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CHAPTER 2 GEOGRAPHIC AREA DIRECTION

INTRODUCTION

Geographic areas include management direction that is too specific to apply across the entire Dakota Prairie Grasslands. For example, desired vegetation conditions need to be tailored to the vegetation types, climate, and productivity of a specific area. The geographic area direction is applied to the area in addition to the grassland-wide and forest-wide direction in Chapter 1 and the management area direction in Chapter 3.

This chapter contains a brief section on each geographic area, which includes:

- Description of the physical setting and unique features.
- Direction developed for the desired conditions and management emphases.

The setting section describes the size, location, climate, major drainages, and topographic and vegetation features of the area. The setting section is followed by highlights of unique or unusual features offered by the area.

Maps at the end of this chapter display direction for these geographic areas, including:

- Recreation Opportunity Spectrum (ROS) settings.
- Scenic Integrity Objectives (SIOs).
- Travel management.

Geographic areas are indicated on the enclosed Alternative 3 map. The Dakota Prairie Grasslands are comprised of the following geographic areas:

Grand and Cedar River National Grasslands

The Grand River National Grassland encompasses about 155,000 acres of National Forest System lands in northwestern South Dakota, while the Cedar River National Grassland encompasses about 6,700 acres of National Forest System land in southwestern North Dakota. The Grand River Ranger District located in Lemmon, South Dakota administers these grasslands. Both grasslands are contained in one geographic area: the Grand/Cedar Geographic Area.

Little Missouri National Grassland

The Little Missouri National Grassland encompasses about 1.0 million acres in the western region of North Dakota. It is divided into two ranger districts, the McKenzie District in the north and the Medora District in the south. Two geographic areas are located on the Little Missouri National Grassland. They are the Badlands Geographic Area and the Rolling Prairie Geographic Area.

Sheyenne National Grassland

The Sheyenne National Grassland encompasses 70,300 acres in southeastern North Dakota. The Sheyenne River forms part of the northern boundary of this tallgrass prairie unit. The district office is located in Lisbon, North Dakota. The geographic area for this unit is called the Sheyenne Geographic Area.

GRAND/CEDAR GEOGRAPHIC AREA

Grand River and Cedar River National Grasslands

Setting

The Grand/Cedar Geographic Area includes approximately 160,931 acres of National Forest System lands and includes both Grand River and Cedar River National Grasslands. The Grand River Ranger District in Lemmon, South Dakota administers these national grasslands. Part of this geographic area extends across the Standing Rock and Cheyenne River Indian Reservations in North and South Dakota.

The climate for the Grand/Cedar Geographic Area is semi-arid Continental. Summers are warm and winters very cold. Precipitation is heaviest in late spring and early summer. Average yearly precipitation is approximately 15-17 inches. The average winter temperature is about 19 degrees Fahrenheit; summer's average maximum temperature is 83 degrees Fahrenheit. Blizzards generally occur several times each winter, and hail often accompanies thunderstorms in the summer.

The topography of this area is characterized by fairly level stretches to rolling hills with isolated occurrences of badlands and rock outcrops. Butte escarpments provide unique locations of biologic, geologic, cultural, and archaeological resources. Elevation ranges between 2,325 and 2,915 feet above sea level.

The Cedar River portion of the geographic area is primarily drained by the Cedar River. The Grand River portion is drained by the Grand River and its main tributary is Black Horse Butte Creek. Other tributaries include Third Creek, Butte Creek, Horse Butte Creek, Darling Creek, Tooth Creek, Deer Creek, Slick Creek, and Timber Draw Creek.

The dominant vegetation mix includes western wheatgrass, green needlegrass, blue grama, needle-and-thread, threadleaf sedge, green ash, American elm, boxelder, silver sagebrush, buffaloberry, serviceberry, snowberry, chokecherry, and wild plum. Crested wheatgrass, an introduced species, is also present. Much of it was planted as a result of drought years during the 1930s.

Desired Conditions

The desired condition is to maintain or perpetuate a diversity of healthy and vigorous mixed grass and short grass communities. The full spectrum of both cool season and warm season species would be represented. This includes western wheatgrass, green needlegrass, needle-and-thread grass, little bluestem, threadleaf sedge, prairie sandreed, sand bluestem, sideoats grama, and blue grama.

Hardwood draws would be managed to maintain or perpetuate a multi-layer and multi-age class of herbaceous plants, shrubs and trees. Species included in the draws are green ash, American elm, chokecherry and snowberry. Streams and riparian areas would maintain soil moisture to perpetuate riparian plant communities with strong root masses. Plant species include prairie cordgrass, bulrushes (*Scirpus spp.*), spikerushes (*Eleocharis spp.*), inland saltgrass, cottonwoods, and willows.

The desired landscape condition is open and scenic prairie. The streams and riparian areas should be properly functioning or in an upward trend. Long-term soil productivity and properly functioning water cycles are maintained. Properly functioning water cycles are characterized by high infiltration rates, low soil compaction, and minimal overland flows. Energy flow and nutrient cycling are functioning properly to maintain diverse, native plant, and animal communities.

Existing recreation developments would be maintained, and new recreational opportunities would be developed as the demand for recreation increases. Recreation experiences would focus on open and undeveloped landscapes.

Prescribed fire would be used to reinitiate the role of natural fire in the prairie ecosystem.

Infrastructure would be maintained, as needed, for various uses. Opportunities to reduce or eliminate unnecessary improvements would be pursued.

Unique Attributes

- High native vegetative integrity.
- Bird watching opportunities.
- Big game and upland bird viewing and hunting opportunities.
- Significant fossil resources as found in the Hell Creek Geologic Formation.
- Open and scenic plains and vast prairie landscapes.
- Unique plant communities associated with Grand River Sand Dunes, the Grand River "bog" riparian area, aspen community, and Grand River butte landforms (i.e., White Butte).

Management Area Prescription Allocation

Number	Prescription	Acres
2.1	Special Interest Areas	240
3.64	Special Plant and Wildlife Habitat	1,020
3.65	Rangelands with Diverse Natural-appearing Landscape	37,690
4.22	Scenic Areas, Vistas or Travel Corridors	2,960
6.1	Rangeland with Broad Resource Emphasis	119,010
3.65 NR	No new road construction	6,530

Geographic Area - Objectives

Vegetation

This section deals with vegetation and its relationship to Management Indicator Species (MIS) habitat needs. The focus in the Grand River and Cedar River Geographic Area is on grass and grass-like life forms.

The resulting vegetation would have a mix of seral conditions believed to be within the natural range of variation. Disturbance processes would contribute to a "shifting mosaic" of vegetation composition and structure over space and time.

Composition objectives are based on a mix of grass and grass-like species across a majority of the Geographic Area. This mix provides suitable opportunity for meeting structure objectives and providing for floristic diversity.

Composition

1. Desired seral stages (plant species composition) and vegetation structure across the geographic area are as follows:

Desired Seral Stages - Objective

Early	Mid	Late
10 to 15%	65 to 75%	15 to 20%

The potential mix of seral conditions within this geographic area (GA) is very diverse due to the influences of precipitation, soil types, and disturbances such as grazing and fire. Descriptions of species dominance/co-dominance associated with early, mid and late seral conditions follow below. Seral stages are aggregated into sites having similar soil texture and/or topographic features; together they provide an overview of the entire GA. Although dune and badland soils/topography are present within this GA, they are not of significant size and would not be discussed further. The following descriptions incorporate information from NRCS Range Site descriptions and Rangeland Cover Types of the United States, Society for Range Management (1994).

Early seral: This seral condition would most commonly occur in and around prairie dog towns, and in isolated areas of high livestock use such as around water developments or concentration areas near fences or natural barriers. This seral condition is important in providing habitat for prairie dogs and low structure obligate species. These sites often contain large areas where club moss is a dominant floristic feature.

- Sandy soil sites – Dominated by blue grama, sedge, and annual forbs. Mid and tall grass species such as prairie sandreed, needle-and-thread grass, western wheatgrass, and little bluestem are conspicuously absent. Many areas of bare soil can be present.
- Silty soil sites – Dominated by blue grama, annual forbs, fringed sage, and broom snakeweed. Mid and tall grass species such as western wheatgrass, needle-and-thread grass and green needlegrass are conspicuously absent. Many areas of bare soil can be present.
- Clay soil sites – Dominated by blue grama, annual forbs and annual grasses. Mid and tall grass species such as green needlegrass, needle-and-thread grass, western wheatgrass, and little bluestem are conspicuously absent. Many areas of bare soil can be present.
- Shallow soil sites – Dominated by blue grama, annual forbs, and annual grasses. Mid and tall grass species such as little bluestem and western wheatgrass are conspicuously absent. Many areas of bare soil can be present.
- Overflow sites – Dominated by blue grama, annual forbs, and Kentucky bluegrass. Tall and mid grass species such as big bluestem, needle-and-thread grass, and prairie sandreed are conspicuously absent. Water tables are usually lowered and some bare soil can be present.

