerush. Key forbs include smartweeds, western dock, and aster.

The plant community is well adapted to the Northern Great Plains climatic conditions. It is a critical plant community, providing water and habitat for the surrounding area. The diversity in plant species provides a variety of habitats for wildlife. It is resistant to drought due to a dependable water supply. This is a sustainable plant community (soil stability, watershed function, and biologic integrity).

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during a normal year.

Growth curve number: ND5410

Growth curve name: Missouri Slope, Lowland, Cool, Warm-Season Mix.

Growth curve description: Lowland, warm-season, cool-season co-dominant.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	0	3	22	30	30	8	5	2	0	0

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

- Continuous grazing without adequate recovery periods between grazing events will shift this plant community to the *Reed Canarygrass/Spikerush/Baltic Rush Plant Community*.
- Non-use and no fire will move this plant community to the *Decadent Plants, Excessive Litter Plant Community*.
- Excessive defoliation (i.e., areas of heavy animal concentration,) will convert the plant community to the *Annual/Pioneer Perennial Plant Community*.
- Cropped go-back land with continuous grazing will lead this plant community to the *Annual/Pioneer Perennial Plant Community*.

### Reed Canarygrass/Spikerush/Baltic Rush Plant Community

This plant community will slowly develop from the adverse effects of continuous grazing, without adequate recovery periods between each grazing event during the growing season.

When compared to the HCPC, whitetop, prairie cordgrass, slough sedge, and northern reedgrass, have decreased. Reed canarygrass, spikerush, low-growing sedges, Baltic rush, and cattails have increased. The abundant production and proximity to water make this plant community important for livestock and wildlife such as birds, mule deer, and antelope. The plant community is stable and protected from excessive erosion. The biotic integrity of this plant community is usually intact. The watershed is usually functioning.

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during a normal year

Growth curve number: ND5409

Growth curve name: Missouri Slope, Lowland, Cool-season Dominant.

Growth curve description: Lowland, cool-season dominant, tall grasses and grass-likes.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	37	35	5	2	8	0	0	0

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

- Prescribed grazing that includes adequate recovery opportunity between grazing occurrences will shift this plant community back to the *Whitetop/Prairie Cordgrass/Slough Sedge Plant Community (HCPC)*.
- Heavy, continuous grazing and/or continuous seasonal (spring) grazing will convert this plant community to the *American Sloughgrass/Forbs, Bare Ground Plant Community*.
- Excessive defoliation (i.e., areas of heavy animal concentration,) will convert the plant community to the *Annual/Pioneer Perennial Plant Community*.
- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

### Decadent Plants, Excessive Litter Plant Community

This plant community developed under the absence of grazing and fire. Excessive litter is shading out plants. This inhibits photosynthesis and reduces soils temperatures, delaying green-up in the spring. Plants become decadent and exhibit low vigor. Organic matter oxidizes in the air rather than being incorporated into the soil. The dominant plants tend to be somewhat similar to those found in the HCPC. Weedy species, cool-season grasses, and sedges have increased. Prairie cordgrass has decreased. American licorice tends to increase. Noxious weeds such as purple loosestrife may invade if a seed source is present. Plant diversity is moderate to high.

This plant community is not resistant to change. The introduction of grazing and/or fire quickly changes the plant community. It is somewhat more vulnerable to severe disturbance than the HCPC. The soil remains protected and the watershed continues to function. The biotic community is at risk due to invasive plants.

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during a normal year:

Growth curve number: ND5406

Growth curve name: Missouri Slope, Introduced Cool-season Grasses.

Growth curve description: Introduced cool-season grasses.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	35	35	5	2	8	2	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 with adequate recovery periods between grazing events and proper stocking will move this plant community toward the *Whitetop/Prairie Cordgrass/Slough Sedge Plant Community (HCPC)*. This would require long-term management with prescribed grazing and/or prescribed burning under controlled conditions.
- Excessive defoliation (i.e., areas of heavy animal concentration,) will convert the plant community to the *Annual/Pioneer Perennial Plant Community*.
- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

### American Sloughgrass/Forbs, Bare Ground Plant Community

This plant community developed with heavy continuous grazing without adequate recovery periods between grazing events and/or due to a long duration of flooding during unnatural climatic wet cycles. Annual grasses like American sloughgrass and short-lived perennials such as foxtail barley dominate the community. Quackgrass can invade on drier portions of the community. Prairie cordgrass, whitetop, northern reedgrass, and slough sedge will be lost from the plant community while reed canarygrass and other grass-likes will tend to persist in trace amounts, greatly reduced in vigor. Smartweeds, curly dock, and cinquefoil have increased. Areas of bare ground are standard throughout the site.

