USDA Natural Resources Conservation Service

Ecological site R065XY025NE
Saline Subirrigated

Accessed: 05/19/2024

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.

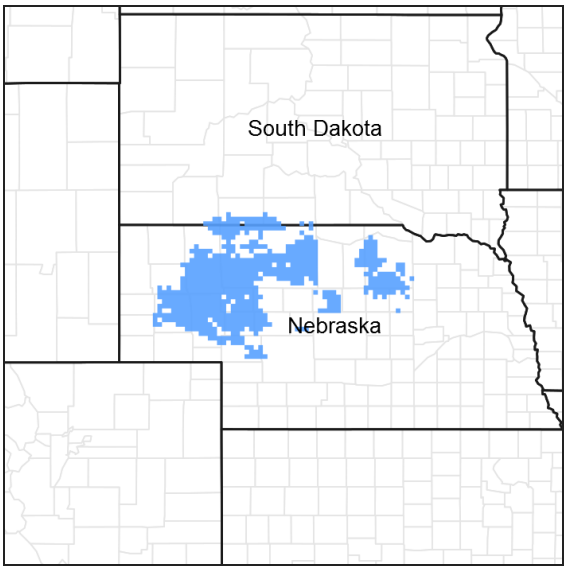


Figure 1. Mapped extent

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.

MLRA notes

Major Land Resource Area (MLRA): 065X–Nebraska Sand Hills

This PROVISIONAL ECOLOGICAL SITE has been developed to meet the standards established in the National Ecological Site Handbook. The information associated with this ecological site does not meet the Approved Ecological Site Description Standard, but it has been through a Quality Control and Quality Assurance processes to assure consistency and completeness. Further investigations, reviews and correlations are necessary before it becomes an Approved Ecological Site Description.

Classification relationships

Major Land Resource Area (MLRA): Major Land Resource Area (MLRA) and Land Resource Unit (LRU) (USDA-Natural Resources Conservation Service, 2006)

Revision Notes:
A PROVISIONAL ECOLOGICAL SITE is a conceptual grouping of soil map unit components within a Major Land Resource Area (MLRA) based on the similarities in response to management. Although there may be wide variability in the productivity of the soils grouped into a Provisional Site, the soil vegetation interactions as expressed in the State and Transition Model are similar and the management actions required to achieve objectives, whether maintaining the existing ecological state or managing for an alternative state, are similar. Provisional Sites are likely to be refined into more precise group during the process of meeting the APPROVED ECOLOGICAL SITE

DESCRIPTION criteria.

Ecological site concept

The saline subirrigated site is found on interdunes and stream valleys. The slope is less than 3%. The water table is seasonally high under these sites. The depth to rusty spots and iron stains in the soil or saturation is 18 to 36 inches. Surface salts are visible on this site

Associated sites

R065XY011NE	**Sandy Low P.Z .14-17** Sandy 14-17" P.Z.
R065XY012NE	**Sands Low P.Z.14-17** Sands 14-17" P.Z.
R065XY032NE	**Sandy Medium P.Z. 17-22** Sandy 17-22" P.Z.
R065XY054NE	**Sandy High P.Z. 22-25** Sandy 22-25" P.Z.

Similar sites

R065XY024NE	**Subirrigated** Subirrigated (big bluestem, Indiangrass dominant; less prairie cordgrass; more productive)

Table 1. Dominant plant species

Tree	Not specified
Shrub	Not specified
Herbaceous	Not specified

Physiographic features

This area consists of Quaternary sand dunes. The sands are derived from the underlying Tertiary Ogallala and Arikaree Groups. These units formed when rivers deposited sediments that originated as erosional detritus following the uplift of the Rocky Mountains to the west. The Ogallala aquifer underlies this are. It is the most extensive and heavily used aquifer on the high plains between the Rocky Mountains and the Mississippi River. The major recharge area for this aquifer is the Sand Hills.

Table 2. Representative physiographic features

Landforms	(1) Alluvial flat
Flooding duration	Brief (2 to 7 days)
Flooding frequency	Occasional
Elevation	792–1,189 m
Slope	2%
Water table depth	46–91 cm
Aspect	Aspect is not a significant factor

Climatic features

The mean average annual precipitation varies from 14 - 22 inches, but has varied from 12 to 27 inches in the driest to wettest seasons. Approximately 65 percent of the annual precipitation occurs during the growing season of mid-April to late September. The average annual snowfall varies from about 30 inches to about 55 inches. The wind velocity is high throughout the year, averaging 10 to 12 miles per hour. Maximum wind velocities generally occur in

the spring.