Mid seral*:* This seral expression can provide opportunities for achieving high structure as it moves toward late seral conditions and mid/tall grass species begin to increase. The species mix found in mid seral conditions is highly variable.

- Sandy soil sites – Blue grama, upland sedges, and Kentucky bluegrass primarily dominate in earlier mid seral conditions although sand dropseed and sideoats grama may be present in limited quantities. Blue grama continues to dominate as movement begins toward the latter stages of mid seral condition where prairie sandreed, needle-and-thread grass, and western wheatgrass begins to replace it as a dominant in the later mid seral condition. High structure can be achieved as this habitat type moves toward late seral conditions.
- Silty soil sites – Blue grama and sedge are primarily dominant in earlier mid seral conditions. These species continue to be present in large amounts as movement begins toward a higher seral condition where little bluestem and prairie Junegrass become more prominent in mid seral conditions. Western wheatgrass, needle-and-thread grass, and green needlegrass begin to replace these species as this habitat type moves toward late seral conditions. High structure can be achieved as this habitat type moves toward late seral conditions.
- Clay soil sites – Blue grama and upland sedges primarily dominate in earlier mid seral conditions although buffalo grass, inland saltgrass, and needle grasses can be present in limited quantities. Blue grama continues to be present in large amounts as movement begins toward a higher seral condition where western wheatgrass and green needlegrass begin to appear in the composition. These two species begin to become co-dominant as these sites move toward late seral conditions. High structure can be achieved as this habitat type moves toward late seral conditions.
- Shallow soil sites – Blue grama dominates early mid seral conditions, with limited occurrences of green needlegrass and needle-and-thread grass. Blue grama continues to be present in large amounts as movement begins toward a higher seral condition with associated increases of green needlegrass and needle-and-thread grass in mid seral conditions. Western wheatgrass, needle-and-thread grass, green needlegrass, and sideoats grama begin to replace blue grama as this habitat type moves toward late seral conditions. High structure can be achieved as this habitat type moves toward late seral conditions.
- Overflow sites – Blue grama and Kentucky bluegrass tend to be more dominant in earlier mid seral conditions. As this type moves to the latter mid seral condition, switchgrass, sideoats grama, prairie sandreed and green needlegrass increase and becomes more prominent. Big bluestem and western wheatgrass begin to replace these species as this habitat type moves toward late seral conditions. High structure can be achieved as this habitat type moves toward late seral conditions.

Late seral: This seral expression provides the best opportunity for achieving high structure objectives on all habitat types.

- Sandy soil sites – Dominated by prairie sandreed, needle-and-thread grass, and little bluestem. Associated species include lesser amounts of sand bluestem, sideoats grama, western wheatgrass, and sand dropseed. In some areas big bluestem can be an important component and blue grama may be present in limited (less than 10% by composition) quantities.
- Silty soil sites – Dominated by western wheatgrass, needle-and-thread grass, and green needle grass. Associated species include lesser amounts of little bluestem, sedge and prairie Junegrass. This seral condition also may contain limited (less than 10% by composition) occurrence of blue grama.
- Clay soil sites – Dominated by western wheatgrass, needle-and-thread grass, and green needlegrass. Contains lesser amounts of buffalo grass, needleleaf sedge, and inland saltgrass. On thinner clay sites this seral condition may also contain limited (10-15% by composition) occurrence of blue grama.
- Shallow soil sites – Dominated by little bluestem. Associated species include lesser amounts of western wheatgrass, sideoats grama, needle-and-thread grass, and green needlegrass. On very shallow soils, blue grama and needle-and-thread grass dominate. This seral condition may also contain limited (less than 10% by composition) occurrence of blue grama.
- Overflow sites – Dominated by big bluestem and western wheatgrass. Associated species include lesser amounts of prairie sandreed, green needlegrass, sideoats grama, and switchgrass.

Desired Structure Objectives

Low	Moderate	High
10 to 20%	50 to 70%	20 to 30%

High vegetation structure can be achieved on moderate and highly productive grasslands dominated by mid and/or tall grasses (late or moderate-late seral stages). Grasslands on moderate to highly productive soils but in a low seral condition and dominated by short-stature plant species generally do not have the capability to provide high vegetation structure. Management changes would be necessary to move some existing seral conditions toward a higher seral condition to meet structure objectives.

Prairie dog colonies provide low structure, as do grassland areas grazed by livestock at high intensities. Low vegetation structure can result from a dominance of low stature plant species in an early seral condition or from heavy utilization of mid and tall grasses typical of high mid to high seral conditions.

Fire

1. Burn a minimum of 5,000 acres per decade. This would include using prescribed fire to enhance native cool season grasses, improve vegetation palatability and facilitate noxious weed management.

Livestock Grazing

1. Rest at least 5 percent of the suitable rangeland each year.

Wildlife

1. Desired population trends and habitat quality and quantity for management indicator and associated species in this geographic area are as follows (See Appendix H for habitat descriptions).

Plains Sharp-tailed Grouse

- Provide diverse and quality nesting, brooding, and wintering habitat at levels that, in combination with habitat on adjoining lands, help support stable to increasing sharp-tailed grouse populations within 10 to 15 years.

Black-tailed Prairie Dog

- Establish two or more prairie dog colony complexes within the next 10 to 15 years. Individual complexes may extend across to other jurisdictions in cooperation with other entities.

Geographic Area – Standards and Guidelines

Vegetation

1. Apply vegetative structural and compositional objectives across all herbaceous community types. **Guideline**

Livestock Grazing

1. Control the timing, duration, and intensity of livestock grazing to achieve desired structure and species composition objectives. **Guideline**

Infrastructure

1. Prohibit road construction within the South Fork and Twin Buttes Creek roadless areas *(see Management Area map).* **Standard**

2. Use nonstructural range management techniques such as water management, herding, riding, and mineral management to achieve desired conditions. If nonstructural management methods are not successful, then new structural developments may be used to achieve desired conditions. **Guideline**

Management Indicator Species

1. Emphasize establishment and expansion of prairie dog complexes on the south half of the Grand River National Grassland. **Guideline**

2. Manage for high vegetative structure in areas where it would enhance nesting habitat quality for sharp-tailed grouse. Emphasize areas characterized by:

- Presence of moderate to highly productive soils and range sites.
- Proximity to sharp-tailed grouse display grounds.
- Proximity to shrub habitats, private croplands and other sharp-tailed grouse foraging habitats. **Guideline**

Management Indicator Species, cont.

3. Manage for high plant species diversity, including forbs, in areas where it would enhance sharp-tailed grouse brooding habitat quality. Emphasize areas in proximity to nesting habitat. **Guideline**

4. In areas used by wintering sharp-tailed grouse, maintain and enhance shrub patches and shrub components in wooded draws and riparian habitats. **Guideline**

TES and Sensitive Plant Guilds

1. Complete and implement conservation strategies for high priority species such as Dakota buckwheat and smooth goosefoot, and sensitive plant guilds including but not limited to, western plains riparian, buttes, and western sandy guild in cooperation with other conservation agencies and organizations. **Guideline**

2. Conduct target surveys or baseline assessments for high priority species. Emphasize species where viability concern is due to low number of populations, low numbers of individuals within populations, or low reproductive success. **Guideline**

BADLANDS GEOGRAPHIC AREA

Little Missouri National Grassland

Setting

The Badlands Geographic Area includes approximately 573,700 acres of National Forest System lands of the Little Missouri National Grassland (about 189,900 acres on McKenzie Ranger District and 383,800 acres on the Medora Ranger District).

The climate of the Badlands Geographic Area is semi-arid Continental. Precipitation is erratic, but averages about 15 inches per year, with about half of that precipitation falling from May through July. Short but intense thunderstorms, sometimes accompanied by hail, are a frequent occurrence between April and September. Moisture deficits are critical during the summer months. Drought cycles are typical, some lasting as long as 10 to 15 years. Yearly temperatures range between -35 degrees Fahrenheit to 100 degrees Fahrenheit. Snowfall averages about 30 inches per year, but winds, averaging about 10 miles per hour, usually create deep accumulations in draws.

