USDA Natural Resources Conservation Service

Ecological site R054XY037ND
Wet Meadow

Accessed: 05/18/2024

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.

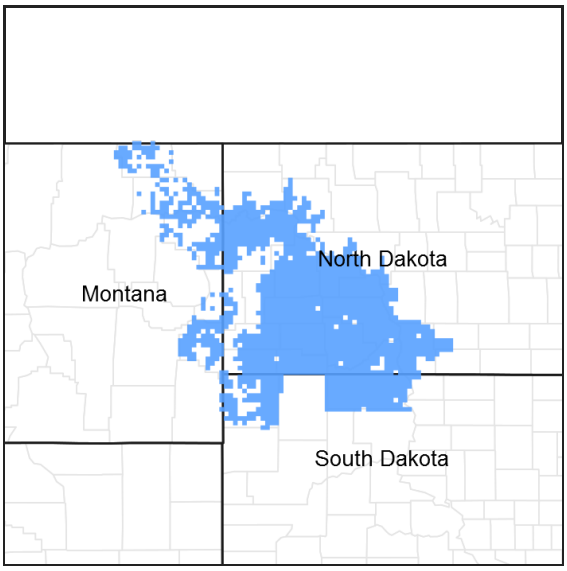


Figure 1. Mapped extent

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: 43a – Missouri Plateau.

Associated sites

R054XY023ND	**Loamy Overflow**
R054XY024ND	**Saline Lowland**
R054XY032ND	**Subirrigated**
R054XY036ND	**Shallow Marsh**

Similar sites

R054XY022ND	**Closed Depression** [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 less production, far more western wheatgrass and far less prairie cordgrass, no water table, a restrictive sodic layer and evidence of salts are within the soil profile.

R054XY036ND	**Shallow Marsh** [Very poorly drained soils with noticeable redoximorphic features within 6 inches or just below the organic soil layer, found in depressions and along streams where water ponds at or above the surface for more the 7 days. Found down slope of wet meadow sites and can be in micro low positions within the listed associated sites. Indicator species are slough sedge, whitetop, prairie cordgrass, cattail, smartweed and no shrub. This site has more production, far more slough sedge and far less prairie cordgrass, and no water table is present.
R054XY024ND	**Saline Lowland** [Found adjacent to streams, toe slopes, foot slopes or sideslopes. Most are poorly drained soils, with water table at the surface or within 3 feet from the surface with evidence of salts within soil profile, noticeable redoximorphic features within 6 inches or just below the organic soil layer. Found upslope from wet land or wet meadow and downslope of subirrigated or overflow sites. Can be located within the listed associated sites. Indicator species are Nuttall's alkaligrass intermixed with western wheatgrass, some rushes and sedges. This site has less production, far more western wheatgrass and far less prairie cordgrass, a water table and evidence of salts within the soil profile are present.

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	(1) *Spartina pectinata* (2) *Calamagrostis stricta ssp. inexpansa*

Physiographic features

This site occurs on level to gently sloping sedimentary uplands and floodplains.

Table 2. Representative physiographic features

Landforms	(1) Depression (2) Flood plain
Flooding duration	Long (7 to 30 days)
Flooding frequency	None to frequent
Ponding duration	Long (7 to 30 days) to very long (more than 30 days)
Ponding frequency	Occasional to frequent
Elevation	488–1,097 m
Slope	0–2%
Ponding depth	0–15 cm
Water table depth	0–183 cm
Aspect	Aspect is not a significant factor

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, ND) to about 16° F (Bison, 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.

Table 3. Representative climatic features

Frost-free period (average)	136 days
Freeze-free period (average)	157 days
Precipitation total (average)	457 mm

Influencing water features

Soil features

The common features of soils in this site are the silt loam to silty clay-textured subsoil and slopes of 0 to 2 percent. The soils in this site are 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. Sub-surface soil layers are non-restrictive to water movement and root penetration.

These soils are not susceptible to water erosion. Ponded water conditions and slow permeability strongly influences the soil-water-plant relationship. Loss of the soil surface layer can result in a shift in species composition and/or production.