The average length of the growing season is 138 days, but the growing season has varied from 114 to 168 days. The average date of first frost in the fall is September 25, and the last frost in the spring is about May 10. July is the hottest month and January is the coldest. It is not uncommon for the temperature to reach 100 ºF during the summer. Summer humidity is low and evaporation is high. The winters are characterized with frequent northerly winds, producing severe cold with temperatures dropping to as low as -30 ºF.

Growth of native cool season plants begins mid to late March and continues to late June. Native warm season plants begin growth in early May and continue to late August. Green up of cool season plants may occur in September and October when adequate soil moisture is present.

Table 3. Representative climatic features

Frost-free period (average)	127 days
Freeze-free period (average)	148 days
Precipitation total (average)	610 mm

Climate stations used

- (1) BARTLETT 1S [USC00250525], Bartlett, NE
- (2) ERICSON 8 WNW [USC00252770], Burwell, NE
- (3) KINGSLEY DAM [USC00254455], Keystone, NE
- (4) MERRIMAN [USC00255470], Merriman, NE
- (5) ROSE 10 WNW [USC00257318], Long Pine, NE
- (6) NORTH PLATTE RGNL AP [USW00024023], Maxwell, NE
- (7) BREWSTER [USC00251130], Brewster, NE
- (8) CHAMBERS [USC00251590], Chambers, NE
- (9) HYANNIS [USC00254100], Hyannis, NE
- (10) VALENTINE NWR [USC00258755], Valentine, NE
- (11) ARTHUR [USC00250365], Arthur, NE
- (12) CRESCENT LAKE NWR [USC00252000], Oshkosh, NE
- (13) ELLSWORTH 15 NNE [USC00252647], Ellsworth, NE
- (14) NEWPORT [USC00255925], Newport, NE
- (15) PURDUM [USC00256970], Purdum, NE
- (16) ATKINSON 3SW [USC00250420], Atkinson, NE
- (17) ELSMERE 9 ENE [USC00252680], Johnstown, NE
- (18) GREELEY [USC00253425], Greeley, NE
- (19) MULLEN [USC00255700], Mullen, NE
- (20) MULLEN 21 NW [USC00255702], Whitman, NE

Influencing water features

This ecological site has a combination of physical and hydrological features that: 1) provide season-long ground water within 3.5 feet of the surface, 2) allows relatively free movement of water and air in the upper part of the soil, and 3) are rarely, or occasionally flooded.

Soil features

The features common to all soils in this site are the fine sand and loamy fine sand textured surface soils and slopes of 0 to 2 percent. The soils in this site are somewhat poorly drained and formed in eolian sand and/or sandy alluvium. The surface layer is 0.5 to 10 inches thick. The texture of the subsurface ranges from loamy fine sand to sand. Finer textured layers may occur in the lower parts of some profiles. Runoff as evidenced by patterns of rill, gully or other water flow is negligible due to the low slope gradient and high intake rate of these soils. Cryptobiotic crusts are present, but their function is not well understood. Some pedestalling of plants occurs, but it is not very evident on casual observation and occurs on less than 5% of the plants.

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

Major soil series correlated to this ecological site include: Wildhorse.

Other soil series that have been correlated to this site include: Janise, Selia and Wann Variant.

Table 4. Representative soil features

Surface texture	(1) Fine sand (2) Loamy fine sand (3) Sand
Family particle size	(1) Sandy
Drainage class	Somewhat poorly drained to moderately well drained
Permeability class	Moderately slow to rapid
Soil depth	203 cm
Available water capacity (0-101.6cm)	7.62–15.24 cm
Calcium carbonate equivalent (0-101.6cm)	15%
Electrical conductivity (0-101.6cm)	20 mmhos/cm
Sodium adsorption ratio (0-101.6cm)	6–105
Soil reaction (1:1 water) (0-101.6cm)	8.5–9.9
Subsurface fragment volume <=3" (Depth not specified)	5%