The topography of the area includes intricately dissected drainages and draws dropping from grassy ridgelines or butte-like hills and color-banded mounds typical of a badlands landscape. Large slumps and earth flows typical of a highly erodible landscape can also be identified. Small inclusions of rolling prairie are also typical of this geographic area. Multi-layered soils are extensively exposed as are soft rock or rock-like substances such as siltstones, clay stones, shale, and sandstones. Other erosion-resistant rocks, such as lignite seams and scoria, are also prevalent. “True” badlands, characterized by largely unvegetated slopes greater than 40 percent are found within this geographic area. Butte escarpments provide unique locations of biologic, geologic, cultural, and archaeological resources. Elevations range from about 1,800 feet above sea level near Lake Sakakawea to about 3,500 feet above sea level atop some of the more prominent buttes.

Some of the drainages in the area include Burnt Creek, Bennett Creek, Cottonwood Creek, Sheep Creek, Beicegel Creek, Cinnamon Creek, Magpie Creek Indian Creek, Boyce Creek, Bear Creek, Sully Creek, Dry Creek, Ash Coulee, Mike's Creek, Blacktail Creek, Davis Creek, Whitetail Creek, and Buckhorn Creek. These tributaries flow into the Little Missouri River, which also flows through this geographic area. The Little Missouri River eventually drains into the Missouri River.

The dominant vegetation includes riparian cottonwood forests along the Little Missouri River, hardwood draws of green ash and chokecherry, uplands of western wheatgrass and needle-and-thread grass, rolling grasslands of western wheatgrass and prairie Junegrass, rocklands of dwarf juniper and creeping cedar, terraces of wolfberry and silver sage, savanna of ponderosa pine and green needlegrass, upland breaks of big sage and skunkbrush, river breaks of Rocky Mountain juniper and silver sage, and toe slopes of western wheatgrass and prickly pear.

Desired Conditions

The vegetative desired condition, based on edaphic and environmental conditions, is to maintain or perpetuate a diversity of vigorous mixed grass and short grass communities. The full spectrum of cool season and warm season species would be represented, such as western wheatgrass, green needlegrass, needle-and-thread grass, little bluestem, threadleaf sedge, prairie sandreed, sand bluestem, sideoats grama, and blue grama.

Hardwood draws would be managed to maintain or develop a multi-layer and multi-age class of herbaceous plants, shrubs and trees. Species included in the draws are green ash, American elm, chokecherry and snowberry. Streams and riparian areas would maintain soil moisture to perpetuate riparian plant communities with strong root masses. Plant species include prairie cordgrass, bulrushes (*Scirpus spp*.), spikerushes (*Eleocharis spp*.), inland saltgrass, cottonwoods, and willows.

Juniper stands would be managed for a multi-layer of Rocky Mountain juniper interspersed with green ash and a lower layer consisting of herbaceous plants, moss and shrubs. Ponderosa pine communities would be managed for savannah-like stands with an upper layer of trees and a lower layer of herbaceous plants, shrubs and trees.

The desired landscape condition is to maintain the undeveloped character and scenic integrity of the badlands and maintain streams in properly functioning condition or in an upward trend. Long-term soil productivity and properly functioning water cycles are maintained. Properly functioning water cycles are characterized by high infiltration rates, low soil compaction, and minimal overland flows. Energy flow and nutrient cycling are functioning properly to maintain diverse, native plant and animal communities.

Existing recreation developments would be maintained and new recreational opportunities would be developed as the demand for recreation increases. Recreation experiences would focus on open and undeveloped landscapes.

Prescribed fire would be used in forested stands to maintain the long-term integrity of such stands. Encroachment of forested stands into other habitats may be controlled with the use of fire. Prescribed fire would be used to reinitiate the role of natural fire in the prairie ecosystem.

Infrastructure would be maintained as needed for various uses. Opportunities to reduce or eliminate unnecessary improvements would be pursued.

Unique Attributes

- Special vegetative communities, including ponderosa pine, bur oak, and limber pine.
- Special wildlife species, including bighorn sheep, elk, mule deer and sage grouse.
- Many scenic roadless areas, including Kinley Plateau and Bennet-Cottonwood.
- The Little Missouri River - one of the longest free-flowing rivers in the United States.
- Fossil resources from the Paleozoic and Cenozoic Epochs.
- The Burning Coal Vein Campgrounds, Whitetail Picnic Area, and the Maah Daah Hey Trail.
- The 1864 Battle of the Badlands site.

- Archaeological trail corridors complexes.
- Archaeological remnants of Mandan/Hidatsa Eagle complexes.
- The 1876 Custer military trail and associated campsites.

Management Area Prescription Allocation

Number	Prescription	Acres
1.2a	Suitable for Wilderness	37,570
1.31	Backcountry Recreation Nonmotorized	62,290
2.1	Special Interest Areas	4,510
2.2	Research Natural Areas	18,800
3.51	Bighorn Sheep	18,930
3.51a		35,780
3.65	Rangelands with Diverse Natural-Appearing Landscapes	336,670
4.22	Scenic Areas, Vistas, or Travel Corridors	20,430
4.32	Dispersed Recreation: High Use	7,930
6.1	Rangeland with Broad Resource Emphasis	31,450

Geographic Area - Objectives

Vegetation

This section deals with vegetation and its relationship to Management Indicator Species habitat needs. The focus in the Badlands Geographic Area is on the grass and grass-like life forms.

The resulting vegetation would have a mix of seral conditions believed to be within the natural range of variation. Disturbance processes would contribute to a "shifting mosaic" of vegetation composition and structure over space and time.

Composition objectives are based on a mix of grass and grass-like species across the entire Badlands Geographic Area. This mix provides suitable opportunity for meeting structure objectives and providing for floristic diversity.

The following section describes the specific vegetative compositional and structural objectives for the Badlands Geographic Area:

Composition

1. Desired seral stages (plant species composition) and vegetation structure across the geographic area are as follows:

Desired Seral Stages - Objective

Early	Mid	Late
10-15%	65-75%	15-20%

The potential mix of seral conditions within this Geographic Area (GA) is very diverse, due to the influence of precipitation, soil types, and disturbances such as grazing and fire. Descriptions of species dominance/co- dominance associated with early, mid, and late seral conditions follow below. Seral stages are aggregated into sites having similar soil texture and/or topographic features. Together they provide an overview of the entire GA. These descriptions incorporate information from the NRCS Range Site descriptions and *Rangeland Cover Types of the United States* (Society for Range Management 1994).

Early seral: This seral condition would most commonly occur in and around prairie dog towns, and in areas of intensive livestock use such as around water developments or concentration areas near fences or natural barriers. This seral condition is important in providing habitat for prairie dogs and low structure obligate species.

- Steep south and west aspect slopes (all soil types) – Primarily short grasses such as blue grama and buffalo grass along with upland sedges, fringed sage, annual forbs and shrubs. Mid and tall grass species such as western wheatgrass, needle-and-thread grass, and prairie sandreed are conspicuously absent.
- Moderate slopes (less than 35% on all soil types) – Primarily short grasses such as blue grama and buffalo grass along with upland sedges, fringed sage, annual forbs and shrubs. Mid and tall grass species such as western wheatgrass, needle-and-thread grass, and green needlegrass, are conspicuously absent. Occurrences of bare soil can increase significantly from late or mid seral conditions.
- Saline lowland sites (fine textured soils) – Primarily large increases of inland saltgrass, with varying amounts of foxtail barley, mat muhly, silverweed cinquefoil, and other annual forbs. Mid and tall grass species such as Nuttall alkaligrass, western wheatgrass, and slender wheatgrass are conspicuously absent.

Mid seral: This seral expression can provide opportunity for achieving high structure as it moves toward late seral conditions and mid/tall grass species begin to increase. The species mix found in mid seral conditions is highly variable.

- Steep south and west aspect slopes (all soil types) – Species composition is highly variable with blue grama, Sandberg bluegrass, and upland sedges dominating in the early mid seral condition. In the early mid seral condition, blue grama dominates on these sites. As the seral condition improves, blue grama would decrease and western wheatgrass along with needle-and-thread begins to dominate this seral condition.
- Moderate slopes (less than 35% on all soil types) – Species composition is highly variable with blue grama, buffalo grass, Sandberg bluegrass, and upland sedges dominating the early mid seral conditions on clay soils and blue grama, sand dropseed, and upland sedges dominating the early mid seral condition on sandy soils. As the seral condition improves, those species decrease and western wheatgrass and needle-and-thread grass begin to dominate this seral condition.
- Saline lowland sites (fine textured soils) – Inland saltgrass increases as seral condition moves downward to the point where it is very dominant in early seral conditions. Inland saltgrass begins to decrease while Nuttall alkaligrass, alkali cordgrass, western wheatgrass and slender wheatgrass begin to increase and gradually dominate these sites as movement is made toward a higher seral condition.

