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CHAPTER 2 GEOGRAPHIC AREA DIRECTION

INTRODUCTION

Geographic areas include management direction that is too specific to apply across an entire grassland or several 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- 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 and includes the following:

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

The size, location, climate, major drainages, and topographic and vegetation features are described in the Setting section. This section also includes the area's unique or unusual features. The management direction for each area is listed in the following sections: Geographic Area Direction – Objectives and Geographic Area Direction – Standards and Guidelines. Maps at the back of this chapter also display direction for the geographic areas. They include the following information:

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

The Thunder Basin National Grassland encompasses about 572,000 acres of National Forest System (NFS) lands in the eastern region of Wyoming. These lands are interspersed with lands of other ownership, including state and private. The Douglas Ranger District (Douglas, Wyoming) administers the Thunder Basin National Grassland.

The Thunder Basin National Grassland is divided into the following 6 geographic areas. The areas are delineated on the enclosed Alternative 3 map.

- Broken Hills
- Cellers Rosecrans
- Fairview Clareton
- Hilight Bill
- Spring Creek
- Upton Osage

BROKEN HILLS GEOGRAPHIC AREA

Setting

The Broken Hills Geographic Area includes about 157,440 acres of National Forest System lands in east-central Wyoming. It consists of the Rochelle Hills, Red Hills, Cow Creek Buttes, and the Downs area southeast of Bill, Wyoming.

The climate of the Broken Hills Geographic Area can be classified as semi-arid Continental. The area is characterized by cold winters and warm summers, with somewhat infrequent periods of hot weather of more than 100^{o} Fahrenheit. Annual precipitation is generally between 10 and 14 inches, with about 40 inches of snowfall each year. Winds from the southwest are prevalent and sometimes strong.

The topography of the area is characterized by rolling hills to steep escarpments. Elevation ranges from about 4,500 feet above sea level in the Downs area to about 5,200 feet in the Rochelle Hills. The primary drainages in this geographic area are Black Thunder Creek and its tributaries Little Thunder and HA Creeks, the mainstem of Dry Creek and its tributaries Bobcat, Deer, and Little Rat Creeks, the Dry Fork of the Cheyenne River, and tributaries to Antelope Creek. The dominant vegetation includes Wyoming big sagebrush, needle-and-thread grass, blue grama grass, western wheatgrass, and ponderosa pine.

Desired Conditions

The desired condition in this geographic area is an open, scenic landscape with little evidence of human influence or activity. Insects, diseases, wildfire, and grazing patterns will create plant communities with diverse composition (seral stages) and structure. Natural outbreaks of native insects and diseases will be allowed to proceed without intervention unless there is a substantial threat to high-value resources. This area will have a healthy and diverse mix of grasses, including the following species: western wheatgrass, needle and thread grass, green needlegrass, little bluestem, blue grama, and prairie junegrass.

Habitat suitability and effectiveness will be maintained for key wildlife species. Prairie dog colonies will be maintained or increased.

The streams and riparian areas will be in proper functioning condition or moving towards proper functioning condition (BLM 1993). Riparian areas/woody draws will be managed to maintain or enhance different age classes of herbaceous plants, shrubs, and trees. Desired riparian species include sedges, rushes, snowberry, rose, willow, cottonwood, as well as other woody plants. Soils in this geographic area will have high infiltration rates and low soil compaction, resulting in minimal overland flow events.

Primitive conditions with minimal facility development will be emphasized. Mineral developments, such as oil and gas wells and pipelines, will be present but visually subordinate to the landscape in the mid and background. Pastures will be large.

Unique Attributes

- Scenic buttes and hilly landscapes.
- Remote and secluded roadless areas.
- Significant populations of mule deer, pronghorn antelope and elk.
- Largely undisturbed open country.

Management Area Prescription Allocation

Prescription		Approximate Acres
1.31	Backcountry Recreation Nonmotorized	6,545
2.1	Special Interest Area	14,170
3.63	Black-footed Ferret Reintroduction Area	13,619
3.65	Rangelands with Diverse Natural-Appearing Landscapes	71,100
3.68	Big Game Range	18,426
5.12	General Forest and Rangeland	33,577

Geographic Area Direction - Objectives

Vegetation

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

Desired Seral Stages - Objective

Late	Late Intermediate	Early Intermediate	Early
15 to 25%	30 to 40%	25 to 35%	10 to 20%

Across the landscape, grass and sagebrush are intermingled. In some areas, grasses are the dominant species; in other areas, sagebrush is the dominant species. The vegetation composition varies depending on seral stage.

In grass-dominated communities in mid to late seral stages, the dominant native grass species are western wheatgrass, needle and thread grass, green needlegrass, and little bluestem. In grass-dominated sites in early to mid seral stages, grasses such as blue grama often dominate. Threeawn and blue grama are commonly the dominant grasses on prairie dog colonies in early seral stage.

In sagebrush-dominated communities, there is more sagebrush in the mid to late seral stages than in early to mid seral stages. As the community moves from early to late seral stage, the percentage of grasses declines. In the understory, the dominant native plant species are western wheatgrass and green needlegrass.

Desired Vegetation Structure -Objective

High	Moderate	Low
30 to 40%	40 to 50%	15 to 25%

High vegetation structure can be achieved on moderate and highly productive grasslands

dominated by mid grasses (late or late intermediate seral stages). Grasslands on moderate to highly productive soils but in an early seral condition and dominated by short-stature plant species generally do not have the capability to provide high vegetation structure. Management changes may 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 or from heavy utilization of mid grasses.

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. Appendix H describes quality nesting as sagebrush understories with residual herbaceous cover averaging at least 7 inches in height. This objective is primarily provided when sagebrush habitat types are in a late seral condition.

Forest Vegetation

1. Manage timber stands to enhance wildlife and TES habitats while doing the following:

- Improving forest health.
- Preventing potentially damaging forest pest populations.
- Reducing fuel loading and risk of catastrophic wildfire adjacent to communities and homes.
- Improving riparian habitat. **Objective**

2. During vegetation management projects in ponderosa pine forests, use methods that emphasize development of structural stages 4 (mature) and 5 (late successional). Long-term objective is to have 40% of the forest cover in structural stage 4 and 20% in structural stage 5. **Objective**

3. Over the long term (100 years), manage forest cover to create stands with four structural stages in the forest cover as follows:

- 15-25% in structural stage 2.
- 15-25% in structural stage 3.
- 40% in structural stage 4.
- 20% in structural stage 5. **Objective**

4. Within 10-15 years, achieve forest structural diversity by maintaining or enhancing hardwood trees, shrub inclusions, and other beneficial plant communities and openings. **Objective**

Disturbance Processes

1. To achieve Goal 1.c Ecological Integrity, fire will be reintroduced into the ecosystem. The amount and scope of burning will be determined by project specific resource needs. **Objective**

Livestock Grazing

1. To achieve Goal 1.c Wildlife and Fish Habitat, as well as Grassland Wide Direction, rest 1 to 10% of the suitable rangeland each year as determined by project specific resource needs. **Objective**

Infrastructure

1. Increase the average pasture size as opportunities arise over the next 15 years. **Objective**

2. Provide at least 20 miles of system non-motorized trails within 10 years. **Objective**

Wildlife

Black-tailed Prairie Dog (MIS)

1. Maintain an increasing trend of black-tailed prairie dog populations across the geographic area over the next 10 to 15 years. **Objective**

2. Maintain and expand the current distribution of black-tailed prairie dogs across the geographic area over the next 10 to15 years. **Objective**

3. Improve the complex of prairie dog colonies (10 or more colonies with distances between nearest colonies not exceeding 6 miles) in the central part of this geographic area over the next 10 to 15 years. This area has been designated as MA 3.63. **Objective**

4. To help increase prairie dog populations and habitat for associated species, allow and encourage expansion of the prairie dog colony complex (10 or more colonies with a total colony acreage of at least 1,000 acres and intercolony distances of less than 6 miles) in the central portion of this geographic area over the next 10 to 15 years. Colonies protected by conservation agreements or easements on adjoining land jurisdictions, including private, may be considered part of a complex. **Objective**

Sage Grouse (MIS)

1. Provide diverse and quality sagebrush habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of sage grouse and other wildlife with similar habitat needs. **Objective**

2. Establish and maintain quality nesting habitat for sage grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush understories within 10 years. **Objective**

3. Reduce the impacts of extended droughts on sage grouse populations and their recovery after droughts by managing land uses in sage grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats. **Objective**

Geographic Area Direction – Standards and Guidelines

Vegetation

1. Use existing monitoring information and stocking rate guidelines for livestock grazing (see Appendix I) to help design and implement range management strategies for meeting desired vegetation objectives. **Guideline**

2. Manage vegetation by Management Area (MA) according to the following table to achieve the desired seral stage (plant species composition) objectives for the Geographic Area. **Guideline**

Seral Condition By M.A.