Major soil series correlated to this ecological site can be found in Section II of the Natural Resources Conservation Service 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/

Table 4. Representative soil features

Surface texture	(1) Silt loam (2) Loam (3) Silty clay loam
Family particle size	(1) Clayey
Drainage class	Poorly 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)	12.7–20.32 cm
Calcium carbonate equivalent (0-101.6cm)	0–15%
Electrical conductivity (0-101.6cm)	0–4 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	0–5

Soil reaction (1:1 water) (0-101.6cm)	6.1–8.4
Subsurface fragment volume <=3" (Depth not specified)	0–5%
Subsurface fragment volume >3" (Depth not specified)	0–10%

Ecological dynamics

The 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 climatic conditions and/or management actions. Due to the nature of the soils, the site is considered quite stable. Under continued adverse impacts, a slow decline in vegetative vigor and composition will occur. Under favorable vegetative management treatments the site can quickly return to the Reference Plant Community.

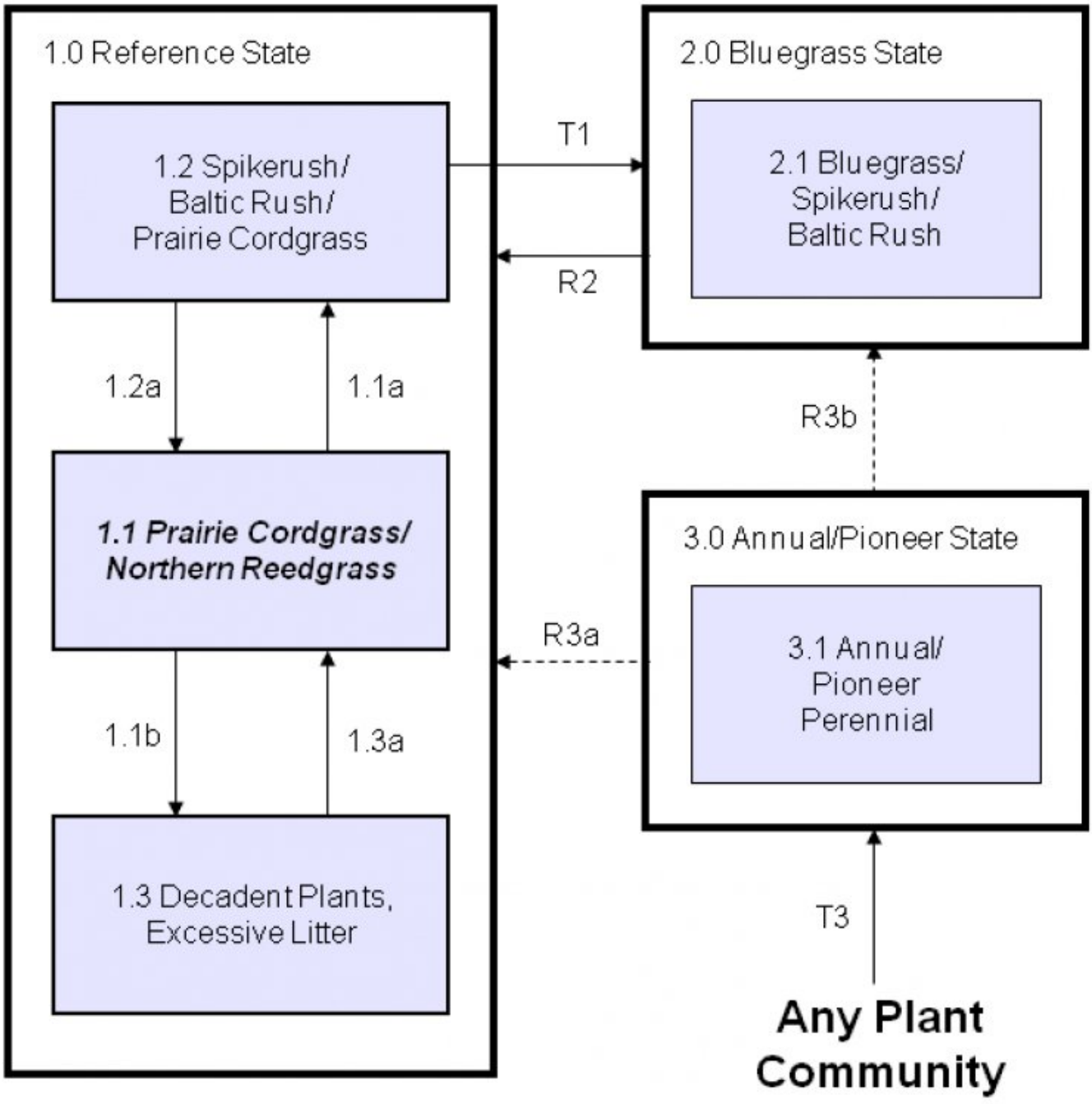
The plant community upon which interpretations are primarily based is the Reference Plant Community. The Reference Plant Community has been determined by study of rangeland relic areas, areas protected from excessive disturbance, and areas under long-term rotational grazing regimes. Trends in plant community 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.