Late seral: This seral expression provides the best opportunity for achieving high structure objectives especially on the moderate slopes.

- Steep south and west aspect slopes (all soil types) – Primarily western wheatgrass, needle-and-thread grass, little bluestem, and blue grama. Important associated species include plains muhly, red threeawn, sideoats grama, and upland sedges. For this seral condition, western wheatgrass and needle-and-thread grass are the dominant/co-dominant species on these sites.
- Moderate slopes (less than 35% on all soil types) – Primarily western wheatgrass, needle-and-thread grass, prairie sandreed, and sand bluestem. Important associated species include Sandberg bluegrass, sand dropseed, needleleaf sedge, and buffalograss on clay sites and Canada wild rye, prairie Junegrass, and upland sedges on sandy sites. For this seral condition, western wheatgrass and needle-and-thread grass are the dominant/co-dominant species on these sites.
- Saline lowland sites (fine textured soil types) – Primarily Nuttall alkaligrass, slender wheatgrass, alkali cordgrass, western wheatgrass, and very limited amounts of inland saltgrass. Important associated species include plains bluegrass, alkali sacaton, and mat muhly.

Desired Structure Objectives

Low	Moderate	High
10-20%	50-70%	20-30%

High vegetation structure can be achieved on moderate and highly productive grasslands dominated by mid and/or tall grasses (latter stages of mid seral and late seral stages). Grasslands on moderate to highly productive soils but in a low seral condition and dominated by short-stature plant species generally do not have the capability to provide high vegetation structure. Management actions may be necessary to improve some existing seral conditions to meet structure objectives.

Prairie dog colonies provide low structure, as do grassland areas intensively grazed by livestock. Low vegetation structure can result from a dominance of low stature plant species in an early seral condition or from heavy utilization of mid and tall grasses typical of high mid to high seral conditions.

Livestock Grazing

1. Rest at least 5 percent of the suitable rangeland each year.

Fire

1. Prescribe burn a minimum of 8,000 acres per decade. Priorities for prescribed burning include: stimulating shrub growth in woody draws, increasing cool season grasses, reducing the vigor of invasive species, reducing fuel loadings, improving the palatability of crested wheatgrass, and reducing pine and juniper encroachment.

Wildlife

1. Within five years, develop prescribed fire plans in support of habitat improvement for bighorn sheep.

2. Desired population trends and habitat quality and quantity for management indicator and associated species in this geographic area are as follows (see Appendix H for habitat descriptions).

Plains Sharp-tailed Grouse

- Provide diverse and quality nesting, brooding, and wintering habitat at levels that, in combination with habitat on adjoining lands, help support stable to increasing sharp-tailed grouse populations within 10 to 15 years.

Black-tailed Prairie Dog

- Establish two or more prairie dog colony complexes within 10 to 15 years. A colony complex is 10 or more colonies with a total combined acreage of at least 1,000 acres. Individual complexes may extend across the adjoining Rolling Prairie geographic area.

Sage Grouse

- Provide diverse and quality nesting and brooding habitat at levels that, in combination with habitat on adjoining lands, help support stable to increasing sage grouse populations within 10 to 15 years.

Infrastructure

1. Over the next 15 years, increase the average pasture size as opportunities arise.

Geographic Area – Standards and Guidelines

Vegetation

1. Apply vegetative structural and compositional objectives across all herbaceous community types. **Guideline**

2. Use grazing, fire, and harvesting to maintain or enhance the health and vigor of ponderosa pine communities. **Guideline**

3. Trees may be cut or removed in ponderosa pine communities under the following circumstances.

- To reduce fuel loads and fire risk, especially to adjoining private land.
- To curtail imminent threat of epidemic insect attack.
- To improve aesthetics, such as enhancing a scenic view from a prominent overlook.
- To enhance growth of unique plant species and community types. **Guideline**

Livestock Grazing

1. Control the timing, duration, and intensity of grazing on grass-dominated ridge tops and valley bottoms to prevent overuse and to promote the desired structure and species composition. **Guideline**

Infrastructure

1. Use nonstructural range management techniques such as water management, herding, riding, and mineral management to achieve desired conditions. If nonstructural management methods are not successful, then new structural developments may be used to achieve desired conditions. **Guideline**

Wildlife

1. Do not authorize domestic sheep and goat grazing within ten miles of bighorn sheep management area (MA 3.51 and 3.51a). **Guideline**

2. Domestic sheep and goats may be permitted as part of an integrated pest management (IPM) control program if they do not conflict with bighorn sheep management objectives. The North Dakota Game and Fish Department would be consulted if such a program is considered. **Guideline**

3. Discourage recreational activities in bighorn sheep lambing areas, April 1 through June 15. **Guideline**

Management Indicator Species

1. Emphasize establishment and expansion of prairie dog complexes in the Indian Creek and Boyce Creek drainages. **Guideline**

2. Manage for high vegetative structure in areas where it would enhance nesting habitat for sharp-tailed grouse. Emphasize areas characterized by:

- Presence of moderate to highly productive soils and range sites.
- Plant composition dominated by mid and/or tall grasses.
- Proximity to sharp-tailed grouse display grounds.
- Proximity to shrub habitats, private croplands and other sharp-tailed grouse foraging habitats. **Guideline**

3. Manage for high plant species diversity, including forbs, in areas where it would enhance sharp-tailed grouse brooding habitat quality. Emphasize areas in proximity to nesting habitat. **Guideline**

4. In areas used by wintering sharp-tailed grouse, maintain and enhance shrub patches and shrub components in wooded draws and riparian habitats. **Guideline**

5. Manage for high vegetative structure in areas where it would enhance sage grouse nesting habitat. Emphasize areas characterized by:

- Presence of moderate to highly productive soils and range sites.
- Plant composition dominated by mid and/or tall grasses, with sagebrush canopy cover of 15-25%.
- Proximity to sage grouse display grounds. **Guideline**

TES and Sensitive Plant Guilds

1. Complete and initiate implementation of conservation strategies for high priority sensitive species and plant guilds including but not limited to: Dakota buckwheat, smooth goosefoot, western plains riparian guild, buttes guild, scoria hills guild, and western sandy guild in cooperation with other conservation agencies and organizations. **Guideline**

2. Conduct target surveys or baseline assessments for high priority species, including but not limited to: alkali sacaton, smoothbark cottonwood, limber pine, sand lily, Torrey's cryptantha, nodding buckwheat, and smooth goosefoot. Emphasize species where viability is a concern due to low number of populations, low numbers of individuals within populations, or low reproductive success. **Guideline**

3. Ensure that timing, intensity and frequency of livestock grazing maintains and/or increases sensitive plant species populations and rare plant communities found on buttes. **Guideline**

4. Enhance conservation of sensitive plant species and rare plant communities by developing educational and interpretive materials for buttes that receive high public use. **Guideline**

5. Protect springs and seeps found on buttes from livestock disturbance. Avoid placing new water developments on the tops and sides of buttes containing sensitive plant species or rare plant communities. **Guideline**

ROLLING PRAIRIE GEOGRAPHIC AREA

Little Missouri National Grassland

Setting

The Rolling Prairie Geographic Area includes approximately 452,600 acres of National Forest System lands on the Little Missouri National Grassland (311,000 acres on the McKenzie Ranger District and 141,600 acres on the Medora Ranger District).

The climate of the Rolling Prairie Geographic Area is semi-arid Continental. Precipitation is erratic, but averages 15 inches per year, with about half of that precipitation falling from May through July. Short but intense thunderstorms, sometimes accompanied by hail, are a frequent occurrence between April and September. Moisture deficits are critical during the summer months. Drought cycles are typical, some lasting as long as 10 to 15 years. Yearly temperatures range between minus 35 degrees Fahrenheit to 100 degrees Fahrenheit. Snowfall averages about 30 inches per year, but winds, averaging about 10 miles per hour, usually prevent deep accumulations.

The topography of the area is characterized as nearly level to rolling hills with some inclusions of scattered buttes and badlands landscapes. The soils are quite well developed and stable, and occur beneath a fairly consistent mosaic of grass cover. Butte escarpments provide unique locations of biologic, geologic, cultural, and archaeological resources. Elevations range from about 1,800 feet above sea level near Lake Sakakawea to about 3,500 feet above sea level atop some of the more prominent buttes.