MA	Late		Late Intermediate		Early Intermediate		Early	
	Target	Range	Target	Range	Target	Range	Target	Range
1.31	25%	25-30%	35%	35-40%	30%	25-30%	10%	10-15%
2.1	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%
3.63	15%	10-15%	10%	10-15%	15%	15-20%	60%	60-65%
3.65	20%	20-25%	35%	30-35%	30%	30-35%	15%	10-15%
3.68	25%	25-30%	35%	30-35%	25%	25-30%	15%	10-15%
5.12	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%

3. Manage vegetation by Management Area (MA) according to the following table to achieve the desired structural objectives for the Geographic Area. **Guideline**

Structural Condition by M.A.

MA	High		Moderate		Low	
	Target	Range	Target	Range	Target	Range
1.31	30%	30-35%	50%	45-50%	20%	15-20%
2.1	30%	30-35%	50%	45-50%	20%	15-20%
3.63	30%	30-35%	10%	10-15%	60%	60-65%
3.65	35%	30-35%	50%	45-50%	15%	10-15%
3.68	40%	40-45%	50%	45-50%	10%	10-15%
5.12	40%	40-45%	40%	40-45%	20%	15-20%

Forest Vegetation

1. When doing planned vegetation treatments, emphasize the maintenance and development of forest structural stages 4 (mature) and 5 (late successional). **Guideline**

2. Replicate biological processes found in the areas and strive to replicate natural vegetative patterns and patch size when doing management activities. **Guideline**

3. When developing openings in vegetative communities, simulate naturally shaped edges. **Guideline**

4. Don't make wood fiber production, Christmas tree cutting, or fire wood harvest the primary objectives of vegetative manipulation. **Standard**

Snags and Dead Woody Material Management

1. During vegetation treatments, maintain an average of four hard snags per forested acre. **Guideline**

2. If there are fewer than four hard snags per forested acre, projects to increase snag numbers may be implemented. **Guideline**

3. Snags can be clumped or individual but should be well distributed throughout the planning unit. **Guideline**

4. In areas not meeting the snag standard, consider snag cutting restrictions and treating live replacement trees to create snags. **Guideline**

5. Retain all soft snags unless they are a safety hazard. **Guideline**

6. Leave large woody debris on harvested or thinned sites to help retain moisture, prevent soil movement, provide micro-sites for establishment of forbs, grasses, shrubs, and trees and to provide habitat for wildlife. Locate woody debris concentrations where fuel loading is not a concern. **Guideline.**

7. On conifer-forested sites (ponderosa pine), retain an average of at least 50 linear feet per acre of coarse woody debris with a minimum diameter of 10 inches (where materials are available) or largest woody material found on-site. **Guideline**.

	Hard Snags			**Downed Logs**	
Forest Type	Minimum Diameter	Average per Acre *	Minimum Height	Minimum Diameter	Linear Feet per Acre *
Ponderosa pine	10 inches	4.0	25 feet	10 inches	50 feet

*This does not mean that every acre will have a snag or downed log; these are averages across the geographic area

Infrastructure

1. Maintain or increase average pasture size. **Guideline**

2. Maintain or reduce the net classified road density. If new short-term roads are constructed, existing unclassified or classified roads should be decommissioned. **Guideline**

Special Uses

1. Bury all electrical utility lines of 33KV or less and telephone lines. **Standard**

Wildlife

Black-tailed Prairie Dog (MIS)

1. Emphasize an active landownership adjustment program adjacent to the complex, throughout the geographic area in an attempt to reduce private land conflicts over prairie dog management and to enhance long-term management opportunities for expanding prairie dog populations in this area. Landownership adjustments may need to be completed in some locations before implementation of some actions to accelerate prairie dog population growth. **Guideline**

2. A range of 23,616 to 31,488 acres of low structure grasslands is prescribed for this geographic area. Much of this acreage should be located in the northeast portion of the geographic area in areas adjoining existing colonies and where prairie dog colonies are known to have occurred in the recent past. This will accelerate expansion of existing colonies and re-establishment of past colonies that are not along private land boundaries. **Guideline**

Sage Grouse (MIS)

1. A range of 55,104 to 62,976 acres of high structure sagebrush understory is prescribed for this geographic area. A substantial amount of this should be located where it would optimize sage grouse habitat and associated species. The following criteria will be considered during site-specific project level planning to help determine the best locations to manage for high structure grasslands:

- Presence of moderate to highly productive soils and range sites,
- Plant composition dominated by mid and/or tall grasses with sagebrush canopy cover of 10 to 35%,
- Proximity to sage grouse display grounds, 2 miles in uniform patches and 3 miles in irregular patches. **Guideline**

2. Establish and maintain quality foraging habitat for sage grouse and associated species by enhancing and/or maintaining productive sagebrush stands with a diversity of forb species. **Guideline**

3. At the onset of drought, evaluate the need to modify land use practices in sage grouse habitat to avoid significantly magnifying the adverse effects of drought on their populations and vegetation for nesting, brooding and foraging. **Standard**

CELLERS ROSECRANS GEOGRAPHIC AREA

Setting

The Cellers Rosecrans Geographic Area includes about 121,080 acres of National Forest System lands in east-central Wyoming. This geographic area lies largely within the central part of the Thunder Basin National Grassland from the Cheyenne River north.

The climate of the Cellers Rosecrans Geographic Area can be classified as semi-arid Continental. The area is characterized by cold winters and warm summers with somewhat infrequent periods of hot weather of more than 100^{o} Fahrenheit. Annual precipitation is generally between 10 and 14 inches, with about 40 inches of snowfall each year. Winds from the southwest are prevalent and sometimes strong.

Fairly level plains to rolling hills characterize the topography of the area. Elevation ranges from about 4,300 feet above sea level to 4,700 feet above sea level. The primary drainages in the geographic area are Black Thunder Creek and the lower portion of Little Black Thunder Creek. Portions of the Cheyenne River (including tributaries Frog and Horse Creeks) and Antelope Creek also flow through this geographic area. The dominant vegetation includes blue grama, Wyoming big sagebrush, cottonwood, western wheatgrass and needle-and-thread.

Desired Conditions

Insects, diseases, wildfire, and grazing patterns will create plant communities with diverse composition and structure. This area will have a healthy and diverse mix of grasses, including the following species: western wheatgrass, needle and thread grass, green needlegrass, little bluestem, blue grama, and prairie junegrass. Management activities will maintain or enhance hardwood and coniferous trees, woody shrub inclusions and other beneficial plant communities and increase vegetative diversity. Tree densities within stands will vary to create landscape-scale diversity. Fire will be used in some areas to promote open park-like timber stands. Late successional-stage vegetation may be found in the area.

Riparian areas/woody draws will be managed to maintain or enhance different age classes of herbaceous plants, shrubs, and trees. Some areas will be managed to achieve rapid development of cottonwood and willow riparian habitats. Desired riparian species include sedges, rushes, snowberry, rose, willow, cottonwood, and other woody plants.

Management direction in Special Interest Areas will emphasize cultural and zoological resources. Plant and animal species and communities associated with black-footed ferrets and black-tailed prairie dogs will be actively restored.

Primitive conditions with minimal facility development will be emphasized. Mineral developments such as oil and gas wells and pipelines will be present but visually subordinate in the mid and background. Pastures will remain large.

Unique Attributes

- A proposed Cheyenne River Valley reintroduction site for the endangered black-footed ferret.
- Significant populations of black-tailed prairie dogs.
- Large, consolidated areas of public land.