Ecological changes occur on this site primarily because of continuous grazing without adequate recovery opportunities between grazing events, and over rest or non-use and lack of fire. Continuous grazing will cause species such as spikerush, Baltic rush and native bluegrass to increase. Introduced species such as Kentucky bluegrass will begin to invade and dominate. Grasses such as prairie cordgrass and northern reedgrass will decrease in frequency and production and can eventually be removed from the site. Non-use (extended rest over years) or lack of fire will cause litter levels and plant decadence/mortality to increase.

Due to a general invasion of exotic species (such as Kentucky bluegrass and smooth bromegrass) across the MLRA within this site, returning to the 1.1 Praire Cordgrass/Northern Reedgrass Plant Community Phase may not be possible.

Following the state and transition diagram are narratives for each of the described states and community phases. These may not represent every possibility, but they are the most prevalent and repeatable states/community phases. The plant composition tables shown below have been developed from the best available knowledge at the time of this revision. As more data are collected, some of these community phases and/or states may be revised or removed, and new ones may be added. The main purpose for including the descriptions here is to capture the current knowledge and experience at the time of this revision.

State and transition model



State 1
Reference

The State narrative is under development.

Community 1.1
Prairie Cordgrass/Northern Reedgrass

This is the interpretive plant community and is considered to be the Reference Plant Community. This plant community evolved with grazing by large herbivores and is well suited for grazing by domestic livestock. It can be found on grazed areas, where 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% grasses, 40% grass-likes, and 5% forbs by air-dry weight. Prairie cordgrass is the dominant tall warm-season grass occupying this plant community. Northern reedgrass is the dominant tall cool season species. A variety of sedges and rushes occur throughout this community as well as switchgrass and fowl bluegrass. Key forbs include Maximillian sunflower, Canada goldenrod and cinquefoil. This plant community is diverse, stable, and productive, and is well adapted to

the Northern Great Plains. The high water table supplies much of the moisture for plant growth. Community dynamics, nutrient cycle, water cycle and energy flow are functioning properly. Plant litter is properly distributed with very little movement off-site and natural plant mortality is very low. The diversity in plant species allows for the variability of both the fluctuations of water table and reoccurring flooding. This is a sustainable plant community in terms of 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	3105	3329	3553
Shrub/Vine	1233	1513	1793
Forb	146	202	258
Total	**4484**	**5044**	**5604**

Figure 5. Plant community growth curve (percent production by month). ND5410, Missouri Slope, Lowland, Warm Season Dominant. Lowland, warm-season dominant, cool-season subdominant..