Some of the drainages in the area include Antelope Creek, Sand Creek, Bartall Creek, Johntown Creek, Horse Creek, Alkali Creek, One-O-One Creek, Poison Springs Creek, Bennie Pier Creek, Clear Creek, Charbonneau Creek, Poker Jim Creek, Jim Creek, Bell Lake Creek, Philbrick Creek, Deep Creek, Cottonwood Creek, Williams Creek and Horse Creek. These tributaries empty into either the Yellowstone River or the Little Missouri River, which eventually drain into the Missouri River. On the northern portion of this geographic area, National Forest System lands lie adjacent to and drain directly into the Missouri River.

The dominant vegetation includes hardwood draws of green ash and chokecherry, uplands of blue grama and little bluestem, rolling grasslands of western wheatgrass and prairie Junegrass, and terraces of wolfberry and silver sage.

Desired Condition

The desired landscape condition is to maintain the Rolling Prairie's scenic nature, while perpetuating diverse and healthy mixed grass and short grass communities. The full spectrum of cool season and warm season species would be represented, including: western wheatgrass, green needlegrass, needle-and-thread grass, little bluestem, threadleaf sedge, prairie sandreed, sand bluestem, sideoats grama and blue grama.

Hardwood draws would be managed to maintain or develop a multi-layer and multi-age class of herbaceous plants, shrubs and trees. Species included in the draws are green ash, American elm, chokecherry and snowberry.

Streams would be maintained at properly functioning condition or improved to an upward trend. Long-term soil productivity and properly functioning water cycles are maintained. Properly functioning water cycles are characterized by high infiltration rates, low soil compaction, and minimal overland flows. Energy flow and nutrient cycling are functioning properly to maintain diverse, native plant and animal communities.

Existing recreation developments would be maintained and new recreational opportunities would be developed as the demand for recreation increases. Recreation experiences would focus on open and undeveloped landscapes.

Prescribed fire would be used to mimic the benefits of a natural fire regime in the prairie ecosystem.

Infrastructure would be maintained as needed for various uses. Opportunities to reduce or eliminate unnecessary improvements would be pursued.

Wildlife and botanical resources would have a diversity of habitat conditions. The grassland ecosystem would have a "shifting mosaic" of disturbance processes over space and time to enhance these habitat conditions.

Unique Attributes

- Open and scenic nature of the rolling plains.
- The Horse Creek Roadless Area.
- Black Butte, a prominent geographical feature and American Indian Traditional Use area.
- Extensive prehistoric stone circle/tipi ring complexes.
- Sather Campground and Lake.
- Largest intact natural grassland area in North Dakota.
- Populations of sage grouse and big game.

Management Area Prescription Allocation

Number	Prescription	Acres
1.2a	Suitable for Wilderness	3,950
1.31	Backcountry Recreation Nonmotorized	2,530
2.1	Special Interest Areas	1,650
2.2	Research Natural Areas	280
2.4	American Indian Traditional Areas	6,280
3.63	Black-footed Ferret Reintroduction Area	29,180
3.65	Rangelands with Diverse Natural-Appearing Landscapes	8,760
4.22	Scenic Areas, Vistas or Travel Corridors	170
4.32	Dispersed Recreation: High Use	60
6.1	Rangeland with Broad Resource Emphasis	399,260

Geographic Area - Objectives

Vegetation

This section deals with vegetation and its relationship to Management Indicator Species habitat needs. The focus is on grass and grass like life forms, as well as sagebrush.

Composition objectives are based on providing a sufficient diversity of grass and grass-like species across the entire geographic area so that structure objectives can be met and floristic diversity achieved.

1. The specific vegetative compositional and structural objectives follow.

Desired Seral Stages Objectives

Early	Mid	Late
10-15%	65-75%	15-20%

The potential mix of seral conditions within this geographic area is very diverse due to the influences of precipitation, soil types, and disturbances such as grazing and fire. Descriptions of species dominance/co-dominance associated with early, mid and late seral conditions follow below. Seral stages are aggregated into sites having similar soil texture and/or topographic features; together they provide an overview of the entire GA. These descriptions incorporate information from the NRCS Range Site descriptions and Rangeland Cover Types of the United States, Society for Range Management (1994).

Early seral: This seral condition would most commonly occur in and around prairie dog towns, and in areas of intensive livestock use such as around water developments or concentration areas near fences or natural barriers. This seral condition is important in providing habitat for prairie dogs and low structure obligate species. These sites often contain large areas where club moss is a dominant floristic feature.

- Sandy soil sites (deeper soil development) - Dominated by blue grama, threadleaf sedge, sun sedge, and gray sagewort. Mid and tall grass species such as western wheatgrass, needle-and-thread grass, sand bluestem, and little bluestem are conspicuously absent. Many areas of bare soil can be present.
- Clay soil sites (deeper soil development) - Dominated by blue grama, threadleaf sedge, fringed sage, and broom snakeweed. Mid and tall grass species such as western wheatgrass, needle-and-thread grass, and prairie Junegrass are conspicuously absent. Many areas of bare soil can be present.
- Shallow soil sites (primarily loam and sandy loam soil textures) – Dominated by blue grama, threadleaf sedge, fringed sage, cactus and red threeawn. Mid and tall grass species such as western wheatgrass, needle-and-thread grass, plains muhly, and sideoats grama are conspicuously absent. Many areas of bare soil can be present.
- Overflow sites (primarily clay and clay loam soil textures) – Dominated by blue grama, sedges, annual forbs, and Kentucky bluegrass. Tall and mid grass species such as big bluestem, needle-and-thread grass, and green needlegrass are conspicuously absent. Many areas of bare soil can be present.

Mid seral: This seral expression can provide opportunity for achieving high structure as it moves toward late seral conditions and mid/tall grass species begin to increase. The species mix found in mid seral conditions is highly variable.

- Sandy soil sites (deeper soil development) – Blue grama, upland sedges, and Kentucky bluegrass primarily dominate in earlier mid seral conditions. These species continue to be present in large amounts as movement begins toward a higher seral condition where big bluestem, green needlegrass, and western wheatgrass begin to replace those species. High structure can be achieved as this habitat type moves toward late seral conditions.
- Clay soil sites (deeper soil development) – Blue grama, threadleaf sedge, sun sedge and hairy grama primarily dominate in earlier mid seral conditions. These species continue to be present in large amounts as movement begins toward a higher seral condition where Sandberg bluegrass and upland sedges become a co-dominant in mid seral conditions. Western wheatgrass, needle-and-thread grass, green needlegrass begin to dominate as this habitat type moves toward late seral conditions. High structure can be achieved as this habitat type moves toward late seral conditions.
- Shallow soil sites (primarily loam and sandy loam soil textures) – Blue grama and threadleaf sedge primarily dominate in earlier mid seral conditions. These species continue to be present in large amounts as movement begins toward a higher seral condition where Sandberg bluegrass becomes a co-dominant in mid seral conditions. Western wheatgrass, needle-and-thread grass, plains muhly, and sideoats grama begin to replace these species as this habitat type moves toward late seral conditions. High structure can be achieved as this habitat type moves toward late seral conditions.
- Overflow sites (primarily clay and clay loam soil textures) – Blue grama and fescue sedge tend to be more dominant in earlier mid seral conditions. As this type moves to the latter mid seral condition, western wheatgrass increases and becomes a co-dominant. Big bluestem, needle-and-thread grass, and green needlegrass begin to replace these species as this habitat type moves toward late seral conditions. High structure can be achieved as this habitat type moves toward late seral conditions.

Late seral: This seral expression provides the best opportunity for achieving high structure on all habitat types.

- Sandy soil sites (deeper soil development) – Primarily prairie sandreed, needle-and-thread grass, sand bluestem, and little bluestem. Associated species include lesser amounts of prairie Junegrass, western wheatgrass, and sand dropseed.
- Clay soil sites (deeper soil development) – Primarily western wheatgrass, needle-and-thread grass, green needle grass, and prairie Junegrass. Associated species include lesser amounts of inland saltgrass, Sandberg bluegrass, and buffalo grass.
- Shallow soil sites (primarily loam and sandy loam soil textures) – Primarily western wheatgrass, needle-and-thread grass, and plains muhly. Associated species include lesser amounts of prairie Junegrass, little bluestem, upland sedges, and sideoats grama.

- Overflow sites (primarily clay and clay loam soil textures) – Primarily big bluestem, needle-and-thread grass, and green needlegrass. Associated species include lesser amounts of western wheatgrass, porcupine grass, bearded wheatgrass, and thickspike wheatgrass. Forbs comprise approximately 10% of this habitat type in late seral condition. Typical species include Rydberg's sunflower, tall goldenrod, and tall white aster.