Management Area Prescription Allocation

Number	Prescription	Approximate Acres
2.1	Special Interest Areas	6,940
2.2	Research Natural Areas	1,213
3.63	Black-footed Ferret Reintroduction Area	34,275
3.68	Big Game Range	6
5.12	General Forest and Rangelands: Range Vegetation Emphasis	78,647

Geographic Area Direction - Objectives

Vegetation

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

Desired Seral Stages - Objective

Late	Late Intermediate	Early Intermediate	Early
10 to 20%	20 to 30%	25 to 35%	25 to 35%

Across the landscape, grass and sagebrush are intermingled. In some areas, grasses are the dominant species; in other areas, sagebrush is the dominant species. The vegetation composition varies depending on seral stage.

In grass-dominated communities in mid to late seral stages, the dominant native grass species are western wheatgrass, needle and thread grass, green needlegrass, and little bluestem. In grass-dominated sites in early to mid seral stages, grasses such as blue grama often dominate. Threeawn and blue grama are commonly the dominant grasses on prairie dog colonies in early seral stage.

In sagebrush-dominated communities, there is more sagebrush in the mid to late seral stages than in early to mid seral stages. As the community moves from early to late seral stage, the percentage of grasses declines. In the understory, the dominant native plant species are western wheatgrass and green needlegrass.

Desired Vegetation Structure - Objective

High	Moderate	Low
30 to 40%	25 to 35%	30 to 40%

High vegetation structure can be achieved on moderate and highly productive grasslands dominated by mid grasses (late or late intermediate seral stages). Grasslands on moderate to highly productive soils but in an early seral condition and dominated by short-stature plant species generally do not have the capability to provide high vegetation structure. Management changes may 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 or from heavy utilization of mid grasses.

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. Appendix H describes quality nesting as sagebrush understories with residual herbaceous cover averaging at least 7 inches in height. This objective is primarily provided when sagebrush habitat types are in a late seral condition.

Forest Vegetation

1. Manage timber stands to enhance wildlife and TES habitats while doing the following:

- Improving forest health.
- Preventing potentially damaging forest pest populations.
- Reducing fuel loading and risk of catastrophic wildfire adjacent to communities and homes.
- Improving riparian habitat. **Objective**

2. During vegetation management projects in ponderosa pine forests, use methods that emphasize development of structural stages 4 (mature) and 5 (late successional). Long-term objective is to have 40% of the forest cover in structural stage 4 and 20% in structural stage 5. **Objective**

3. Over the long term (100 years), manage forest cover to create stands with four structural stages in the forest cover as follows:

- 15-25% in structural stage 2.
- 15-25% in structural stage 3.
- 40% in structural stage 4.
- 20% in structural stage 5. **Objective**

4. Within 10-15 years, achieve forest structural diversity by maintaining or enhancing hardwood trees, shrub inclusions, and other beneficial plant communities and openings. **Objective**

Disturbance Processes

1. To achieve Goal 1.c Ecological Integrity, fire will be reintroduced into the ecosystem. The amount and scope of burning will be determined by project specific resource needs. **Objective**

Livestock Grazing

1. To achieve Goal 1.c Wildlife and Fish Habitat, as well as Grassland Wide Direction, rest 1-10% of the suitable rangeland each year as determined by project specific resource needs **Objective**

Infrastructure

1. The landscape is dominated by large pasture size. **Objective**

Wildlife

Black-tailed Prairie Dog (MIS)

1. Maintain an increasing trend of black-tailed prairie dog populations across the geographic area over the next 10 to 15 years. **Objective**

2. Maintain and expand the current distribution of black-tailed prairie dogs across the geographic area over the next 10 to15 years. **Objective**

3. Improve the complex of prairie dog colonies (10 or more colonies with distances between nearest colonies not exceeding 6 miles) in the southwestern part of this geographic area over the next 10 to 15 years. This area has been designated as MA 3.63. **Objective**

4. To help increase prairie dog populations and habitat for associated species, allow and encourage expansion of the prairie dog colony complex (10 or more colonies with a total colony acreage of at least 1,000 acres and intercolony distances of less than 6 miles) in the central portion of this geographic area over the next 10 to 15 years. Colonies protected by conservation agreements or easements on adjoining land jurisdictions, including private, may be considered part of a complex. **Objective**

Sage Grouse (MIS)

1. Provide diverse and quality sagebrush habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of sage grouse and other wildlife with similar habitat needs. **Objective**

2. Establish and maintain quality nesting habitat for sage grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush understories within 10 years. **Objective**

3. Reduce the impacts of extended droughts on sage grouse populations and their recovery after droughts by managing land uses in sage grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats. **Objective**

Geographic Area Direction – Standards and Guidelines

Vegetation

1. Use existing monitoring information and stocking rate guidelines for livestock grazing (see Appendix I) to help design and implement range management strategies for meeting desired vegetation objectives. **Standard**

2. Manage vegetation by Management Area (MA) according to the following table to achieve the desired seral stage (plant species composition) objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Seral Condition By M.A.

MA	Late		Late Intermediate		Early Intermediate		Early	
	Target	Range	Target	Range	Target	Range	Target	Range
2.1	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%
2.2	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%
3.63	15%	10-15%	10%	10-15%	15%	15-20%	60%	60-65%
3.68	25%	25-30%	35%	30-35%	25%	25-30%	15%	10-15%
5.12	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%

3. Manage vegetation by Management Area (MA) according to the following table to achieve the desired structural objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Structural Condition By M.A.

MA	High		Moderate		Low	
	Target	Range	Target	Range	Target	Range
2.1	30%	30-35%	50%	45-50%	20%	15-20%
2.2	40%	35-40%	40%	35-40%	20%	15-20%
3.63	30%	30-35%	10%	10-15%	60%	60-65%
3.68	40%	40-45%	50%	45-50%	10%	10-15%
5.12	40%	40-45%	40%	40-45%	20%	15-20%

Forest Vegetation

1. When doing planned vegetation treatments, emphasize the maintenance and development of forest structural stages 4 (mature) and 5 (late successional). **Guideline**

2. Replicate biological processes found in the areas and strive to replicate natural vegetative patterns and patch size when doing management activities. **Guideline**

3. When developing openings in vegetative communities, simulate naturally shaped edges. **Guideline**

4. Don't make wood fiber production, Christmas tree cutting, or fire wood harvest the primary objectives of vegetative manipulation. **Standard**

Snags and Dead Woody Material Management

1. During vegetation treatments, maintain an average of four hard snags per forested acre. **Guideline**

2. If there are fewer than four hard snags per forested acre, projects to increase snag numbers may be implemented. **Guideline**

3. Snags can be clumped or individual but should be well distributed throughout the planning unit. **Guideline**

4. In areas not meeting the snag standard, consider snag cutting restrictions and treating live replacement trees to create snags. **Guideline**

5. Retain all soft snags unless they are a safety hazard. **Guideline**

6. Leave large woody debris on harvested or thinned sites to help retain moisture, prevent soil movement, provide micro-sites for establishment of forbs, grasses, shrubs, and trees and to provide habitat for wildlife. Locate woody debris concentrations where fuel loading is not a concern. **Guideline.**

7. On conifer-forested sites (ponderosa pine), retain an average of at least 50 linear feet per acre of coarse woody debris with a minimum diameter of 10 inches (where materials are available) or largest woody material found on-site. **Guideline**.