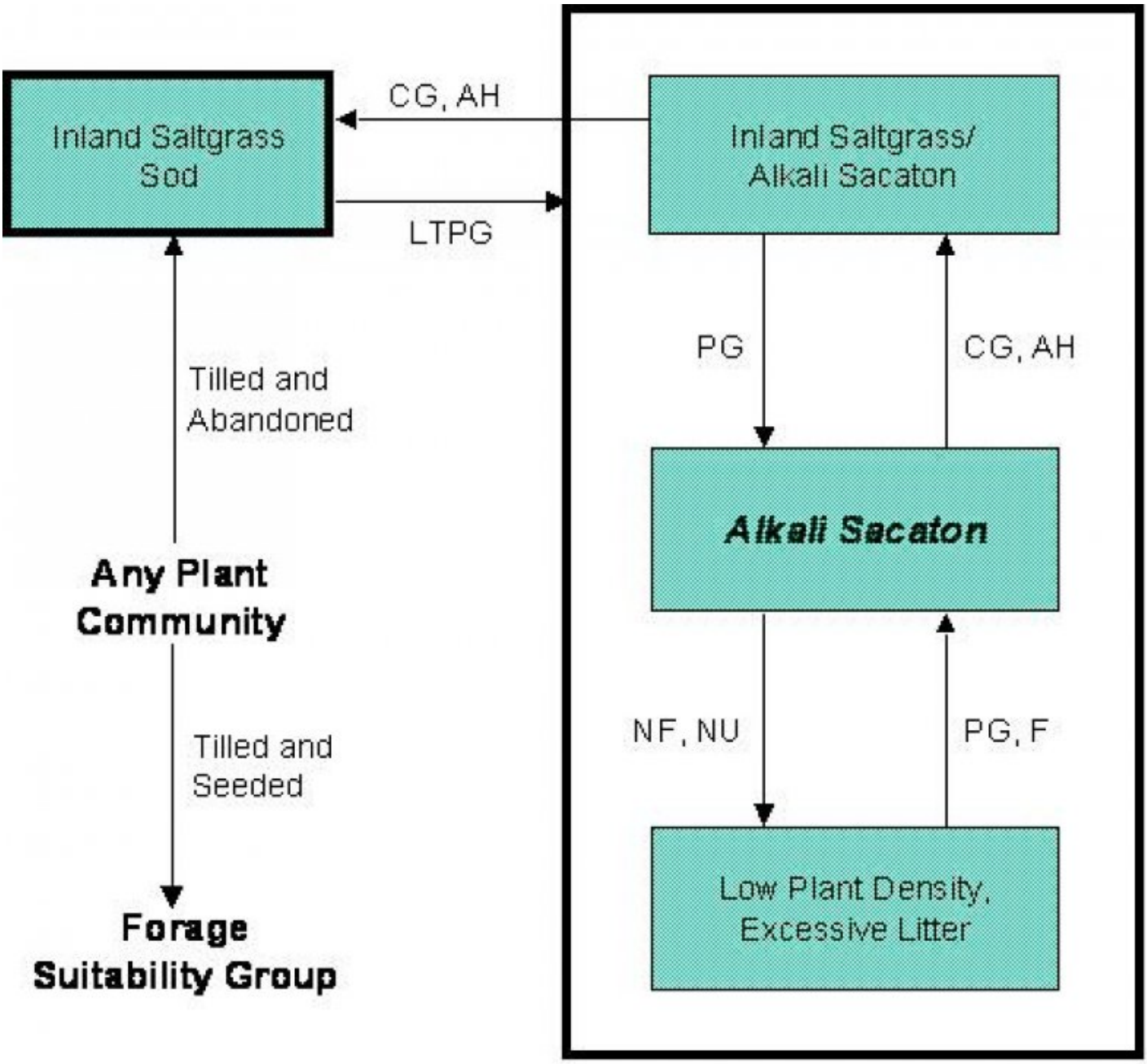
Ecological dynamics

As this site deteriorates, species such as inland saltgrass and foxtail barley increase. Grasses such as alkali sacaton, alkali cordgrass, western wheatgrass and slender wheatgrass will decrease in frequency and production.