A significant amount of production and diversity has been lost when compared to the HCPC. Loss or reduction of native grasses, grass-likes, and forbs has negatively impacted energy flow and nutrient cycling. It will take a long time to restore this plant community back to the HCPC with improved management. Renovation would be very costly, whereas time is the best remedy.

The following growth curve is an estimate of the monthly percentages of total annual growth of the dominant species expected during a normal year:

Growth curve number: ND5406

Growth curve name: Missouri Slope, Introduced Cool-season Grasses.

Growth curve description: Introduced cool-season grasses.

JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
0	0	3	10	35	35	5	2	8	2	0	0

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

- Long-term prescribed grazing with adequate recovery periods following each grazing event may move this plant community toward the *Reed Canarygrass/Spikerush/Baltic Rush Plant Community*. Eventually it may return to the *HCPC* or associated successional plant community stages assuming an adequate seed/vegetative source is available. This process may take greater than 10 years.
- Excessive defoliation (i.e., areas of heavy animal concentration,) will convert the plant community to the *Annual/Pioneer Perennial Plant Community*.
- Cropped go-back land with continuous grazing will convert this plant community to the *Annual/Pioneer Perennial Plant Community*.

### Annual/Pioneer Perennial Plant Community

This plant community develops under severe disturbance, long enduring flooding, and/or excessive defoliation. This can result from heavy livestock or wildlife concentration, excessive ponding 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 foxtail barley, barnyardgrass, annual brome, quackgrass, and rushes. The dominant forbs include curly dock, smartweeds, and other early successional species. Plant species from adjacent ecological sites may become minor components of this plant community. The community also is susceptible to invasion of other non-native species due to severe soil disturbances and relatively high percent of bare ground. Many annual and perennial forbs, including non-native species, have invaded the site.

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 low in this plant community. Reduced surface cover, low plant density, low plant vigor, loss of root biomass, and soil compaction, all contribute to decreased water infiltration, excessive ponding, and salt concentrations on the surface.

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. The total annual production ranges from 300 to 2,000 lbs./ac. (air-dry weight) depending upon species and severity of the degradation of the site.

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

- Under long-term prescribed grazing and/or removal of disturbance, including adequate rest periods, this plant community will move through the successional stages, and may eventually lead towards the *Whitetop/Prairie Cordgrass/Slough Sedge Plant Community (HCPC)*. Depending on the severity of compaction, sedimentation, and concentrated heavy-loaded organic build-up and if adequate perennial plants exist, this change can occur more slowly. This process will likely take a period of (20+ years).
- Range seeding with deferment and prescribed grazing can accelerate the conversion of this plant community towards a community resembling the *Whitetop/Prairie Cordgrass/Slough Sedge Plant Community*.
- Heavy, continuous grazing will upgrade the plant community towards a low successional state resembling the *American Sloughgrass/Forbs, Bare Ground Plant Community*.

## **Ecological Site Interpretations**

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

-- Under Development --

**Whitetop/Prairie Cordgrass/Slough Sedge Plant Community:**

**Reed Canarygrass/Spikerush/Baltic Rush Plant Community:**

**Decadent Plants, Excessive Litter Plant Community:**

**American Sloughgrass/Forbs, Bare Ground Plant Community:**

**Annual/Pioneer Perennials 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>							
American mannagrass	N U U N	N D D U	N U U N	N D D U	N U U N	N U U N	N U U N
American sloughgrass	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
Baltic rush	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
barnyardgrass	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	U U U U
burreed	N U U N	N D D U	N U U N	N D D U	N D D U	N U U N	N U U N
cattail	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
foxtail barley	U D N N	N P N N	U D N N	N P N N	N P N N	U D N N	U D N N
northern reedgrass	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 cordgrass	U D D U	N N N N	U D D U	N N N N	N N N N	U D D U	U D D U
quackgrass	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
reed canarygrass	U D U U	N N N N	U D U U	N N N N	N N N N	U D U U	U D U U
river bulrush	U U U U	N N N N	U U U U	N N N N	N N N N	U U U U	U U U U
slough sedge	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
spikerush	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
whitetop	U P U D	N P N U	U P U D	N P N U	N P N U	U P U D	U P U D
woolly sedge	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
<b>Forbs</b>							
American licorice	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
aster	U U D U	U U D U	U U D U	U U D U	U U D U	U U D U	U U D 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
curly dock	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
Pennsylvania smartweed	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
smartweed	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
western dock	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

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

The following table lists suggested initial stocking rates for cattle under continuous grazing (year long grazing or growing season long grazing) under normal growing conditions; however, *continuous grazing is not recommended*. These are conservative estimates that should be used only as guidelines in the initial stages of the conservation planning process and may need to be adjusted due to diet preferences of other types or kinds of livestock and/or other factors. Often, the current plant composition does not entirely match any particular plant community (as described in this ecological site description). Because of this, a field visit is recommended, in all cases, to document plant composition and production. More precise carrying capacity estimates should eventually be calculated using the following stocking rate information along with animal preference data, particularly when grazers other than cattle are involved. With consultation of the land manager, more intensive grazing management may result in improved harvest efficiencies and increased carrying capacity.