	Hard Snags			**Downed Logs**	
Forest Type	Minimum Diameter	Average per Acre *	Minimum Height	Minimum Diameter	Linear Feet per Acre *
Ponderosa pine	10 inches	4.0	25 feet	10 inches	50 feet

*This does not mean that every acre will have a snag or downed log; these are averages across the geographic area

Infrastructure

1. Maintain or increase average pasture size in Management Areas 2.1, 2.2, and 3.63. **Guideline**

2. Maintain or reduce the net classified road density. If new short-term roads are constructed, existing unclassified or classified roads should be decommissioned. **Guideline**

Special Uses

1. Bury all electrical utility lines of 33KV or less and telephone lines. **Standard**

Wildlife

Black-tailed Prairie Dog (MIS)

1. Emphasize an active landownership adjustment program adjacent to the complex, throughout the geographic area in an attempt to reduce private land conflicts over prairie dog management and to enhance long-term management opportunities for expanding prairie dog populations in this area. Landownership adjustments may need to be completed in some locations before implementation of some actions to accelerate prairie dog population growth. **Guideline**

2. A range of 36,324 to 42,378 acres of low structure grasslands is prescribed for this geographic area. Much of this acreage should be located in the northeast portion of the geographic area in areas adjoining existing colonies and where prairie dog colonies are known to have occurred in the recent past. This will accelerate expansion of existing colonies and re-establishment of past colonies that are not along private land boundaries. **Guideline**

Sage Grouse (MIS)

1. A range of 42,378 to 48,432 acres of high structure sagebrush understory is prescribed for this geographic area. A substantial amount of this should be located where it would optimize sage grouse habitat and associated species. The following criteria will be considered during site-specific project level planning to help determine the best locations to manage for high structure grasslands:

- Presence of moderate to highly productive soils and range sites,
- Plant composition dominated by mid and/or tall grasses with sagebrush canopy cover of 10 to 35%.
- Proximity to sage grouse display grounds, 2 miles in uniform patches and 3 miles in irregular patches. **Guideline**

2. Establish and maintain quality foraging habitat for sage grouse and associated species by enhancing and/or maintaining productive sagebrush stands with a diversity of forb species. **Guideline**

3. At the onset of drought, evaluate the need to modify land use practices in sage grouse habitat to avoid significantly magnifying the adverse effects of drought on their populations and vegetation for nesting, brooding and foraging. **Standard**

FAIRVIEW CLARETON GEOGRAPHIC AREA

Setting

The Fairview Clareton Geographic Area encompasses about 92,130 acres of National Forest System lands in east-central Wyoming. This geographic area is located in the easternmost part of the national grassland, between the Cheyenne River and US Highway 16.

The climate of the Fairview Clareton Geographic Area can be classified as semi-arid Continental. The area is characterized by warm summers with somewhat infrequent hot periods of more than 100^{o} Fahrenheit. Winters can be very cold, with temperatures dipping below minus 35^{o} Fahrenheit. Annual precipitation is generally between 10 to 14 inches at the lower elevations, and between 15 to 19 inches in the more northerly areas of the geographic area. About 40 inches of snowfall occurs on an average annual basis. Winds from the southeast are prevalent and are often strong.

The topography of the area consists of nearly level plains to rolling and moderately steep hills with some gullied lands. Elevation ranges between 3,800 to 4,800 feet above sea level. The primary drainages in the geographic area are Lodgepole Creek (including tributaries Wildcat, Lone Tree, Deep, and Hay Creeks) and Beaver Creek (including tributaries South Beaver, Mush, Fiddler, and lower Iron and Turner Creeks). The dominant vegetation includes Wyoming big sagebrush, blue grama and western wheatgrass.

Desired Conditions

Grazing will be a significant activity. The area will be managed to provide a rural/agricultural landscape. This area will have a healthy and diverse mix of grasses, including the following species: western wheatgrass, needle and thread grass, green needlegrass, little bluestem, blue grama, and prairie junegrass.

The streams and riparian areas will be in proper functioning condition or moving towards proper functioning condition (BLM 1993). Riparian areas/woody draws will be managed to maintain or enhance different age classes of herbaceous plants, shrubs, and trees. Desired riparian species include sedges, rushes, snowberry, rose, willow, cottonwood, as well as other woody plants. Soils in this geographic area will have high infiltration rates and low soil compaction, resulting in minimal overland flow events.

There will be more development and a moderate number of facilities in this geographic area. Facilities and landscape modifications will be visible but reasonably mitigated to blend with natural features. Portions of the area will contain frequent fences, livestock developments, and roads. Structures associated with mineral development (e.g., oil and gas wells, pipelines) will be clearly visible. In some locations, operations will dominate the landscape; in others, they will be visually subordinate in the background. At the conclusion of mineral activities, lands will be reclaimed to approximate pre-disturbance levels or to meet a specific purpose consistent with the management area direction.

Unique Attributes

- Highly valued paleontological and archeological resources are present.
- There is substantial minerals development, including bentonite, oil, and gas.

Management Area Prescription Allocation

Number	Prescription	Approximate Acres
2.1	Special Interest Areas	5,670
4.32	Dispersed Recreation High Use	5,650
5.12	General Forest and Rangelands: Range Vegetation Emphasis	14,165
6.1	Rangeland with Broad Resource Emphasis	66,653

Geographic Area Direction - Objectives

Vegetation

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

Desired Seral Stages - Objective

Late	Late Intermediate	Early Intermediate	Early
10 to 20%	30 to 40%	30 to 40%	10 to 20%

Across the landscape, grass and sagebrush are intermingled. In some areas, grasses are the dominant species; in other areas, sagebrush is the dominant species. The vegetation composition varies depending on seral stage.

In grass-dominated communities in mid to late seral stages, the dominant native grass species are western wheatgrass, needle and thread grass, green needlegrass, and little bluestem. In grass-dominated sites in early to mid seral stages, grasses such as blue grama often dominate. Threeawn and blue grama are commonly the dominant grasses on prairie dog colonies in early seral stage.

In sagebrush-dominated communities, there is more sagebrush in the mid to late seral stages than in early to mid seral stages. As the community moves from early to late seral stage, the percentage of grasses declines. In the understory, the dominant native plant species are western wheatgrass and green needlegrass.

Desired Vegetation Structure - Objective

High	Moderate	Low
25 to 35%	45 to 55%	15 to 25%

High vegetation structure can be achieved on moderate and highly productive grasslands dominated by mid grasses (late or late intermediate seral stages). Grasslands on moderate to highly productive soils but in an early seral condition and dominated by short-stature plant species generally do not have the capability to provide high vegetation structure. Management changes may 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 or from heavy utilization of mid grasses.

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. Appendix H describes quality nesting as sagebrush understories with residual herbaceous cover averaging at least 7 inches in height. This objective is primarily provided when sagebrush habitat types are in a late seral condition.

Disturbance Processes

1. To achieve Goal 1c Ecological Integrity, fire will be reintroduced into the ecosystem. The amount and scope of burning will be determined by project specific resource needs. **Objective**

Livestock Grazing

1. To achieve Goal 1c Wildlife and Fish Habitat, as well as Grassland Wide Direction, rest 1-10% of the suitable rangeland each year as determined by project-specific resource needs. **Objective**

Wildlife

Sage Grouse (MIS)

1. Provide diverse and quality sagebrush habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of sage grouse and other wildlife with similar habitat needs. **Objective**

2. Establish and maintain quality nesting habitat for sage grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush understories within 10 years. **Objective**

3. Reduce the impacts of extended droughts on sage grouse populations and their recovery after droughts by managing land uses in sage grouse habitat in a manner that does not significantly magnify the negative effects of drought on grouse nesting, brooding and foraging habitats. **Objective**

Geographic Area Direction – Standards and Guidelines

Vegetation

1. Use existing monitoring information and stocking rate guidelines for livestock grazing (see Appendix I) to help design and implement range management strategies for meeting desired vegetation objectives. **Standard**

2. Manage vegetation by Management Area (MA) according to the following table to achieve the desired seral stage (plant species composition) objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Seral Condition By M.A.

MA	Late		Late Intermediate		Early Intermediate		Early	
	Target	Range	Target	Range	Target	Range	Target	Range
2.1	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%
4.32	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%
5.12	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%
6.1	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%

3. Manage vegetation by Management Area (MA) according to the following table to achieve the desired structural objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Structural Condition by M.A.