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

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

State and transition model



AH - annual haying; **CG** - continuous grazing w/o adequate recovery periods; **F-** Fire; **LTPG -** long term prescribed grazing (> 40 years); **NF-** no fire; **NU** - non-use; **PG** - prescribed grazing w/ adequate recovery periods

State 1
Alkali Sacaton Plant Community

Community 1.1
Alkali Sacaton Plant Community

Interpretations are primarily based on the Alkali Sacaton Plant Community (this is also considered climax). This site developed with grazing by large herbivores and is well suited for grazing by domestic livestock. This plant community can be found on areas that are properly managed with grazing and/or prescribed burning, and sometimes on areas receiving occasional short periods of rest. This plant community consists mainly of mid warm and cool season grasses. The principle dominant plants are alkali sacaton, inland saltgrass and western

wheatgrass. Grasses of secondary importance are alkali cordgrass, slender wheatgrass, little bluestem, and foxtail barley. Blue grasses, sedges, and spike rushes occur as an understory. Forbs such as heath aster, milkvetch, and prairie gentian are significant. This plant community is about 80% grasses, 15% grass-likes and 5% forbs by air-dry weight. This plant community is adapted to high salt content inherent of the soils. White crusts can occupy many areas of the soil surface due to seasonal fluctuations in the water table. This is a healthy and sustainable plant community in terms of soil stability, watershed function, and biological integrity. 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: NE6546 Growth curve name: Nebraska/South Dakota Sandhills, Saline Subirrigated Growth curve description: Warm-season dominant, cool-season subdominant, short & mid grasses. Transitional pathways and/or community pathways leading to other plant communities are as follows: Continuous grazing without adequate recovery periods following grazing events or annual haying will convert this plant community to the Inland Saltgrass/Alkali Sacaton Plant Community. Non-use and no fire will convert this plant community to the Low Plant Density, Excessive Litter Plant Community.

Table 5. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	2354	3172	3760
Forb	–	78	163
Total	**2354**	**3250**	**3923**

Figure 7. Plant community growth curve (percent production by month). NE6546, NE/SD Sandhills, Saline Subirrigated. Warm-season dominant, cool-season subdominant, short & mid grasses.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	10	20	30	15	10	5	5	0	0

State 2
Inland Saltgrass, Alkali Sacaton Plant Community

Community 2.1
Inland Saltgrass, Alkali Sacaton Plant Community

This plant community developed with relatively short term continuous grazing without periodic rest, or with annual haying. Plants resistant to removal are maintaining vigor. The potential vegetation is about 80% grasses, 15% grass-like plants, and 5% forbs. Inland saltgrass and alkali sacaton have increased in abundance. Most of the palatable plants such as western wheatgrass, slender wheatgrass, and alkali cordgrass are present but occur in lesser amounts. The soil is stable; however, plant diversity has been reduced. The water cycle, nutrient cycle and energy flow are slightly reduced but continue to adequately function. This community indicates key management concerns. Proper grazing management techniques at this point will stabilize the community at or near the Alkali Sacaton Plant Community. Increased disturbance can easily move the community to a more degraded scenario. 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: NE6547 Growth curve name: Nebraska/South Dakota Sandhills, Saline Subirrigated, Hayed & Grazed Growth curve description: Warm-season dominant, cool-season subdominant, short & mid grasses. Transitional pathways and/or community pathways leading to other plant communities are as follows: Continuous grazing or annual haying with no recovery opportunity shifts this plant community to the Inland Saltgrass Sod Plant Community. Prescribed grazing with adequate recovery opportunity will restore this community back to the Alkali Sacaton Plant Community.

Table 6. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1457	1858	2253
Forb	–	48	101
Total	**1457**	**1906**	**2354**

Figure 9. Plant community growth curve (percent production by month). NE6547, NE/SD Sandhills, Saline Subirrigated, Hayed & Grazed. Warm-season dominant, cool-season subdominant, short & mid grasses.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	3	15	35	20	20	5	2	0	0

State 3
Low Plant Density, Excessive Litter Plant Community

Community 3.1
Low Plant Density, Excessive Litter Plant Community

This plant community occurs after an extended period of non-use by domestic livestock. Fire is uncommon or has been eliminated. Litter amounts have increased causing plant density to decrease. Typically, bunchgrasses (alkali sacaton) have developed dead centers and rhizomatous grasses (inland saltgrass) form small colonies because of a lack of tiller stimulation. Salt crusts and/or annual plant species such as kochia and Russian thistle commonly fill bare ground areas. Plant frequency and production have decreased. The potential vegetation is about 75% grasses, 20% grass-like plants, and 5% forbs. Soil erosion is not a concern due to increased litter levels and landscape position. 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: NE6536 Growth curve name: Nebraska/South Dakota Sandhills, Native Grasslands, Non-Use Growth curve description: Warm-season dominant, cool-season subdominant, excessive litter. Transitional pathways and/or community pathways leading to other plant communities are as follows: Prescribed grazing or fire with adequate recovery opportunity or prescribed burning will shift this plant community towards the Alkali Sacaton Plant Community.