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	3	22	30	30	8	5	2	0	0

Community 1.2
Spikerush/Baltic Rush/Prairie Cordgrass

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. Recognition of this plant community will enable the land user to implement key management decisions before a significant ecological threshold is crossed. Prairie cordgrass has been reduced in this plant community, but still persists in fair amounts. Kentucky bluegrass and western wheatgrass are the dominant species. Spikerush and Baltic rush as well as other grass-likes have increased. Northern reedgrass has been significantly reduced. Switchgrass may be removed at this stage. Creeping meadow foxtail can typically invade along drainageways if an upstream seed source is present. Forb species would include asters, goldenrod and cinquefoil as well as a possible invasion of Canada thistle. Plant production and frequency have been reduced. The water cycle, nutrient cycle and energy flow are slightly reduced but continue to adequately function.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1799	2060	2298
Shrub/Vine	1373	1569	1765
Forb	191	294	420
Total	**3363**	**3923**	**4483**

Figure 7. Plant community growth curve (percent production by month). ND5412, Missouri Slope, Lowlands, Cool/Warm-season Mix. Lowlands, cool-season/tall warm-season dominant.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
			3	35	35	15	5	5	2		

Community 1.3
Decadent Plants, Excessive Litter

This plant community develops after an extended period (10 to 20 years or more) of non-use or exclusion of fire. Eventually litter levels become high enough to reduce native grass vigor, diversity and density. Years of

accumulated litter will tend to make this community wetter. Baltic rush and bulrush will increase. Hydrophytic forbs will also increase. Bluegrasses such as fowl bluegrass and Kentucky bluegrass as well as creeping meadow foxtail can flourish in this environment and will become a major component of this plant community. This plant community is resistant to change without prescribed grazing and fire. The combination of both grazing and fire is most effective in moving this plant community towards the Reference Plant Community. Soil erosion is low. Runoff is similar to the Reference Plant Community. Once this plant community is reached, time and external resources will be needed to see any immediate recovery.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2578	2785	2937
Shrub/Vine	673	981	1345
Forb	112	157	202
Total	**3363**	**3923**	**4484**

Figure 9. Plant community growth curve (percent production by month). ND5406, Missouri Slope, Introduced Cool-season Grasses. 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

Pathway 1.1a
Community 1.1 to 1.2

Continuous grazing without adequate recovery periods between grazing events will shift this plant community to the Spikerush/Baltic Rush/Prairie Cordgrass Plant Community.

Pathway 1.1b
Community 1.1 to 1.3

Non-use and no fire will move this plant community to the Decadent Plants, Excessive Litter Plant Community.

Pathway 1.2a
Community 1.2 to 1.1

Prescribed grazing that includes adequate recovery opportunities will shift this plant community back to the Prairie Cordgrass/Northern Reedgrass Plant Community.

Conservation practices

Prescribed Grazing

Pathway 1.3a
Community 1.3 to 1.1

Prescribed grazing or prescribed burning followed by prescribed grazing will move this plant community toward the Prairie Cordgrass/Northern Reedgrass Plant Community. This would require long-term management with prescribed grazing and/or prescribed burning under controlled conditions.

Conservation practices

Prescribed Burning
Prescribed Grazing

State 2
Bluegrass

The State narrative is under development.

Community 2.1
Bluegrass/Spikerush/Baltic Rush

This plant community developed with heavy continuous grazing without adequate recovery periods between grazing events. Various bluegrasses, spikerush and Baltic rush dominate the community. Kentucky bluegrass will invade on drier portions of the community. Prairie cordgrass will tend to persist in trace amounts, greatly reduced in vigor. Goldenrod, dogbane and cinquefoil have increased. A significant amount of production and diversity has been lost when compared to the Reference Plant Community. Loss or reduction of native cool and warm season grasses, and the forb component have negatively impacted energy flow and nutrient cycling. It will take an extended period of time to restore this plant community back to the Reference Plant Community with improved management. Renovation in most cases would not be practical as well as very costly.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1295	1612	1933
Shrub/Vine	701	841	981
Forb	247	350	448
Total	**2243**	**2803**	**3362**

Figure 11. Plant community growth curve (percent production by month). ND5406, Missouri Slope, Introduced Cool-season Grasses. 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

State 3
Annual/Pioneer

The State narrative is under development.