MA	High		Moderate		Low	
	Target	Range	Target	Range	Target	Range
2.1	30%	30-35%	50%	45-50%	20%	15-20%
4.32	30%	30-35%	50%	45-50%	20%	15-20%
5.12	40%	40-45%	40%	40-45%	20%	15-20%
6.1	30%	25-30%	50%	50-55%	20%	15-20%

Special Uses

1. Bury electrical utility lines of 33 KV or less and telephone lines, except when:

- Scenic integrity objectives of the area can be met using an overhead line.
- Burial is not feasible due to geologic hazard or unfavorable geologic conditions.
- It is not reasonable as determined by a cost-effectiveness analysis.
- Greater long-term site disturbance would result.
- It is not technically feasible. **Guideline**

Wildlife

Sage Grouse (MIS)

1. A range of 27,639 to 32,245 acres of high structure sagebrush understory is prescribed for this geographic area. A substantial amount of this should be located where it would optimize sage grouse habitat and associated species. The following criteria will be considered during site-specific project level planning to help determine the best locations to manage for high structure grasslands:

- Presence of moderate to highly productive soils and range sites,
- Plant composition dominated by mid and/or tall grasses with sagebrush canopy cover of 10 to 35%.
- Proximity to sage grouse display grounds: 2 miles in uniform patches and 3 miles in irregular patches. **Guideline**

2. Establish and maintain quality foraging habitat for sage grouse and associated species by enhancing and/or maintaining productive sagebrush stands with a diversity of forb species. **Guideline**

3. At the onset of drought, evaluate the need to modify land use practices in sage grouse habitat to avoid significantly magnifying the adverse effects of drought on their populations and vegetation for nesting, brooding and foraging. **Standard**

HILIGHT BILL GEOGRAPHIC AREA

Setting

The Hilight Bill Geographic Area encompasses about 100,780 acres of National Forest System lands in east-central Wyoming. This geographic area is located roughly parallel to Wyoming State Highway 59 from Bill to Wright, Wyoming.

The climate of the Hilight Bill Geographic Area can be classified as semi-arid Continental. The area is characterized by cold winters and warm summers with somewhat infrequent periods of hot weather of more than 100^{o} Fahrenheit. Winter temperatures may dip to as much as minus 35^{o} Fahrenheit. Annual precipitation is generally between 10 and 14 inches, with about 40 inches of snowfall each year. Winds from the southwest are prevalent and sometimes strong.

Fairly level plains with slopes of less than 15% characterize the topography of the area. Elevation ranges between 4,700 feet to 5,300 feet above sea level. The primary drainages in the geographic area are the headwaters of Antelope Creek (including tributaries Bates, Spring, and Porcupine Creeks), the Dry Fork of the Cheyenne River, and Dry Creek. The dominant vegetation includes big sagebrush, western wheatgrass, and needlegrass and blue gramma.

Desired Conditions

Minerals exploration and development and livestock grazing will be significant management activities in this geographic area. In some areas, there may be restrictions on public use to ensure public safety and to avoid unreasonable interference with mineral operations. In those areas where mining is emphasized, reclamation activities will restore the area to a reasonable level of its pre-mining condition. In areas with other management emphases, existing vegetative diversity and structural conditions will be maintained and enhanced. This area will have a healthy and diverse mix of grasses, including the following species: western wheatgrass, needle and thread grass, green needlegrass, little bluestem, blue grama, and prairie junegrass.

The streams and riparian areas will be in proper functioning condition or moving towards proper functioning condition (BLM 1993). Riparian areas/woody draws will be managed to maintain or enhance different age classes of herbaceous plants, shrubs, and trees. Desired riparian species include sedges, rushes, snowberry, rose, willow, cottonwood, as well as other woody plants. Soils in this geographic area will have high infiltration rates and low soil compaction, resulting in minimal overland flow events.

There will be more development and a moderate number of facilities in this geographic area. Facilities and landscape modifications will be visible but reasonably mitigated to blend with natural features. Higher fence densities and intensive mineral development may occur.

Mineral developments and facilities such as coal mines, railroads, oil and gas wells, and pipelines will be present and will often dominate the landscape. When mineral activities are concluded, the disturbed lands will be reclaimed to blend in with adjacent undisturbed areas.

Unique Attributes

- There is significant extraction of coal, uranium, oil, and gas.
- Recreational hunting for mule deer, elk and pronghorn antelope is common.
- High incidence of raptor nesting occurs.

Management Area Prescription Allocation

Number	Prescription	Approximate Acres
3.68	Big Game Range	1,354
6.1	Rangeland with Broad Resource Emphasis	51,440
8.4	Mineral Production and Development	47,993

Geographic Area Direction - Objectives

Vegetation

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

Desired Seral Stages - Objective

Late	Late Intermediate	Early Intermediate	Early
10 to 20%	30 to 40%	30 to 40%	10 to 20%

Across the landscape, grass and sagebrush are intermingled. In some areas, grasses are the dominant species; in other areas, sagebrush is the dominant species. The vegetation composition varies depending on seral stage.

In grass-dominated communities in mid to late seral stages, the dominant native grass species are western wheatgrass, needle and thread grass, green needlegrass, and little bluestem. In grass-dominated sites in early to mid seral stages, grasses such as blue grama often dominate. Threeawn and blue grama are commonly the dominant grasses on prairie dog colonies in early seral stage.

In sagebrush-dominated communities, there is more sagebrush in the mid to late seral stages than in early to mid seral stages. As the community moves from early to late seral stage, the percentage of grasses declines. In the understory, the dominant native plant species are western wheatgrass and green needlegrass.

Desired Vegetation Structure - Objective

High	Moderate	Low
25 to 35%	45 to 55%	15 to 25%

High vegetation structure can be achieved on moderate and highly productive grasslands dominated by mid grasses (late or late intermediate seral stages). Grasslands on moderate to highly productive soils but in an early seral condition and dominated by short-stature plant species generally do not have the capability to provide high vegetation structure. Management changes may 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 or from heavy utilization of mid grasses.

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. Appendix H describes quality nesting as sagebrush understories with residual herbaceous cover averaging at least 7 inches in height. This objective is primarily provided when sagebrush habitat types are in a late seral condition.

Disturbance Processes

1. To achieve Goal 1c Ecological Integrity, fire will be reintroduced into the ecosystem. The amount and scope of burning will be determined by project specific resource needs. **Objective**

Livestock Grazing

1. To achieve Goal 1c Wildlife and Fish Habitat, as well as Grassland Wide Direction, rest 1-10% of the suitable rangeland each year as determined by project specific resource needs. **Objective**

Wildlife

Sage Grouse (MIS)

1. Provide diverse and quality sagebrush habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of sage grouse and other wildlife with similar habitat needs. **Objective**

2. Establish and maintain quality nesting habitat for sage grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush understories within 10 years. **Objective**

3. Reduce the impacts of extended droughts on sage grouse populations and their recovery after droughts by managing land uses in sage grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats. **Objective**

Geographic Area Direction – Standards and Guidelines

Vegetation

1. Use existing monitoring information and stocking rate guidelines for livestock grazing (see Appendix I) to help design and implement range management strategies for meeting desired vegetation objectives. **Standard**

2. Manage vegetation by Management Area (MA) according to the following table to achieve the desired seral stage (plant species composition) objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Seral Condition By M.A.

MA	Late		Late Intermediate		Early Intermediate		Early	
	Target	Range	Target	Range	Target	Range	Target	Range
3.68	25%	25-30	35%	30-35%	25%	25-30%	15%	10-15%
6.1	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%
8.4	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%

3. Manage vegetation by Management Area (MA) according to the following table to achieve the desired structural objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Structural Condition by M.A.

MA	High		Moderate		Low	
	Target	Range	Target	Range	Target	Range
3.68	40%	40-45%	50%	45-50%	10%	10-15%
6.1	30%	25-30%	50%	50-55%	20%	15-20%
8.4	30%	25-30%	50%	50-55%	20%	15-20%

Special Uses

1. Bury electrical utility lines of 33 KV or less and telephone lines, except when:

- Scenic integrity objectives of the area can be met using an overhead line.
- Burial is not feasible due to geologic hazard or unfavorable geologic conditions.
- It is not reasonable as determined by a cost-effectiveness analysis.
- Greater long-term site disturbance would result.
- It is not technically feasible. **Guideline**

Wildlife

Sage Grouse (MIS)

1. A range of 25,195 to 30,234 acres of high structure sagebrush understory is prescribed for this geographic area. A substantial amount of this should be located where it would optimize sage grouse habitat and associated species. The following criteria will be considered during site-specific project level planning to help determine the best locations to manage for high structure grasslands:

- Presence of moderate to highly productive soils and range sites,
- Plant composition dominated by mid and/or tall grasses with sagebrush canopy cover of 10 to 35%.
- Proximity to sage grouse display grounds, 2 miles in uniform patches and 3 miles in irregular patches. **Guideline**

2. Establish and maintain quality foraging habitat for sage grouse and associated species by enhancing and/or maintaining productive sagebrush stands with a diversity of forb species. **Guideline**

3. At the onset of drought, evaluate the need to modify land use practices in sage grouse habitat to avoid significantly magnifying the adverse effects of drought on their populations and vegetation for nesting, brooding and foraging. **Standard**

SPRING CREEK GEOGRAPHIC AREA

Setting

The Spring Creek Geographic Area encompasses about 48,740 acres of National Forest System lands in eastern Wyoming. This geographic area is located about 30 miles north of Gillette, Wyoming.