Table 7. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	1569	2077	2578
Forb	–	54	112
Total	**1569**	**2131**	**2690**

Figure 11. Plant community growth curve (percent production by month). NE6536, NE/SD Sandhills, Native Grass, Non-Use. Warm-season dominant, cool-season subdominant, excessive litter.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	5	15	20	20	20	10	7	3	0	0

State 4
Inland Saltgrass Sod Plant Community

Community 4.1
Inland Saltgrass Sod Plant Community

This plant community developed with further continuous grazing or areas that have been tilled and abandoned. Inland saltgrass dominates this plant community and has developed into a sod bound condition. Alkali sacaton has been greatly reduced. Slender and western wheatgrass are gone and have been replaced by increased amounts of

foxtail barley. Plains pricklypear has increased. Forbs such as kochia and Russian thistle have also increased. The potential vegetation is about 80% grasses, 15% grass-like plants, and 5% forbs. The plant community lacks diversity. Evaporation has increased resulting in a higher salt content on the soil surface. Organic matter/carbon reserves are severely diminished. It will take a long time to bring this plant community back to the Alkali Sacaton Plant Community with management alone. Renovation of this plant community would be very costly due to high salt content and water table. 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: NE6548 Growth curve name: Nebraska/South Dakota Sandhills, Saline Subirrigated, Sod Bound Growth curve description: Warm season dominant, short grasses. Transitional pathways and/or community pathways leading to other plant communities are as follows: Long term prescribed grazing with adequate recovery periods between grazing events will move this plant community to the Inland Saltgrass/Alkali Sacaton Plant Community and eventually to the Alkali Sacaton Plant Community. This process will require a long period of time, and may be difficult to attain depending on the degree of degradation.

Table 8. Annual production by plant type

Plant Type	Low (Kg/Hectare)	Representative Value (Kg/Hectare)	High (Kg/Hectare)
Grass/Grasslike	897	1093	1295
Forb	–	28	62
Total	**897**	**1121**	**1357**

Figure 13. Plant community growth curve (percent production by month). NE6548, NE/SD Sandhills, Saline Subirrigated, Sod Bound. Warm season dominant, short grasses.

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	10	40	25	15	5	0	0	0

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	**Alkali Sacaton**			628–1255	
	alkali sacaton	SPAI	*Sporobolus airoides*	628–1255	–
2	**Inland Saltgrass**			314–628	
	saltgrass	DISP	*Distichlis spicata*	314–628	–
3	**Western Wheatgrass**			314–628	
	western wheatgrass	PASM	*Pascopyrum smithii*	22–628	–
4	**Warm-Season Grasses**			157–785	
	switchgrass	PAVI2	*Panicum virgatum*	0–471	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–314	–
	alkali cordgrass	SPGR	*Spartina gracilis*	0–314	–
	little bluestem	SCSC	*Schizachyrium scoparium*	0–157	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–157	–
	scratchgrass	MUAS	*Muhlenbergia asperifolia*	0–157	–
5	**Other Native Grasses**			314–628	
	plains bluegrass	POAR3	*Poa arida*	157–314	–
	slender wheatgrass	ELTRT	*Elymus trachycaulus ssp. trachycaulus*	157–314	–
	foxtail barley	HOJU	*Hordeum jubatum*	0–157	–
	Grass, perennial	2GP	*Grass, perennial*	0–157	–
6	**Grass-Likes**			157–471	
	sedge	CAREX	*Carex*	0–314	–
	spikerush	ELEOC	*Eleocharis*	0–157	–
	rush	JUNCU	*Juncus*	0–157	–
	bulrush	SCIRP	*Scirpus*	0–157	–
Forb					
7	**Forbs**			0–157	
	Forb, perennial	2FP	*Forb, perennial*	0–63	–
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–31	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0–31	–
	milkvetch	ASTRA	*Astragalus*	0–31	–
	scouringrush horsetail	EQHY	*Equisetum hyemale*	0–31	–
	showy prairie gentian	EUEXR	*Eustoma exaltatum ssp. russellianum*	0–31	–
	Pursh seepweed	SUCA2	*Suaeda calceoliformis*	0–31	–
	white heath aster	SYER	*Symphyotrichum ericoides*	0–31	–
	common dandelion	TAOF	*Taraxacum officinale*	0–31	–