Community 3.1
Annual/Pioneer Perennial

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 inland saltgrass, foxtail barley, barnyardgrass, quackgrass, fowl bluegrass, Kentucky bluegrass, Baltic rush, sedges and western wheatgrass. The dominant forbs include curlycup gumweed, Canada thistle 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. 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. Reduced surface cover, low plant density, low plant vigor, loss of root biomass, and soil compaction, all contribute to decreased water infiltration, increased runoff, and accelerated erosion rates. 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 500 to 1500 lbs./ac. (air-dry weight) depending upon growing conditions.

Transition T1
State 1 to 2

Heavy continuous grazing without adequate recovery periods between grazing events will move this plant community across an ecological threshold toward the Bluegrass/Spikerush/Baltic Rush Plant Community.

Restoration pathway R2
State 2 to 1

Long-term prescribed grazing with adequate recovery periods following each grazing event and proper stocking, over long periods of time, will move this plant community toward the Spikerush/Baltic Rush/Prairie Cordgrass Plant Community. This plant community may eventually return to the Reference Plant Community or associated successional communities assuming an adequate seed/vegetative source is available. This process may take greater than 20 years.

Conservation practices

Prescribed Grazing

Transition T3
State 2 to 3

Excessive defoliation (i.e., areas of heavy animal concentration) or cropped go-back land with continuous grazing will convert the plant community to the Annual/Pioneer Perennial Plant Community.

Restoration pathway R3a
State 3 to 1

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 to a plant community resembling the Prairie Cordgrass/Northern Reedgrass Plant Community. Depending on the slope, aspect, and size, and if adequate perennial plants exist, this change can occur more rapidly. This process will likely take a long period of time (20+ years). Range seeding after removal of disturbance with deferment and prescribed grazing can convert this to a plant community resembling the Prairie Cordgrass/Northern Reedgrass Plant Community.

Conservation practices

Prescribed Grazing

Restoration pathway R3b
State 3 to 2

Heavy, continuous grazing after removal of disturbance will direct this plant community towards the Bluegrass/Spikerush/Baltic Rush Plant Community.

Additional community tables

Table 9. Community 1.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Grasses**			2270–2774	
	prairie cordgrass	SPPE	*Spartina pectinata*	1009–1513	–
	northern reedgrass	CASTI3	*Calamagrostis stricta ssp. inexpansa*	504–757	–
	American mannagrass	GLGR	*Glyceria grandis*	252–504	–
	American sloughgrass	BESY	*Beckmannia syzigachne*	252–504	–
	western wheatgrass	PASM	*Pascopyrum smithii*	101–252	–
	switchgrass	PAVI2	*Panicum virgatum*	151–252	–
	fowl bluegrass	POPA2	*Poa palustris*	50–101	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	50–101	–
	Grass, perennial	2GP	*Grass, perennial*	0–101	–
	rough bentgrass	AGSC5	*Agrostis scabra*	50–101	–
2	**Grass-Likes**			1009–2018	
	shortbeak sedge	CABR10	*Carex brevior*	252–504	–
	Sartwell's sedge	CASA8	*Carex sartwellii*	252–504	–
	woolly sedge	CAPE42	*Carex pellita*	202–404	–
	clustered field sedge	CAPR5	*Carex praegracilis*	252–404	–
	Grass-like (not a true grass)	2GL	*Grass-like (not a true grass)*	50–252	–
	spikerush	ELEOC	*Eleocharis*	151–252	–
	flatsedge	CYPER	*Cyperus*	50–101	–
Forb					
3	**Forbs**			151–252	
	Maximilian sunflower	HEMA2	*Helianthus maximiliani*	50–101	–
	Rydberg's sunflower	HENUR	*Helianthus nuttallii ssp. rydbergii*	50–101	–
	mint	MENTH	*Mentha*	50–101	–
	dogbane	APOCY	*Apocynum*	50–101	–
	Canada goldenrod	SOCA6	*Solidago canadensis*	50–101	–
	Forb, perennial	2FP	*Forb, perennial*	0–50	–
	Flodman's thistle	CIFL	*Cirsium flodmanii*	0–50	–
	showy prairie gentian	EUEXR	*Eustoma exaltatum ssp. russellianum*	0–50	–
	cinquefoil	POTEN	*Potentilla*	0–50	–
	western dock	RUAQ	*Rumex aquaticus*	0–50	–
	blue-eyed grass	SISYR	*Sisyrinchium*	0–50	–