The climate of the Spring Creek Geographic Area can be classified as semi-arid Continental. The area is characterized by cold winters and warm summers with somewhat infrequent periods of hot weather of more than 100^{o} Fahrenheit. Winter temperatures may dip to as much as minus 35^{o} Fahrenheit. Annual precipitation is generally between 15 and 17 inches, with about 40 inches of snowfall each year. Winds from the southwest are prevalent and sometimes strong.

The topography of the area is characterized by nearly level to moderately steep plains, with rolling hills and steep escarpments in the western and northern portions of the geographic area. Elevations range between 4,100 feet to 4,600 feet above sea level in the Weston Hills area.

The primary drainages in the geographic area are Duck Creek, ZV Creek, Spring Creek (including tributaries Dry Fork Spring Creek and Wild Horse Creek), and Prairie Creek (including Horse Creek tributary). Duck, ZV, and Spring Creeks flow west/northwest into the Little Powder River. Prairie Creek flows east-northeast and eventually drains into the Little Missouri River.

The dominant vegetation includes sagebrush, western wheatgrass, little bluestem and needlegrass. About 6,000 acres of ponderosa pine occurs primarily in the Weston Hills and the northern part of the geographic area.

Desired Condition

Insects, diseases, wildfire, and grazing patterns will create plant communities with diverse composition and structure. This area will have a healthy and diverse mix of grasses, including the following species: western wheatgrass, needle and thread grass, green needlegrass, little bluestem, blue grama, and prairie junegrass. Management activities will maintain or enhance hardwood and coniferous trees, woody shrub inclusions and other beneficial plant communities and increase vegetative diversity. Tree densities within stands will vary to create landscape-scale diversity. Fire will be used in some areas to promote open park-like timber stands. Late successional-stage vegetation may be found in the area.

Riparian areas/woody draws will be managed to maintain or enhance different age classes of herbaceous plants, shrubs, and trees. Some areas will be managed to achieve rapid development of cottonwood and willow riparian habitats. Desired riparian species include sedges, rushes, snowberry, rose, willow, cottonwood, and other woody plants.

Areas with heavy recreation use will have picnicking and camping facilities available. Motorized and nonmotorized trails will have signs to distinguish different uses.

Primitive conditions with minimal facility development will be emphasized. Mineral developments such as oil and gas wells and pipelines will be present but visually subordinate in

the mid and background. Pastures will remain large.

Unique Attributes

- Ponderosa pine forests, woody draws and grasslands.
- Scenic landscapes, including scoria outcroppings.
- Recreational hunting of pronghorn antelope and mule deer.

Management Area Prescription Allocation

Number	Prescription	Approximate Acres
3.65	Rangelands with Diverse Natural-appearing Landscapes	12,332
4.32	Dispersed Recreation High Use	1,929
5.12	General Forest and Rangeland: Range Vegetation Emphasis	34,481

Geographic Area Direction - Objectives

Vegetation

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

Desired Seral Stages - Objective

Late	Late Intermediate	Early Intermediate	Early
10 to 20%	30 to 40%	30 to 40%	10 to 20%

Across the landscape, grass and sagebrush are intermingled. In some areas, grasses are the dominant species; in other areas, sagebrush is the dominant species. The vegetation composition varies depending on seral stage.

In grass-dominated communities in mid to late seral stages, the dominant native grass species are western wheatgrass, needle and thread grass, green needlegrass, and little bluestem. In grass-dominated sites in early to mid seral stages, grasses such as blue grama often dominate. Threeawn and blue grama are commonly the dominant grasses on prairie dog colonies in early seral stage.

In sagebrush-dominated communities, there is more sagebrush in the mid to late seral stages than in early to mid seral stages. As the community moves from early to late seral stage, the percentage of grasses declines. In the understory, the dominant native plant species are western wheatgrass and green needlegrass.

Desired Vegetation Structure (Objective)

High	Moderate	Low
35 to 45%	35 to 45%	15 to 25%

High vegetation structure can be achieved on moderate and highly productive grasslands dominated by mid grasses (late or late intermediate seral stages). Grasslands on moderate to highly productive soils but in an early seral condition and dominated by short-stature plant

species generally do not have the capability to provide high vegetation structure. Management changes may 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 or from heavy utilization of mid grasses.

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. Appendix H describes quality nesting as sagebrush understories with residual herbaceous cover averaging at least 7 inches in height. This objective is primarily provided when sagebrush habitat types are in a late seral condition.

Forest Vegetation

1. Manage timber stands to enhance wildlife and TES habitats while doing the following:

- Improving forest health.
- Preventing potentially damaging forest pest populations.
- Reducing fuel loading and risk of catastrophic wildfire adjacent to communities and homes.
- Improving riparian habitat. **Objective**

2. During vegetation management projects in ponderosa pine forests, use methods that emphasize development of structural stages 4 (mature) and 5 (late successional). Long-term objective is to have 40% of the forest cover in structural stage 4 and 20% in structural stage 5. **Objective**

3. Over the long term (100 years), manage forest cover to create stands with four structural stages in the forest cover as follows:

- 15-25% in structural stage 2.
- 15-25% in structural stage 3.
- 40% in structural stage 4.
- 20% in structural stage 5. **Objective**

4. Within 10-15 years, achieve forest structural diversity by maintaining or enhancing hardwood trees, shrub inclusions, and other beneficial plant communities and openings. **Objective**

Disturbance Processes

1. To achieve Goal 1.c Ecological Integrity, fire will be reintroduced into the ecosystem. The amount and scope of burning will be determined by project specific resource needs. **Objective**

Livestock Grazing

1. To achieve Goal 1.c Wildlife and Fish Habitat, as well as Grassland Wide Direction, rest 1-10% of the suitable rangeland each year as determined by project specific resource needs. **Objective**

Infrastructure

1. Increase the average pasture size as opportunities arise over the next 15 years. **Objective**

Wildlife

Sage Grouse (MIS)

1. Provide diverse and quality sagebrush habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of sage grouse and other wildlife with similar habitat needs. **Objective**

2. Establish and maintain quality nesting habitat for sage grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush understories within 10 years. **Objective**

3. Reduce the impacts of extended droughts on sage grouse populations and their recovery after droughts by managing land uses in sage grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats. **Objective**

Plains Sharp-tailed Grouse (MIS)

1. Provide diverse and quality grassland habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of sharp-tailed grouse and other wildlife with similar habitat needs. **Objective**

2. Establish and maintain quality nesting and brooding habitat for sharp-tailed grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure over the next 10 to 15 years. **Objective**

3. Reduce the impacts of extended droughts on sharp-tailed grouse populations and their recovery after droughts by managing land uses in sharp-tailed grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats. **Objective**

Recreation

1. Provide at least 1 developed recreation facility at a fishery-stocked reservoir within the next 10 years. **Objective**

Geographic Area Direction – Standards and Guidelines

Vegetation

1. Use existing monitoring information and stocking rate guidelines for livestock grazing (see Appendix I) to help design and implement range management strategies for meeting desired vegetation objectives. **Standard**

2. Manage vegetation by Management Area (MA) according to the following table to achieve the desired seral stage (plant species composition) objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Seral Condition By M.A.

MA	Late		Late Intermediate		Early Intermediate		Early	
	Target	Range	Target	Range	Target	Range	Target	Range
3.65	20%	20-25%	35%	30-35%	30%	30-35%	15%	10-15%
4.32	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%
5.12	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%

3. Manage vegetation by Management Area (MA) according to the following table to achieve the desired structural objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Structural Condition by M.A.