Table 10. Community 2.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Alkali Sacaton**			381–762	
	alkali sacaton	SPAI	*Sporobolus airoides*	381–762	–
2	**Inland Saltgrass**			572–762	
	saltgrass	DISP	*Distichlis spicata*	572–762	–
3	**Western Wheatgrass**			0–95	
	western wheatgrass	PASM	*Pascopyrum smithii*	0–95	–
4	**Warm-Season Grasses**			38–191	
	scratchgrass	MUAS	*Muhlenbergia asperifolia*	0–95	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–95	–
	alkali cordgrass	SPGR	*Spartina gracilis*	0–95	–
	switchgrass	PAVI2	*Panicum virgatum*	0–38	–
	little bluestem	SCSC	*Schizachyrium scoparium*	0–38	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–38	–
5	**Other Native Grasses**			95–286	
	foxtail barley	HOJU	*Hordeum jubatum*	95–191	–
	plains bluegrass	POAR3	*Poa arida*	0–95	–
	slender wheatgrass	ELTRT	*Elymus trachycaulus ssp. trachycaulus*	0–95	–
	Grass, perennial	2GP	*Grass, perennial*	0–38	–
6	**Non-Native Grasses**			0–95	
	Kentucky bluegrass	POPR	*Poa pratensis*	0–95	–
7	**Grass-Likes**			95–286	
	sedge	CAREX	*Carex*	0–191	–
	spikerush	ELEOC	*Eleocharis*	0–95	–
	rush	JUNCU	*Juncus*	0–95	–
	bulrush	SCIRP	*Scirpus*	0–95	–
Forb					
8	**Forbs**			0–95	
	Forb, perennial	2FP	*Forb, perennial*	0–38	–
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–38	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0–38	–
	milkvetch	ASTRA	*Astragalus*	0–19	–
	scouringrush horsetail	EQHY	*Equisetum hyemale*	0–19	–
	showy prairie gentian	EUEXR	*Eustoma exaltatum ssp. russellianum*	0–19	–
	Pursh seepweed	SUCA2	*Suaeda calceoliformis*	0–19	–
	white heath aster	SYER	*Symphyotrichum ericoides*	0–19	–
	common dandelion	TAOF	*Taraxacum officinale*	0–19	–

Table 11. Community 3.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Alkali Sacaton**			319–639	
	alkali sacaton	SPAI	*Sporobolus airoides*	319–639	–
2	**Inland Saltgrass**			319–639	
	saltgrass	DISP	*Distichlis spicata*	319–639	–
3	**Western Wheatgrass**			213–426	
	western wheatgrass	PASM	*Pascopyrum smithii*	213–426	–
4	**Warm-Season Grasses**			213–532	
	switchgrass	PAVI2	*Panicum virgatum*	106–319	–
	little bluestem	SCSC	*Schizachyrium scoparium*	106–213	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–106	–
	alkali cordgrass	SPGR	*Spartina gracilis*	0–106	–
	scratchgrass	MUAS	*Muhlenbergia asperifolia*	0–106	–
	blue grama	BOGR2	*Bouteloua gracilis*	0–43	–
5	**Other Native Grasses**			319–532	
	slender wheatgrass	ELTRT	*Elymus trachycaulus ssp. trachycaulus*	213–319	–
	plains bluegrass	POAR3	*Poa arida*	106–213	–
	foxtail barley	HOJU	*Hordeum jubatum*	0–106	–
	Grass, perennial	2GP	*Grass, perennial*	0–43	–
6	**Non-Native Grasses**			0–43	
	Kentucky bluegrass	POPR	*Poa pratensis*	0–43	–
7	**Grass-Likes**			213–426	
	sedge	CAREX	*Carex*	106–319	–
	spikerush	ELEOC	*Eleocharis*	0–213	–
	rush	JUNCU	*Juncus*	0–213	–
	bulrush	SCIRP	*Scirpus*	0–213	–
Forb					
8	**Forbs**			0–106	
	Forb, perennial	2FP	*Forb, perennial*	0–43	–
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–21	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0–21	–
	milkvetch	ASTRA	*Astragalus*	0–21	–
	scouringrush horsetail	EQHY	*Equisetum hyemale*	0–21	–
	showy prairie gentian	EUEXR	*Eustoma exaltatum ssp. russellianum*	0–21	–
	Pursh seepweed	SUCA2	*Suaeda calceoliformis*	0–21	–
	white heath aster	SYER	*Symphyotrichum ericoides*	0–21	–
	common dandelion	TAOF	*Taraxacum officinale*	0–21	–