Table 10. Community 1.2 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Grasses**			1373–1765	
	prairie cordgrass	SPPE	*Spartina pectinata*	392–588	–
	quackgrass	ELRE4	*Elymus repens*	0–392	–
	bluegrass	POA	*Poa*	196–392	–
	fowl bluegrass	POPA2	*Poa palustris*	196–392	–
	creeping meadow foxtail	ALAR	*Alopecurus arundinaceus*	0–392	–
	American sloughgrass	BESY	*Beckmannia syzigachne*	196–392	–
	western wheatgrass	PASM	*Pascopyrum smithii*	118–275	–
	foxtail barley	HOJU	*Hordeum jubatum*	78–196	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	118–196	–
	rough bentgrass	AGSC5	*Agrostis scabra*	118–196	–
	Grass, annual	2GA	*Grass, annual*	39–196	–
	American mannagrass	GLGR	*Glyceria grandis*	0–118	–
	switchgrass	PAVI2	*Panicum virgatum*	78–118	–
	Grass, perennial	2GP	*Grass, perennial*	39–78	–
	northern reedgrass	CASTI3	*Calamagrostis stricta ssp. inexpansa*	0–78	–
2	**Grass-Likes**			1373–1765	
	spikerush	ELEOC	*Eleocharis*	392–785	–
	shortbeak sedge	CABR10	*Carex brevior*	392–588	–
	clustered field sedge	CAPR5	*Carex praegracilis*	196–392	–
	flatsedge	CYPER	*Cyperus*	196–392	–
	Sartwell's sedge	CASA8	*Carex sartwellii*	39–196	–
	woolly sedge	CAPE42	*Carex pellita*	78–196	–
	Grass-like (not a true grass)	2GL	*Grass-like (not a true grass)*	39–196	–
Forb					
3	**Forbs**			196–392	
	cinquefoil	POTEN	*Potentilla*	118–196	–
	dogbane	APOCY	*Apocynum*	118–196	–
	curly dock	RUCR	*Rumex crispus*	118–196	–
	blue-eyed grass	SISYR	*Sisyrinchium*	118–196	–
	Canada goldenrod	SOCA6	*Solidago canadensis*	118–196	–
	common dandelion	TAOF	*Taraxacum officinale*	118–196	–
	Flodman's thistle	CIFL	*Cirsium flodmanii*	78–118	–
	Forb, annual	2FA	*Forb, annual*	39–78	–
	Forb, perennial	2FP	*Forb, perennial*	39–78	–
	western dock	RUAQ	*Rumex aquaticus*	39–78	–
	mint	MENTH	*Mentha*	0–39	–