Desired Structure Objectives

Low	Moderate	High
10-20%	50-70%	20-30%

High vegetation structure can be achieved on moderate and highly productive grasslands dominated by mid and/or tall grasses (latter mid seral or late seral stages). Grasslands on moderate to highly productive soils but in a low seral condition and dominated by short-stature plant species generally do not have the capability to provide high vegetation structure. Management actions may be necessary to improve some existing seral conditions to meet structure objectives.

Prairie dog colonies provide low structure, as do grassland areas intensively grazed by livestock. Low vegetation structure can result from a dominance of low stature plant species in an early seral condition or from heavy utilization of mid and tall grasses typical of high mid to high seral conditions.

The height and density of grasses, forbs and sedges in the understory of sagebrush stands are important factors influencing structure for several wildlife species. The relationship of structure to quality nesting habitat for sage grouse is described in Appendix H.

Fire

1. Burn a minimum of 12,000 acres per decade. Priorities for prescribed burning include: improve palatability of crested wheatgrass, reducing the vigor of invasive species, stimulating shrub growth in woody draws, reducing fuel loadings, and reducing pine and juniper encroachment.

Livestock Grazing

1. Rest at least 5 percent of the suitable rangeland each year.

Wildlife

1. Desired population trends and habitat quality and quantity for management indicator and associated species in this geographic area are as follows (see Appendix H for habitat descriptions).

Plains Sharp-tailed Grouse

- Provide diverse and quality nesting, brooding, and wintering habitat at levels that, in combination with habitat on adjoining lands, help support stable to increasing sharp-tailed grouse populations within 10-15 years.

Wildlife, cont.

Black-tailed Prairie Dog

- Establish two or more prairie dog colony complexes within 10 to 15 years. Individual complexes may extend into Theodore Roosevelt National Park or Badlands Geographic Area.

Sage Grouse

- Provide diverse and quality nesting and brooding habitat at levels that, in combination with habitat on adjoining lands, help support stable to increasing sage grouse populations within 10 to 15 years.

Geographic Area – Standards and Guidelines

Vegetation

1. Apply vegetative structural and compositional objectives across all herbaceous community types. **Guideline**

Infrastructure

1. Use nonstructural range management techniques such as water management, herding, riding, and mineral management to achieve desired conditions. If nonstructural management methods are not successful, then new structural developments may be used to achieve desired conditions. **Guideline**

Wildlife

1. Do not authorize domestic sheep grazing within ten miles of bighorn sheep management area (MA 3.51 and 3.51a). **Guideline**

2. Domestic sheep and goats may be permitted as part of an integrated pest management (IPM) control program if they do not conflict with bighorn sheep management objectives. The North Dakota Game and Fish Department would be consulted if such a program is considered. **Guideline**

Management Indicator Species

1. Emphasize establishment and expansion of prairie dog complexes in the Horse Creek drainage and in the vicinity of Theodore Roosevelt National Park, South Unit. **Guideline**

2. Manage for high vegetative structure in areas where it would enhance nesting habitat for sharp-tailed grouse. Emphasize areas characterized by:

- Presence of moderate to highly productive soils and range sites.
- Plant composition dominated by mid and/or tall grasses.
- Proximity to sharp-tailed grouse display grounds.
- Proximity to shrub habitats, private croplands and other sharp-tailed grouse foraging habitats. **Guideline**

3. Manage for high plant species diversity, including forbs, in areas where it would enhance sharp-tailed grouse brooding habitat quality. Emphasize areas in proximity to nesting habitat. **Guideline**

4. In areas used by wintering sharp-tailed grouse, maintain and enhance shrub patches and shrub components in wooded draws and riparian habitats. **Guideline**

5. Manage for high vegetative structure in areas where it would enhance sage grouse nesting habitat. Emphasize areas characterized by:

- Presence of moderate to highly productive soils and range sites.
- Plant composition dominated by mid and/or tall grasses, with sagebrush canopy cover of 15-25%.
- Proximity to sage grouse display grounds. **Guideline**

TES and Sensitive Plant Guilds

1. Enhance conservation of sensitive plant species and rare plant communities by developing educational and interpretive materials for buttes that receive high public use. **Guideline**

2. Protect springs and seeps found on buttes from livestock disturbance that negatively impacts populations. Avoid placing new water developments on the tops and sides of buttes containing sensitive plant species or rare plant communities. **Guideline**

3. Ensure that timing, frequency, and intensity of livestock grazing maintains or increases sensitive plant populations or rare plant communities on buttes. **Guideline**

4. Control the timing of livestock grazing in riparian areas and on sandy soils to protect known sand lily populations. **Guideline**

5. Complete and initiate implementation of conservation strategies for high priority sensitive species and plant guilds including but not limited to: Dakota buckwheat, smooth goosefoot, western plains riparian guild, buttes guild, scoria hills guild, and western sandy guild in cooperation with other conservation agencies and organizations. **Guideline**

6. Conduct target surveys or baseline assessments for high priority species, including but not limited to: alkali sacaton, smoothbark cottonwood, limber pine, sand lily, Torrey's cryptantha, nodding buckwheat, and smooth goosefoot. Emphasize species where viability is a concern due to low number of populations, low numbers of individuals within populations, or low reproductive success. **Guideline**

SHEYENNE GEOGRAPHIC AREA

Sheyenne National Grassland

Setting

The Sheyenne Geographic Area encompasses 70,300 acres in southeastern North Dakota. It is the largest public land holding of tall grass prairie, one of the most endangered biomes in North America. The Sheyenne River forms part of the northern boundary of this tall grass prairie unit. The Sheyenne National Grassland district office is located in Lisbon, North Dakota. The one geographic area for this unit is called the Sheyenne Geographic Area. The Sheyenne Geographic Area includes the entire 70,300 acres of National Forest System lands in the area.

The climate of the Sheyenne can be classified as Continental. Precipitation levels average about 21 inches per year. Winters can be bitterly cold, dipping below minus 20 degrees Fahrenheit, exacerbated by extreme wind-chill factors, while summer temperatures can exceed 100 degrees Fahrenheit.

The sandy geological features of the area can be traced back to between 10,000 and 15,000 years ago when a massive glacier covered southeastern North Dakota. As the glacier receded, the Sheyenne River funneled the glacier's melt water into the vast glacial Lake Agassiz. The Grasslands are the result of the delta formed as the glacial melt water of the Sheyenne River dropped heavy sediments. Most of the Sheyenne Geographic Area drains north into the Sheyenne River, which drains a large part of eastern North Dakota and empties into the Red River of the North to the northeast. The Wild Rice River drains the Hankinson unit of this National Grassland. Elevations range from 980 feet above sea level to 1,080 feet above sea level.

Major distinguishing landforms include (from north to south): the Sheyenne River terrace, the choppy sandhills, the hummocky sandhills, and the deltaic plains.

Each landform has distinct potential plant communities. The choppy sandhills have oak savanna interspersed with mixed grass prairie and oak woodlands. The hummocky sandhills have three distinct plant communities based on topography: mixed grass prairie dominated by little bluestem, prairie sandreed and side oats grama, tall-grass prairie dominated by big bluestem, Indian grass and porcupine grass and wetlands frequently dominated by wooly sedge, and northern reedgrass. The deltaic plain primarily supports tall grass prairie types dominated by big bluestem, Indian grass and switchgrass. The river terrace is eastern hardwood deciduous forest dominated by American elm and basswood. It is also within the river terrace that rare fen wetlands occur.

This area contains numerous threatened, endangered, and sensitive species. Many of the sensitive plants of this area have been combined into sensitive plant guilds, which are groups of plants with similar habitat or site requirements. These guilds include: the eastern prairie boggy wetland which includes species found in bogs, calcareous fens, springs, boggy woodlands, and green ash/basswood deciduous hardwoods; the tallgrass prairie wetlands guild, which includes species associated with lowland swales, wetlands, marshes, and the sedge/willow complexes; the tallgrass prairie deciduous hardwoods, which includes species found in hardwood forests and woodlands; and tallgrass prairie choppy sandhills, which includes species found in sandy mixed grass prairie, sand dunes and blowouts, and bur oak savanna.

Approximately 11,000 acres are infested with leafy spurge. Kentucky bluegrass is a dominant cover type over approximately 25% of the hummocky sandhills and deltaic plains. Many lowland swales areas include grass-dominated communities and willow dominated communities.

Desired Conditions

The desired condition is to maintain or develop a diversity of vigorous tall grass prairie communities. The full spectrum of both warm and cool season species would be represented, such as big bluestem, little bluestem, Indian grass, and switchgrass on mid-sites; wooly sedge and northern reedgrass in swales, prairie sandreed, porcupine grass, and side oats grama on the uplands. The prairie would be managed for high quality forage for livestock and wildlife, nesting and cover for upland birds, and the protection of soil and water resources. Small woodland areas consisting of bur oak, quaking aspen and green ash would be managed for a multi-layer and multi-age class of herbaceous plants, shrubs and trees. Oak savanna (choppy sandhills) would be managed for open stands of bur oak with herbaceous understory that includes native mixed grass species and forbs.