MA	High		Moderate		Low	
	Target	Range	Target	Range	Target	Range
3.65	35%	30-35%	50%	45-50%	15%	10-15%
4.32	30%	30-35%	50%	45-50%	20%	15-20%
5.12	40%	40-45%	40%	40-45%	20%	15-20%

Forest Vegetation

1. When doing planned vegetation treatments, emphasize the maintenance and development of forest structural stages 4 (mature) and 5 (late successional). **Guideline**

2. Replicate biological processes found in the areas and strive to replicate natural vegetative patterns and patch size when doing management activities. **Guideline**

3. When developing openings in vegetative communities, simulate naturally shaped edges. **Guideline**

4. Don't make wood fiber production, Christmas tree cutting, or fire wood harvest the primary objectives of vegetative manipulation. **Standard**

Snags and Dead Woody Material Management

1. During vegetation treatments, maintain an average of four hard snags per forested acre. **Guideline**

2. If there are fewer than four hard snags per forested acre, projects to increase snag numbers may be implemented. **Guideline**

3. Snags can be clumped or individual but should be well distributed throughout the planning unit. **Guideline**

4. In areas not meeting the snag standard, consider snag cutting restrictions and treating live replacement trees to create snags. **Guideline**

5. Retain all soft snags unless they are a safety hazard. **Guideline**

6. Leave large woody debris on harvested or thinned sites to help retain moisture, prevent soil movement, provide micro-sites for establishment of forbs, grasses, shrubs, and trees and to provide habitat for wildlife. Locate woody debris concentrations where fuel loading is not a concern. **Guideline.**

7. On conifer-forested sites (ponderosa pine), retain an average of at least 50 linear feet per acre of coarse woody debris with a minimum diameter of 10 inches (where materials are available) or largest woody material found on-site. **Guideline**.

	Hard Snags			**Downed Logs**	
Forest Type	Minimum Diameter	Average per Acre *	Minimum Height	Minimum Diameter	Linear Feet per Acre *
Ponderosa pine	10 inches	4.0	25 feet	10 inches	50 feet

*This does not mean that every acre will have a snag or downed log; these are averages across the geographic area

Infrastructure

1. Maintain or increase average pasture size in Management Areas 3.65 and 4.32. **Guideline**

2. Maintain or reduce classified road density. If new short-term roads are constructed, existing unclassified or classified roads should be decommissioned. **Guideline**

Special Uses

1. Bury all electrical utility lines of 33KV or less and telephone lines. **Guideline**

Wildlife

Sage Grouse (MIS)

1. A range of 17,059 to 19,496 acres of high structure sagebrush understory is prescribed for this geographic area. A substantial amount of this should be located where it would optimize sage grouse habitat and associated species. The following criteria will be considered during site-specific project level planning to help determine the best locations to manage for high structure grasslands:

- Presence of moderate to highly productive soils and range sites,
- Plant composition dominated by mid and/or tall grasses with sagebrush canopy cover of 10 to 35%.
- Proximity to sage grouse display grounds, 2 miles in uniform patches and 3 miles in irregular patches. **Guideline**

2. Establish and maintain quality foraging habitat for sage grouse and associated species by enhancing and/or maintaining productive sagebrush stands with a diversity of forb species. **Guideline**

3. At the onset of drought, evaluate the need to modify land use practices in sage grouse habitat to avoid significantly magnifying the adverse effects of drought on their populations and vegetation for nesting, brooding and foraging. **Standard**

Plains Sharp-tailed Grouse (MIS)

1. A range of 17,059 to 19,496 acres of high structure grasslands is prescribed for this geographic area. A substantial amount of this acreage should be located where it would optimize habitat for sharp-tailed grouse and associated species. The following criteria will be considered during site-specific project level planning to help determine the best locations to manage for high structure grasslands:

- 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**

2. Establish and maintain quality foraging habitat for sharp-tailed grouse and associated species by enhancing and/or maintaining a diversity of forb species in grassland communities and regeneration of shrub patches and the shrub component of wooded draws and riparian habitats. **Guideline**

3. At the onset of drought, evaluate the need to modify land use practices in sharp-tailed grouse habitat to avoid significantly magnifying the adverse effects of drought on grouse populations and vegetation for nesting, brooding and foraging. **Guideline**

UPTON OSAGE GEOGRAPHIC AREA

Setting

The Upton Osage Geographic Area includes about 32,310 acres of National Forest System lands in east-central Wyoming. It lies in the extreme northeastern portion of the Thunder Basin National Grassland and west of the Black Hills, which accounts for its many stands of ponderosa pine.

The climate of the Upton Osage Geographic Area can be classified as semi-arid Continental. The area is characterized by cold winters and warm summers with somewhat infrequent periods of hot weather where temperatures exceed 100^{o} Fahrenheit. Annual precipitation is generally between 15 and 19 inches, with about 40 inches of snowfall each year. Winds from the southwest are prevalent and sometimes strong.

Nearly level plains to ascending hills characterize the topography of the area. Elevation ranges from about 4,200 feet above sea level to about 4,500 above sea level. The dominant vegetation includes ponderosa pine in the more hilly locations, with sagebrush and numerous grass species on the more level plains.

Most of the area drains toward the Cheyenne River, although a small portion does drain toward the Belle Fourche River. The principal drainages in the Cheyenne River watershed are Pine, Iron, and Turner Creeks—headwater tributaries of Beaver Creek: The principal drainages in the Belle Fourche watershed are Wind Creek, Arch Creek, and Willow Creek.

Desired Condition

Insects, diseases, wildfire, and grazing patterns will create plant communities with diverse composition and structure. This area will have a healthy and diverse mix of grasses, including the following species: western wheatgrass, needle and thread grass, green needlegrass, little bluestem, blue grama, and prairie junegrass. Management activities will maintain or enhance hardwood and coniferous trees, woody shrub inclusions, and other beneficial plant communities and increase vegetative diversity. Tree densities within stands will vary to create landscape-scale diversity. Fire will be used in some areas to promote open park-like timber stands. Late successional-stage vegetation may be found in the area.

Riparian areas/woody draws will be managed to maintain or enhance different age classes of herbaceous plants, shrubs, and trees. Some areas will be managed to achieve rapid development of cottonwood and willow riparian habitats. Desired riparian species include sedges, rushes, snowberry, rose, willow, cottonwood, and other woody plants.

Areas with heavy recreation use will have picnicking and camping facilities available. Motorized and nonmotorized trails will have signs to distinguish different uses.

Primitive conditions with minimal facility development will be emphasized. Mineral developments such as oil and gas wells and pipelines will be present but visually subordinate in the mid and background. Bentonite mining operations will be present, but will typically be less than 160 acres in size. Some mines may be much larger than 160 acres, but they will not dominate the landscape. When mineral activities are concluded, the disturbed lands will be

reclaimed to blend in with adjacent undisturbed areas. Pastures will remain large.

Unique Attributes

- Substantial ponderosa pine forest stands.
- Extensive sagebrush plains.
- Significant populations of mule deer and pronghorn antelope.
- Multiple mineral extraction industries.

Management Area Prescription Allocation

Number	Prescription	Approximate Acres
3.68	Big Game Range	14,107
4.32	Dispersed Recreation High Use	18,200

Geographic Area Direction - Objectives

Vegetation

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

Desired Seral Stages - Objective

Late	Late Intermediate	Early Intermediate	Early
15 to 25%	30 to 40%	25 to 35%	10 to 20%

Across the landscape, grass and sagebrush are intermingled. In some areas, grasses are the dominant species; in other areas, sagebrush is the dominant species. The vegetation composition varies depending on seral stage.

In grass-dominated communities in mid to late seral stages, the dominant native grass species are western wheatgrass, needle and thread grass, green needlegrass, and little bluestem. In grass-dominated sites in early to mid seral stages, grasses such as blue grama often dominate. Threeawn and blue grama are commonly the dominant grasses on prairie dog colonies in early seral stage.

In sagebrush-dominated communities, there is more sagebrush in the mid to late seral stages than in early to mid seral stages. As the community moves from early to late seral stage, the percentage of grasses declines. In the understory, the dominant native plant species are western wheatgrass and green needlegrass.