Table 11. Community 1.3 plant community composition

				Annual Production	Foliar Cover

Group	Common Name	Symbol	Scientific Name	(Kg/Hectare)	(%)
Grass/Grasslike					
1	**Grasses**			2158–2550	
	creeping meadow foxtail	ALAR	*Alopecurus arundinaceus*	0–1177	–
	quackgrass	ELRE4	*Elymus repens*	0–1177	–
	western wheatgrass	PASM	*Pascopyrum smithii*	196–392	–
	switchgrass	PAVI2	*Panicum virgatum*	196–392	–
	bluegrass	POA	*Poa*	196–392	–
	fowl bluegrass	POPA2	*Poa palustris*	196–392	–
	prairie cordgrass	SPPE	*Spartina pectinata*	196–392	–
	American mannagrass	GLGR	*Glyceria grandis*	39–196	–
	northern reedgrass	CASTI3	*Calamagrostis stricta ssp. inexpansa*	39–196	–
	Grass, annual	2GA	*Grass, annual*	78–196	–
	Grass, perennial	2GP	*Grass, perennial*	39–196	–
	rough bentgrass	AGSC5	*Agrostis scabra*	78–118	–
	American sloughgrass	BESY	*Beckmannia syzigachne*	0–78	–
	foxtail barley	HOJU	*Hordeum jubatum*	39–78	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	0–78	–
2	**Grass-Likes**			785–1177	
	woolly sedge	CAPE42	*Carex pellita*	196–392	–
	clustered field sedge	CAPR5	*Carex praegracilis*	196–392	–
	Sartwell's sedge	CASA8	*Carex sartwellii*	196–392	–
	spikerush	ELEOC	*Eleocharis*	196–392	–
	flatsedge	CYPER	*Cyperus*	118–196	–
	Grass-like (not a true grass)	2GL	*Grass-like (not a true grass)*	39–196	–
	shortbeak sedge	CABR10	*Carex brevior*	39–196	–
Forb					
3	**Forbs**			118–196	
	mint	MENTH	*Mentha*	78–118	–
	curly dock	RUCR	*Rumex crispus*	78–118	–
	blue-eyed grass	SISYR	*Sisyrinchium*	0–78	–
	Canada goldenrod	SOCA6	*Solidago canadensis*	39–78	–
	common dandelion	TAOF	*Taraxacum officinale*	0–78	–
	Forb, annual	2FA	*Forb, annual*	39–78	–
	Forb, perennial	2FP	*Forb, perennial*	39–78	–
	dogbane	APOCY	*Apocynum*	0–78	–
	Flodman's thistle	CIFL	*Cirsium flodmanii*	39–78	–
	showy prairie gentian	EUEXR	*Eustoma exaltatum ssp. russellianum*	39–78	–
	Maximilian sunflower	HEMA2	*Helianthus maximiliani*	39–78	–
	Rydberg's sunflower	HENUR	*Helianthus nuttallii ssp. rydbergii*	39–78	–
	cinquefoil	POTEN	*Potentilla*	39–78	–
	western dock	RUAQ	*Rumex aquaticus*	39–78	–

Table 12. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Grasses**			1121–1401	
	creeping meadow foxtail	ALAR	*Alopecurus arundinaceus*	0–981	–
	quackgrass	ELRE4	*Elymus repens*	0–981	–
	bluegrass	POA	*Poa*	420–560	–
	fowl bluegrass	POPA2	*Poa palustris*	280–420	–
	American sloughgrass	BESY	*Beckmannia syzigachne*	280–420	–
	Grass, annual	2GA	*Grass, annual*	140–280	–
	foxtail barley	HOJU	*Hordeum jubatum*	140–280	–
	mat muhly	MURI	*Muhlenbergia richardsonis*	140–280	–
	rough bentgrass	AGSC5	*Agrostis scabra*	140–280	–
	western wheatgrass	PASM	*Pascopyrum smithii*	56–140	–
	prairie cordgrass	SPPE	*Spartina pectinata*	0–140	–
	Grass, perennial	2GP	*Grass, perennial*	0–56	–
	American mannagrass	GLGR	*Glyceria grandis*	0–28	–
	switchgrass	PAVI2	*Panicum virgatum*	0–28	–
2	**Grass-Likes**			701–981	
	spikerush	ELEOC	*Eleocharis*	280–701	–
	shortbeak sedge	CABR10	*Carex brevior*	280–420	–
	clustered field sedge	CAPR5	*Carex praegracilis*	140–280	–
	flatsedge	CYPER	*Cyperus*	140–280	–
	Sartwell's sedge	CASA8	*Carex sartwellii*	28–56	–
	woolly sedge	CAPE42	*Carex pellita*	28–56	–
	Grass-like (not a true grass)	2GL	*Grass-like (not a true grass)*	28–56	–
Forb					
3	**Forbs**			280–420	
	Canada goldenrod	SOCA6	*Solidago canadensis*	140–280	–
	curly dock	RUCR	*Rumex crispus*	140–280	–
	cinquefoil	POTEN	*Potentilla*	140–224	–
	blue-eyed grass	SISYR	*Sisyrinchium*	112–168	–
	dogbane	APOCY	*Apocynum*	84–140	–
	common dandelion	TAOF	*Taraxacum officinale*	84–112	–
	Flodman's thistle	CIFL	*Cirsium flodmanii*	56–84	–
	Forb, annual	2FA	*Forb, annual*	56–84	–
	Forb, perennial	2FP	*Forb, perennial*	56–84	–
	mint	MENTH	*Mentha*	0–28	–
	western dock	RUAQ	*Rumex aquaticus*	0–28	–