Table 12. Community 4.1 plant community composition

Group	Common Name	Symbol	Scientific Name	Annual Production (Kg/Hectare)	Foliar Cover (%)
Grass/Grasslike					
1	**Alkali Sacaton**			0–112	
	alkali sacaton	SPAI	*Sporobolus airoides*	0–112	–
2	**Inland Saltgrass**			673–1009	
	saltgrass	DISP	*Distichlis spicata*	673–1009	–
3	**Western Wheatgrass**			–	
	western wheatgrass	PASM	*Pascopyrum smithii*	–	–
4	**Warm-Season Grasses**			0–56	
	blue grama	BOGR2	*Bouteloua gracilis*	0–22	–
	scratchgrass	MUAS	*Muhlenbergia asperifolia*	0–22	–
	sand dropseed	SPCR	*Sporobolus cryptandrus*	0–22	–
5	**Other Native Grasses**			56–168	
	foxtail barley	HOJU	*Hordeum jubatum*	56–168	–
	plains bluegrass	POAR3	*Poa arida*	0–22	–
	Grass, perennial	2GP	*Grass, perennial*	0–22	–
6	**Non-Native Grasses**			0–22	
	Kentucky bluegrass	POPR	*Poa pratensis*	0–22	–
7	**Grass-Likes**			56–168	
	sedge	CAREX	*Carex*	0–56	–
	spikerush	ELEOC	*Eleocharis*	0–56	–
	rush	JUNCU	*Juncus*	0–56	–
	bulrush	SCIRP	*Scirpus*	0–56	–
Forb					
8	**Forbs**			0–56	
	Forb, perennial	2FP	*Forb, perennial*	0–22	–
	Cuman ragweed	AMPS	*Ambrosia psilostachya*	0–22	–
	white sagebrush	ARLU	*Artemisia ludoviciana*	0–22	–
	milkvetch	ASTRA	*Astragalus*	0–11	–
	scouringrush horsetail	EQHY	*Equisetum hyemale*	0–11	–
	showy prairie gentian	EUEXR	*Eustoma exaltatum ssp. russellianum*	0–11	–
	Pursh seepweed	SUCA2	*Suaeda calceoliformis*	0–11	–
	white heath aster	SYER	*Symphyotrichum ericoides*	0–11	–
	common dandelion	TAOF	*Taraxacum officinale*	0–11	–

Animal community

Grazing by domestic livestock is one of the major income-producing industries in the area. Rangeland in this area may provide year-long forage. During the dormant period, the forage for livestock will likely be lacking protein to meet livestock requirements, and added protein will allow ruminants to better utilize the energy stored in grazed plant materials. A forage quality test (either directly or through fecal sampling) should be used to determine the level of supplementation needed.

Hydrological functions

Forage production on these sites is limited by saline conditions. Proper management is critical to the continued productivity of these sites. Grass reestablishment on overgrazed or tilled sites is often slow and difficult because increased evaporation (from exposed soil surfaces) causes increased salt concentration at the soil surface. The Wildhorse soils on this site are in Hydrologic Soil Group A, but may include localized areas of other soils in Groups B and C. Infiltration rates for Wildhorse soils are extremely high, but high water tables provide subirrigation of salt tolerant vegetation. Surrounding upland areas tend to have permeable soils and surface inflow peaks on these sites are often muted. These sites do not flood or are flooded only occasionally for brief periods.

Rills, gullies and water flow patterns are not present. Pedestals are only slightly present. Litter falls in place, and signs of movement are not common. Chemical and physical crusts are rare, and not significant for hydrologic considerations. Cryptogamic crusts may be present but are not significant for hydrologic considerations. Overall this site has the appearance of being stable and productive except areas of white crust (salts) may be present.