Existing recreation developments would be maintained and new recreational opportunities would be developed as the demand for recreation increases.

Prescribed fire would used to reinitiate the role of natural fire in the prairie ecosystem.

Infrastructure would be maintained as needed for various uses. Livestock infrastructure may be added as needed to achieve the desired vegetative conditions.

The landscape would support a diversity of wildlife and plant habitats, and have a “shifting mosaic” of disturbance processes over space and time to enhance habitat conditions.

The western prairie fringed orchid, a federally listed threatened species, is found in this Geographic Area. There are approximately 46 sensitive plant and animal species that occur within this geographic area. Desired future condition is to have viable populations of each of these species.

Unique Attributes

- The threatened western prairie fringed orchid.
- One of the last populations of greater prairie chicken in North Dakota.
- Sand hills topography with native vegetation in an intensively cultivated agricultural region.
- The scenic Sheyenne River Valley and its riverine forest.
- Dozens of rare and sensitive plant species.
- Fort Abercrombie to Fort Ransom military trail.
- The largest block of tall grass prairie and oak savanna in public ownership in North Dakota.
- Complex of rare plants and unique riparian habitats found in conjunction with the Sheyenne River Corridor.
- North Country National Scenic Trail.

Management Area Prescription Allocation

Number	Prescription	Acres
1.31	Backcountry Recreation Nonmotorized	4,220
2.2	Research Natural Areas	1,050
3.64	Special plant wildlife	1,250
3.66	Ecosystem Restoration	63,760

Geographic Area - Objectives

Vegetation

This section deals with vegetation and its relationship to Management Indicator Species habitat needs. Vegetative objectives are believed to be within the natural range of variability of tall grass prairie and oak savanna. These objectives focus primarily on grass and grass-like life forms. Composition objectives are based on a mix across the open grassland portion of the Sheyenne Geographic Area. That mix most closely provides suitable opportunity for meeting structure objectives, while providing for the floristic diversity consistent with the overall objective for prairie restoration.

1. The specific vegetative compositional and structural objectives follow.

Desired Seral Stages Objectives

Early	Mid	Late
5-10%	50-65%	30-40%

The potential mix of seral conditions within this GA is very diverse. Although topographic relief is minimal, the extremes in available moisture in the predominately sandy soils of this GA provide distinct vegetation changes within short distances. Although management such as prescribed fire and livestock grazing can have a significant influence on vegetation composition, hydrologic and topographic features such as sand dunes and depressions are the primary influence on floristic composition within the GA.

Blowout areas may be present in the sandy and sand soil sites during any of the seral conditions described below, but are generally more extensive in early seral stages.

Descriptions of species dominance/co-dominance associated with early, mid and late seral conditions are as follows below. Seral stages are aggregated into sites having similar soil texture and/or topographic features; together they provide an overview of the entire GA. These descriptions incorporate information from NRCS Range Site descriptions and Rangeland Cover Types of the United States, Society for Range Management, 1994. It is important to note that the species composition and characterization of wetlands represents ecological condition as opposed to classic seral condition descriptions.

Early seral: Early seral conditions are a natural component of these highly erodible sandhills. Sparsely vegetated dunes in healthy condition provide important habitat for species dependent on early seral conditions. This seral condition would most commonly occur in and around areas of intensive livestock use such as around water developments or concentration areas near fences or natural barriers. This seral condition is important in providing habitat for Richardson's ground squirrel and other low structure obligate species.

- Sandy and sand soil sites in undulating prairie topography – In early seral conditions, blue grama, and annual forbs dominate. Mid and tall grass species are conspicuously absent. Blowout areas are common and would increase in size without changes in management to move them toward a higher seral condition.
- Sandy and sand soil sites in choppy sandhills topography – In early seral conditions Kentucky bluegrass, blue grama, sun sedge, and annual forbs such as western ragweed dominate. Mid and tall grass species are conspicuously absent. Western snowberry can be dominate in early seral conditions. Blowout areas are common and would increase in size without management actions to move them toward a higher seral condition.
- Midsites in all topographies – In early seral condition Kentucky bluegrass, sun sedge and blue grama dominate the composition. Forbs such as ragweed, goldenrod, and hoary vervain are prevalent. Blowout areas may occur and would increase in size without management actions to move them toward a higher seral condition.
- Wet meadows (sub irrigated but can be seasonably flooded) – In the early seral condition, Kentucky bluegrass, foxtail barley and Baltic rush dominate. The water table drops in early seral condition creating areas of bare soil dominated by annual forbs.
- Wetlands (water tables at the soil surface with portions continually flooded) – In early seral conditions, Kentucky bluegrass, fowl bluegrass, foxtail barley, and Baltic rush dominate. Water tables drop earlier in the season and there are large areas of bare soil dominated by annual forbs for most of the year.

Mid seral: This seral expression can provide opportunity for achieving high structure as it moves toward late seral conditions and mid/tall grass species begin to increase. The species mix found in mid seral conditions is highly variable.

- Sandy and sand soil sites in undulating prairie topography – In the early stages of this seral condition blue grama, Kentucky bluegrass, western yarrow, western ragweed and goldenrod can be present with very limited occurrences of sand dropseed, sun sedge, and prairie Junegrass. As this type moves toward late seral conditions, sand dropseed and blue grama can increase while prairie sandreed, needle-and-thread grass, and little bluestem begin to reappear. In the latter stages of mid seral condition, sand dropseed and hairy grama begin to decrease while prairie sandreed, needle-and-thread grass, little bluestem, and porcupine grass increase. Kentucky bluegrass and blue grama may still be present in moderate amounts in the latter stages of mid seral conditions.

Mid seral, cont.

- Sandy and sand soil sites in choppy sandhills topography – In the earlier stages of mid seral condition, Kentucky bluegrass, sun sedge, and hairy grama can dominate. Curlycup gumweed may also dominate in the early stages of mid seral condition. As this type moves toward late seral conditions sideoats grama and needle-and-thread grass begin to reappear through the latter stages of mid seral condition, when prairie sandreed and sand bluestem also begin to reappear and become more visually prominent. Kentucky bluegrass and blue grama can still be present in moderate amounts.
- Midsites in all topographies – In the earlier stages of mid seral condition Kentucky bluegrass, sun sedge, and blue grama mostly dominate the composition. As this type moves toward late seral conditions these species decrease and tall grass species such as big bluestem, indiangrass and switchgrass begin to reappear. In the latter stages of mid seral conditions, those species become a more conspicuous part of the composition and sun sedge and blue grama begin to disappear although they still can be a dominant portion of the composition.
- Wet meadows (sub irrigated but can be seasonally flooded) – In the earlier stages of mid seral conditions, fowl bluegrass, fescue sedge, common spike sedge, Baltic rush, and Kentucky bluegrass dominate. As this type moves toward late seral conditions northern reedgrass and switchgrass begin to reappear. In the latter stages of mid seral conditions, those species begin to dominate and Kentucky bluegrass, fowl bluegrass, and Baltic rush begin to become less evident and northern reedgrass, switchgrass, and woolly sedge begin to dominate.
- Wetlands (water tables at the soil surface with intermingled open water) – In the earlier stages of mid seral conditions, fowl bluegrass, common spike sedge, Baltic rush, and Kentucky grass dominate. As this type moves toward late seral conditions prairie cordgrass and slough sedge begin to become more evident. In latter stages of mid seral conditions, those species begin to dominate and Kentucky bluegrass, fowl bluegrass, and Baltic rush begin to become less evident.

Late seral: This seral expression provides the best opportunity for achieving high structure objectives on all habitat types.

- Sandy and sand soil sites in undulating prairie topography – This type is dominated by prairie sandreed, needle-and-thread grass, and prairie Junegrass. Associated species include little bluestem, porcupine grass, sand lovegrass, and blue grama. On less coarse sandy sites, forbs can be an important component (up to 15% by composition) including purple prairie clover, penstemon, and dotted gayfeather. On coarser sand sites, shrubs can also be an important component (up to 10% by composition) including western snowberry, leadplant, and prairie rose.
- Sandy and sand soil sites in choppy sandhills topography – This type is dominated by sand bluestem, prairie sandreed, and needle-and-thread grass. Associated species include sideoats grama, Canada wild rye, and little bluestem. This type also supports a diverse forb life form in late seral conditions including penstemon, stiff sunflower, and prairie spiderwort. Shrubs and tree may be visually conspicuous across the landscape including western snowberry, sumac, leadplant, chokecherry, scattered bur oak, and small clumps of aspen in favored sites.