Animal community

Animal Community – Wildlife Interpretations:
Under development.

Animal Community – Grazing Interpretations:
This site is well adapted to managed grazing by domestic livestock. The predominance of herbaceous plants across all plant community phases best lends these sites to grazing by cattle but other domestic grazers with differing diet preferences may also be a consideration depending upon management objectives. Often, the current plant community does not entirely match any particular plant community (as described in the ecological site description). Because of this, a resource inventory is necessary to document plant composition and production. Proper interpretation of this inventory data will permit the establishment of a safe, initial stocking rate for the type and class of animals and level of grazing management. More accurate stocking rate estimates should eventually be calculated using actual stocking rate information and monitoring data.

Hydrological functions

Water ponding is the principal factor limiting herbage production on this site. The site is dominated by soils in hydrologic groups B and D. Infiltration varies from moderate to slow and runoff potential for this site is negligible. In many cases, areas with greater than 75% 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% 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 game species. The wide variety of plants which bloom from spring until fall have an esthetic value that appeals to visitors.

Wood products

No appreciable wood products are present on the site.

Other products

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

Inventory data references

Information presented here has been derived from NRCS clipping 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 specialist.
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.
Data Source Number of Records Sample Period State County
SCS-RANGE-417 0
Ocular Estimates 4 1992 – 2001 ND Dunn, Morton, Stark

Other references

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Contributors

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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	05/24/2011
Approved by	
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

1. **Number and extent of rills:** Rills should not be present.

2. **Presence of water flow patterns:** None.

3. **Number and height of erosional pedestals or terracettes:** Non-existent.

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

5. **Number of gullies and erosion associated with gullies:** Active gullies should not be present.

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

7. **Amount of litter movement (describe size and distance expected to travel):** Little to no plant litter movement. Plant litter remains in place and is not moved by erosional forces.

8. **Soil surface (top few mm) resistance to erosion (stability values are averages - most sites will show a range of**

values): Plant cover and litter is at 95% or greater of soil surface and maintains soil surface integrity. Stability class anticipated to be 5 or greater.

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** Use soil series description for depth, color, and structure of 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:** High grass canopy and basal cover and small gaps between plants should reduce raindrop impact and slow overland flow, providing increased time for infiltration to occur. Healthy, deep rooted native grasses and grass likes enhance infiltration and reduce runoff.

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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):** No compaction layer should be evident.

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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, rhizomatous warm-season grasses = grass-likes >

    Sub-dominant:

    Other: mid, cool-season rhizomatous grasses > annual grasses > forbs > short, cool-season grasses

    Additional: Due to differing root structure and distribution, Kentucky bluegrass and smooth bromegrass do not fit into reference plant community F/S groups.

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

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14. **Average percent litter cover (%) and depth (in):** Litter cover is in contact with soil surface.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Representative value = 4500 lbs/ac with a range of 4000 lbs/ac to 5000 lbs/ac (air dry weight) depending upon growing conditions.

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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, quackgrass, creeping foxtail, reed canarygrass, smooth bromegrass, Kentucky bluegrass

17. **Perennial plant reproductive capability:** All species are capable of reproducing.