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.

Other information

Revision Notes: “This PROVISIONAL ecological site concept has been QC’d and QA’d to ensure that the site meets the NESH standards for a provisional ecological site that provides basic compiled information in one location. This site should not be considered an Approved ESD until further data entry and editing is completed.

Inventory data references

Information presented here has been derived from NRCS clipping data and other inventory data. Field observations from range trained personnel was also used. Those involved in developing this site include: Dave Cook, Rangeland Management Specialist, NRCS; Dwight Hale, Engineer, NRCS; Sheila Luoma, Resource Conservationist, NRCS; Marla Shelbourn, Rangeland Management Specialist, NRCS; Dave Steffen, Rangeland Management Specialist, NRCS.

Two SCS-RANGE-417 records are available from Garden and Morrill counties in Nebraska. The Sample period was from 1969 - 1980.

Other references

Other references used include: USDA NRCS Water & Climate Center, USDA NRCS National Range and Pature Handbook, USDA NRCS Soil Surveys from various counties, Atlas of the Sandhills.

Site Development and Testing Plan:
Future work is needed to validate the information in this Provisional Ecological Site Description. Additional data collection and evaluation may also be needed to develop this ESD to the Approved, then Correlated level. This could include field activities to collect low, medium and high intensity sampling, soil correlations, and analysis of that data. Field reviews of the project plan should be done by soil scientists and vegetation specialists. A final field review, peer review, quality control, and quality assurance reviews of the ESD will be needed to produce the final document.

The State and Transitional Model and corresponding pathways and associated vegetative communities will need to be reviewed and upgraded to adhere to the new guidelines.
Annual reviews of the Project Plan are to be conducted by the Ecological Site Technical Team. The project plan is: ES- R065XY025NE - MLRA 65 -

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.

Author(s)/participant(s)	Stan Boltz
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Date	10/31/2001
Approved by	Stan Boltz
Approval date	
Composition (Indicators 10 and 12) based on	Annual Production

Indicators

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

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

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

4. **Bare ground from Ecological Site Description or other studies (rock, litter, lichen, moss, plant canopy are not bare ground):** Bare ground is typically less than 5 percent.

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

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

7. **Amount of litter movement (describe size and distance expected to travel):** Litter falls in place.

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

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9. **Soil surface structure and SOM content (include type of structure and A-horizon color and thickness):** A-horizon should be 1 to 7 inches thick with very dark grayish brown colors when moist. Structure typically is medium granular in the upper A-horizon.

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10. **Effect of community phase composition (relative proportion of different functional groups) and spatial distribution on infiltration and runoff:** Deep rooted species (mid and tall rhizomatous cool- and warm-season grasses and grass-likes) with fine and coarse roots positively influences infiltration.

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11. **Presence and thickness of compaction layer (usually none; describe soil profile features which may be mistaken for compaction on this site):** None present.

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

    Dominant: Mid, warm-season bunchgrasses >>

    Sub-dominant: Mid, cool-season grasses > tall, warm-season grasses = short, warm-season grasses >

    Other: Grass-like species > mid, cool-season bunchgrasses > forbs

    Additional:

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

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14. **Average percent litter cover (%) and depth (in):** Litter cover is typically 50 to 80 percent, and depth of litter ranges from 0.25 to 0.5 inches.

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15. **Expected annual annual-production (this is TOTAL above-ground annual-production, not just forage annual-production):** Total annual production ranges from 2,100 to 3,500 pounds/acre, with the reference values being 2,800 pounds/acre (air-dry basis).

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16. **Potential invasive (including noxious) species (native and non-native). List species which BOTH characterize degraded states and have the potential to become a dominant or co-dominant species on the ecological site if their future establishment and growth is not actively controlled by management interventions. Species that become dominant for only one to several years (e.g., short-term response to drought or wildfire) are not invasive plants. Note that unlike other indicators, we are describing what is NOT expected in the reference state for the ecological site:** State and local noxious weeds; also Kentucky bluegrass. Russian olive can dominate this site in

localized areas. Most invasive species will occupy the perimeter of this site.

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17. **Perennial plant reproductive capability:** Perennial grasses and grass-likes should have vigorous rhizomes or tillers.