Plant Community	Production (lbs./acre)	Carrying Capacity <sup>1</sup> (AUM/acre)
Whitetop/Prairie Cordgrass/Slough Sedge (HCPC)	5900	1.86 <sup>2</sup>
Reed Canarygrass/Spikerush/Baltic Rush	5500	1.73 <sup>2</sup>
Decadent Plants, Excessive Litter	4900	1.54 <sup>2</sup>
American Sloughgrass/Forbs, Bare ground	2500	-- <sup>3</sup>
Annual/Pioneer Perennial	-- <sup>3</sup>	-- <sup>3</sup>

<sup>1</sup> Continuous season-long grazing by cattle under average growing conditions.

<sup>2</sup> Stocking rates may need to be adjusted due to palatability and/or availability of forage.

<sup>3</sup> Highly variable; stocking rate needs to be determined on site.

## Hydrology Functions

Water ponding is the principal factor limiting herbage production on this site. The site is dominated by soils in hydrologic group D. Infiltration varies from moderately slow to very slow and runoff potential for this site is negligible. 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. Areas where ground cover is less than 50 percent 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 opportunities for upland and waterfowl 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

None noted.

## Supporting Information

### Associated Sites

(054XY022ND) – Closed Depression

(054XY032ND) – Subirrigated

(054XY024ND) – Saline Lowland

(054XY037ND) – Wet Meadow

### Similar Sites

(054XY022ND) – Closed Depression (CD)

[Poorly drained clayey soils with sodic subsoils and with noticeable redoximorphic features within depressions. Ponds periodically with no apparent water table. Indicator species: dominated by western wheatgrass with alkaligrass and foxtail barley intermixed, forb indicator is western dock, no shrubs. This site has similar landscape position, less production, lots of western wheatgrass and far less prairie cordgrass and slough sedge, a restrictive sodic layer or evidence of salts within the soil profile influences this site.]

**Site Type: Rangeland**  
**MLRA: 54 – Rolling Soft Shale Plain**

**Wet Land**  
**R054XY036ND**

(054XY037ND) – Wet Meadow (WM)

[Poorly drained soils found adjacent to streams or in depressions, with water table at the surface or within one and one-half feet from the surface with no evidence of salts, noticeable redoximorphic features within six inches or just below the organic soil layer. Found upslope from wet land and downslope of subirrigated or overflow sites; can be located within the listed associated sites. Indicator species are prairie cordgrass, northern reedgrass, and no shrub. This site has less production, far less slough sedge and far more prairie cordgrass, and a water table is present yearlong.

## 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: Dennis Froemke, NRCS Range Management Specialist; Jeff Printz, NRCS State Range Management Specialist; Stan Boltz, NRCS Range Management Specialist; Darrell Vanderbusch, NRCS Resource Soil Scientist; L. Michael Stirling, NRCS Range Management Specialist; Josh Saunders, NRCS Range Management Specialist; Jody Forman, NRCS Grazing Land Management Specialist; David Dewald, NRCS State Biologist; and Brad Podoll, NRCS Biologist.

<u>Data Source</u>	<u>Number of Records</u>	<u>Sample Period</u>	<u>State</u>	<u>County</u>
SCS-RANGE-417	0			

## State Correlation

This site has been correlated with North Dakota and South Dakota in MLRA 54.

## Field Offices

Baker, MT	Buffalo, SD	Faith, SD	Mott, ND
Beach, ND	Carson, ND	Hettinger, ND	Selfridge, ND
Beulah, ND	Culbertson, MT	Killdeer, ND	Sidney, MT
Bison, SD	Dickinson, ND	Mandan, ND	Watford City, ND
Bowman, ND	Dupree, SD	McIntosh, SD	Wibaux, MT

## Relationship to Other Established Classifications

Level IV Ecoregions of the Conterminous United States: 43a – Missouri Plateau.

## 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. (<http://www.wcc.nrcs.usda.gov>).

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

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.

**Site Type: Rangeland**  
**MLRA: 54 – Rolling Soft Shale Plain**

**Wet Land**  
**R054XY036ND**

USDA, NRCS, Various Published Soil Surveys.

### **Site Description Approval**

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

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State Range Management Specialist      Date

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State Range Management Specialist      Date