Desired Vegetation Structure - Objective

High	Moderate	Low
30 to 40%	45 to 55%	10 to 20%

High vegetation structure can be achieved on moderate and highly productive grasslands dominated by mid grasses (late or late intermediate seral stages). Grasslands on moderate to highly productive soils but in an early seral condition and dominated by short-stature plant species generally do not have the capability to provide high vegetation structure. Management changes may 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 or from heavy utilization of mid grasses.

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. Appendix H describes quality nesting as sagebrush understories with residual herbaceous cover averaging at least 7 inches in height. This objective is primarily provided when sagebrush habitat types are in a late seral condition.

Forest Vegetation

1. Manage timber stands to enhance wildlife and TES habitats while doing the following:

- Improving forest health.
- Preventing potentially damaging forest pest populations.
- Reducing fuel loading and risk of catastrophic wildfire adjacent to communities and homes.
- Improving riparian habitat. **Objective**

2. During vegetation management projects in ponderosa pine forests, use methods that emphasize development of structural stages 4 (mature) and 5 (late successional). Long-term objective is to have 40% of the forest cover in structural stage 4 and 20% in structural stage 5. **Objective**

3. Over the long term (100 years), manage forest cover to create stands with four structural stages in the forest cover as follows:

- 15-25% in structural stage 2.
- 15-25% in structural stage 3.
- 40% in structural stage 4.
- 20% in structural stage 5. **Objective**

4. Within 10-15 years, achieve forest structural diversity by maintaining or enhancing hardwood trees, shrub inclusions, and other beneficial plant communities and openings. **Objective**

Disturbance Processes

1. To achieve Goal 1.c Ecological Integrity, fire will be reintroduced into the ecosystem. The amount and scope of burning will be determined by project specific resource needs. **Objective**

Livestock Grazing

1. To achieve Goal 1.c Wildlife and Fish Habitat, as well as Grassland Wide Direction, rest 1-10% of the suitable rangeland each year as determined by project specific resource needs. **Objective**

Infrastructure

1. Increase the average pasture size as opportunities arise over the next 15 years. **Objective**

2. Provide at least 10 miles of additional system motorized and non-motorized trails within 10

years. **Objective**

Wildlife

Sage Grouse (MIS)

1. Provide diverse and quality sagebrush habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of sage grouse and other wildlife with similar habitat needs. **Objective**

2. Establish and maintain quality nesting habitat for sage grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure sagebrush understories within 10 years. **Objective**

3. Reduce the impacts of extended droughts on sage grouse populations and their recovery after droughts by managing land uses in sage grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats. **Objective**

Plains Sharp-tailed Grouse (MIS)

1. Provide diverse and quality grassland habitat across the geographic area at levels that, in combination with habitat on adjoining lands, helps support stable to increasing populations of sharp-tailed grouse and other wildlife with similar habitat needs. **Objective**

2. Establish and maintain quality nesting and brooding habitat for sharp-tailed grouse (see Appendix H) and associated wildlife by meeting vegetation objectives for high structure over the next 10 to 15 years. **Objective**

3. Reduce the impacts of extended droughts on sharp-tailed grouse populations and their recovery after droughts by managing land uses in sharp-tailed grouse habitat in a manner that does not significantly magnify the adverse effects of drought on grouse nesting, brooding and foraging habitats. **Objective**

Recreation

1. Develop at least 2 recreation facilities (e.g., toilets, picnic sites, boat ramps) at fishery-stocked reservoirs within the next 10 years. **Objective**

Geographic Area Direction – Standards and Guidelines

Vegetation

1. Use existing monitoring information and stocking rate guidelines for livestock grazing (see Appendix I) to help design and implement range management strategies for meeting desired vegetation objectives. **Standard**

2. Manage vegetation by Management Area (MA) according to the following table to achieve the desired seral stage (plant species composition) objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Seral Condition By M.A.

MA	Late		Late Intermediate		Early Intermediate		Early	
	Target	Range	Target	Range	Target	Range	Target	Range

3.68	25%	25-30%	35%	30-35%	25%	25-30%	15%	10-15%
4.32	15%	15-20%	35%	30-35%	35%	30-35%	15%	15-20%

3. Manage vegetation by Management Area (MA) according to the following table to achieve the desired structural objectives for the Geographic Area. The table has a target percent displayed, with and acceptable range of percents included. **Guideline**

Structural Condition by M.A.

MA	High		Moderate		Low	
	Target	Range	Target	Range	Target	Range
3.68	40%	40-45%	50%	45-50%	10%	10-15%
4.32	30%	30-35%	50%	45-50%	20%	15-20%

Forest Vegetation

1. When doing planned vegetation treatments, emphasize the maintenance and development of forest structural stages 4 (mature) and 5 (late successional). **Guideline**

2. Replicate biological processes found in the areas and strive to replicate natural vegetative patterns and patch size when doing management activities. **Guideline**

3. When developing openings in vegetative communities, simulate naturally shaped edges. **Guideline**

4. Don't make wood fiber production, Christmas tree cutting, or fire wood harvest the primary objectives of vegetative manipulation. **Standard**

Snags and Dead Woody Material Management

1. During vegetation treatments, maintain an average of four hard snags per forested acre. **Guideline**

2. If there are fewer than four hard snags per forested acre, projects to increase snag numbers may be implemented. **Guideline**

3. Snags can be clumped or individual but should be well distributed throughout the planning unit. **Guideline**

4. In areas not meeting the snag standard, consider snag cutting restrictions and treating live replacement trees to create snags. **Guideline**

5. Retain all soft snags unless they are a safety hazard. **Guideline**

6. Leave large woody debris on harvested or thinned sites to help retain moisture, prevent soil movement, provide micro-sites for establishment of forbs, grasses, shrubs, and trees and to provide habitat for wildlife. Locate woody debris concentrations where fuel loading is not a concern. **Guideline.**

7. On conifer-forested sites (ponderosa pine), retain an average of at least 50 linear feet per acre of coarse woody debris with a minimum diameter of 10 inches (where materials are available) or largest woody material found on-site. **Guideline**.

	Hard Snags			Downed Logs	
Forest Type	Minimum Diameter	Average per Acre *	Minimum Height	Minimum Diameter	Linear Feet per Acre *
Ponderosa pine	10 inches	4.0	25 feet	10 inches	50 feet

*This does not mean that every acre will have a snag or downed log; these are averages across the geographic area

Infrastructure

1. Maintain or increase average pasture size. **Guideline**

2. Maintain or reduce the net classified road density. If new short-term roads are constructed, existing unclassified or classified roads should be decommissioned. **Guideline**

Special Uses

1. Bury all electrical utility lines of 33KV or less and telephone lines. **Standard**

Wildlife

Sage Grouse (MIS)

1. A range of 11,308 to 12,924 acres of high structure sagebrush understory is prescribed for this geographic area. A substantial amount of this should be located where it would optimize sage grouse habitat and associated species. The following criteria will be considered during site-specific project level planning to help determine the best locations to manage for high structure grasslands:

- Presence of moderate to highly productive soils and range sites,
- Plant composition dominated by mid and/or tall grasses with sagebrush canopy cover of 10 to 35%.
- Proximity to sage grouse display grounds, 2 miles in uniform patches and 3 miles in irregular patches. **Guideline**

2. Establish and maintain quality foraging habitat for sage grouse and associated species by enhancing and/or maintaining productive sagebrush stands with a diversity of forb species. **Guideline**

3. At the onset of drought, evaluate the need to modify land use practices in sage grouse habitat to avoid significantly magnifying the adverse effects of drought on their populations and vegetation for nesting, brooding and foraging. **Standard**

Plains Sharp-tailed Grouse (MIS)

1. A range of 11,308 to 12,924 acres of high structure grasslands is prescribed for this geographic area. A substantial amount of this acreage should be located where it would optimize habitat for sharp-tailed grouse and associated species. The following criteria will be considered during site-specific project level planning to help determine the best locations to manage for high structure grasslands:

- 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**

2. Establish and maintain quality foraging habitat for sharp-tailed grouse and associated species by enhancing and/or maintaining a diversity of forb species in grassland communities and regeneration of shrub patches and the shrub component of wooded draws and riparian habitats. **Guideline**

3. At the onset of drought, evaluate the need to modify land use practices in sharp-tailed grouse habitat to avoid significantly magnifying the adverse effects of drought on grouse populations and vegetation for nesting, brooding and foraging. **Guideline**