- Midsites in all topographies – This type is dominated by big bluestem, switchgrass, northern reedgrass, indiangrass, and to a lesser extent, little bluestem. Scattered forbs can include penstemon, large gayfeather, and white prairie clover. This site in late seral conditions provides excellent opportunity for quality prairie chicken nesting habitat.
- Wet meadows (sub irrigated but can be seasonally flooded) –This type is dominated by switchgrass, northern reedgrass, and wooly sedge. This site in late seral conditions can also contain a diverse number of forbs including the western prairie fringed orchid, a federally listed species. Willows can be a component of this type.
- Wetlands (water tables at the soil surface with portions continually flooded) – Extreme yearly and seasonal fluctuations in water depth are characteristic of wetlands. These water fluctuations result in plant composition shifts that may be beyond the influence of specific management activities. Typically, this type can be dominated by prairie cordgrass and several sedge species. Associated species include cattails and bulrushes along the edge of open flooded depressions. Baltic rush can be found in limited quantities, associated primarily with the edge of open water.

Desired Structure Objectives

Low	Moderate	High
5-10%	50-65%	30-40%

High vegetation structure can be achieved on those portions of the GA that are dominated by mid and/or tall grasses (late or the latter stages of mid seral condition). Grasslands on moderate to highly productive soils but in a low seral or ecological condition and dominated by short-stature plant species generally do not have the capability to provide high vegetation structure. Management actions may be necessary to move some existing seral conditions toward a higher seral condition to meet structure objectives. In many cases, this change may be fairly rapid and easy to achieve (mid seral conditions), while for other cases, it may take years or decades to accomplish (low and early mid seral conditions).

Grassland areas intensively grazed by livestock over extended time periods, provide low structure. Low vegetation structure can result from a dominance of low stature plant species in an early seral or low ecological condition or from heavy utilization of mid and tall grasses typical of high mid to high seral conditions. These sites are especially important for Richardson's ground squirrel and other low structure obligate species.

Eliminate non-native trees outside developed and identified high-use dispersed recreation areas within 20 years.

Fire

1. Burn approximately 40,000 acres per decade. Objectives of applied prescribed fire include, but are not limited to: reducing Kentucky bluegrass, increasing native grasses, and reducing shrub and tree encroachment to meet desired future condition. Fire would also be used to increase palatability of grasses for grazing and to reduce fuels.

Livestock Grazing

1. Rest at least 5 percent of the suitable rangeland each year if consistent with restoration direction contained in Management Area 3.66.

Management Indicator Species

1. Desired population trends and habitat quality and quantity for management indicator and associated species in this geographic area are as follows (see Appendix H for habitat descriptions).

Greater Prairie Chicken

- Provide diverse and quality nesting, brooding, and roosting habitat for greater prairie chickens at levels that, in combination with habitat on adjoining lands, help support a stable to increasing population of at least 250 adult male prairie chickens within 10 to 15 years.

Plains Sharp-tailed Grouse

- Provide diverse and quality grassland habitat for nesting, brooding, and winter foraging at levels in 10-15 years that, in combination with habitat on adjoining lands, helps support stable to increasing sharp-tailed grouse populations (long-term trends) across the choppy sandhills within this geographic area.

Western Prairie Fringed Orchid

- Provide quality grassland and wetland habitats, maintain hydrological regimes, and provide the ecological processes necessary to ensure that orchids set and disperse seed at levels necessary to support stable to increasing orchid populations over the next 10-15 years.

Geographic Area – Standards and Guidelines

Vegetation

1. Apply vegetative structural and compositional objectives across all herbaceous community types. **Guideline**

2. Use disturbance processes (i.e., grazing, fire) to maintain habitat for dune dependent species. **Guideline**

3. Use management practices in the oak savannas that maintain or create a mosaic of stand conditions that comprise a woody overstory and herbaceous understory. **Guideline**

4. Permit up to 40 cords of firewood collection for personal use per year. If firewood demand exceeds this level, develop snag management guidelines. **Guideline**

5. Conserve rare plant communities through the use of ecological processes suited for those communities. **Guideline**

Infrastructure

1. Construct new structural range improvements (fences and water developments) as needed to achieve desired condition objectives (wildlife habitat, botanical, range management, visual quality and recreation). **Guideline**

2. Prohibit additional draining of the national grassland. **Standard**

3. Restrict development of artesian wells. **Guideline**

Management Indicator Species

1. Emphasize management for greater prairie chicken in the southern and western portions of the Sheyenne Geographic Area. **Guideline**

2. Manage for high vegetative structure in areas where it would enhance greater prairie chicken nesting habitat quality. Emphasize areas characterized by:

- Presence of moderate to highly productive soils and range sites.
- Plant composition dominated by mid and/or tall native grasses.
- Proximity to prairie chicken display grounds.
- Proximity to private croplands and other prairie chicken foraging habitats. **Guideline**

3. Manage for high plant species diversity, including forbs, in areas where it would enhance greater prairie chicken brooding habitat quality. Emphasize areas in proximity to nesting habitat. **Guideline**

4. Establish and maintain quality foraging habitat for greater prairie chicken and associated species by enhancing and/or maintaining a diversity of forbs. **Guideline**

5. Emphasize management for sharp-tailed grouse in the northern and eastern portions of the Sheyenne Geographic Area. **Guideline**

6. Manage for high vegetative structure in areas where it would enhance sharp-tailed grouse nesting habitat quality. Emphasize areas characterized by:

- Presence of moderate to highly productive soils and range sites.
- Plant composition dominated by mid and/or tall native grasses.
- Proximity to sharp-tailed grouse display grounds.
- Proximity to shrub habitats, private croplands and other sharp-tailed grouse foraging habitats. **Guideline**

7. Implement the most current Recovery Strategy for the Western Prairie Fringed Orchid covering land management activities and uses for core, satellite, and other allotments containing orchids (*See Appendix N*). **Standard**.

TES, Sensitive Plant Guilds, and Rare Communities

1. Emphasize late fall (September or later) mowing, instead of prescribed burning, at sites of historic or existing populations of Dakota skipper, Powesheik skipper, Prairie skipper, or Argos skipper, if consistent with restoration objectives. **Guideline**

2. Rest areas with historic or existing populations of sensitive butterflies and skippers, particularly Dakota skipper. Such areas should be rested several years, if consistent with restoration objectives. Rested areas may need to encompass only a portion of a pasture. **Guideline**

3. Conduct butterfly and skipper surveys in areas with historic or existing populations of sensitive butterflies and Dakota skippers. **Guideline.**

4. Maintain and enhance suitable occupied and unoccupied early seral habitats such as dunes and blowouts for sensitive plant species habitat. **Guideline**

TES, Sensitive Plant Guilds, and Rare Communities, cont.

5. Develop and initiate implementation of conservation strategies for the following plant guilds and sensitive plant species: prairie boggy wetlands, tallgrass prairie wetlands, tallgrass prairie deciduous hardwoods, tallgrass prairie choppy sandhills, upright pinweed, and handsome sedge. The Sheyenne Conservation Strategy may substitute for individual strategies if it is sufficiently detailed. **Guideline**

6. Conduct target plant surveys or baseline assessments for species at risk including, but not limited to, the following priority species: slender cottongrass, shining flatsedge, Loesel's twayblade, meadow horsetail, marsh horsetail, sensitive fern, crested woodfern, spinulose woodfern, buckbean, little grapefern, beach heather, sandgrass, frostweed, oakfern, leathery grapefern, broad-leaved goldenrod, foxtail sedge, dogberry, handsome sedge, and upright pinweed. **Guideline**

7. Avoid activities that would negatively impact the hydrologic regime of the Sheyenne River and the Sheyenne aquifer. **Guideline**

8. Protect habitat supporting the Eastern Prairie Boggy Wetland guild from livestock grazing. **Guideline**

9. Avoid use of goats or sheep for noxious weed control in Eastern Prairie Boggy Wetland guild habitats, or in habitats supporting handsome sedge. **Guideline**

10. Avoid placing water developments, oilers, livestock salt, or mineral near or in habitats supporting the Eastern Prairie Boggy Wetland guild. **Guideline**

11. Designate and sign recreation trails in areas adjacent to or within the wetland habitats of the Eastern Prairie Boggy Wetland guild in order to encourage users to remain on designated trails. **Guideline**

12. Discourage recreation activities in habitats occupied by handsome sedge. **Guideline**