CHAPTER 2: THE ALTERNATIVES

2-1. INTRODUCTION

This chapter presents a description of the Phase II Alternatives for amending the 1997 Land and Resource Management Plan (LRMP or Forest Plan). It includes the following:

2-1 Introduction

2-2 Development of the Alternatives: Describes the process used to identify and develop alternatives.

2-3 Description of the Alternatives: Presents five alternatives including the no action alternatives.

2-4 Alternatives Not Analyzed in Detail: Addresses alternatives considered but not carried forward for further analysis.

2-5 Summary of Consequences: Summarizes and compares the environmental impacts of the alternatives.

An introduction to the Black Hills setting is presented below to summarize ecological concepts contained in the Final Environmental Impact Statement (EIS) and associated assessments. This summary is needed to help understand the alternatives, the benefits that the alternatives provide, and the ecological effects of those alternatives.

2-1.1. Brief Ecological Setting And History Of The Black Hills

The Black Hills is an island in the prairie. The "island" concept is important because species associated with ponderosa pine, white spruce, and hardwood communities could be susceptible to ecosystem change that could spread throughout the forest. The Black Hills contains plant communities from the Rocky Mountains, northern coniferous forests, eastern hardwood forests, and the surrounding Great Plains. As an ecotone between the various communities, the Black Hills functions as a place for intermingling of species.

The Black Hills forest ecosystem is shaped by infrequent stand-replacing fire and insect outbreaks along with frequent surface fire and is characterized as having a mixed fire regime (see Section 3.7). Stand-replacing fire has been a major component of the landscape since 2000, burning 14 percent of the Forest. Ecologically this pattern may be consistent with what might be expected from large but infrequent events under the historic disturbance regime. However, stand-replacing fire is generally considered to be socially undesirable from the standpoint of human safety, effects to private and public property, and to the alteration of the flow of goods and services from the Forest. Fire of any type has been suppressed and will continue to be suppressed when possible for social reasons, and has contributed to altering the function of the mixed-severity fire ecological system. Current dense conifer forest conditions can be expected to contribute to the likelihood of additional large stand-replacing fires within the Black Hills ecosystem. Also, a variety of factors including that of fire suppression and associated alterations to ecological systems has contributed to changes in the function of or the reduced extent of other Black Hills ecosystem components, including early successional ecological communities, such as grassland and meadow communities, hardwood communities, beaver dominated riparian communities, and areas of relatively open ponderosa pine with generally higher levels of understory diversity.

2-1.2. Measures Of Viability, Fire Hazard, And Mountain Pine Beetle Risk

Generally, it is expected that fewer risks are associated with the viability of species within the planning area when suitable ecological conditions are broadly distributed and abundant across the historical range of the species. The combination of broader geographical distribution and abundant ecological conditions generally contributes to the likelihood of species persistence.

The risks to species long-term persistence are generally expected to be greater within a planning area when suitable ecological conditions are isolated or are in very low abundance, limiting the likelihood of population interactions among suitable environmental areas or patches, which may contribute to the potential for extirpations within areas or patches and a low likelihood potential for natural re-colonization of such patches.

The Phase II Alternatives each target different strategies for the conservation of species persistence and addressing viability (see Section 2-3 Description of the Alternatives below).

The species viability and diversity evaluation considered:

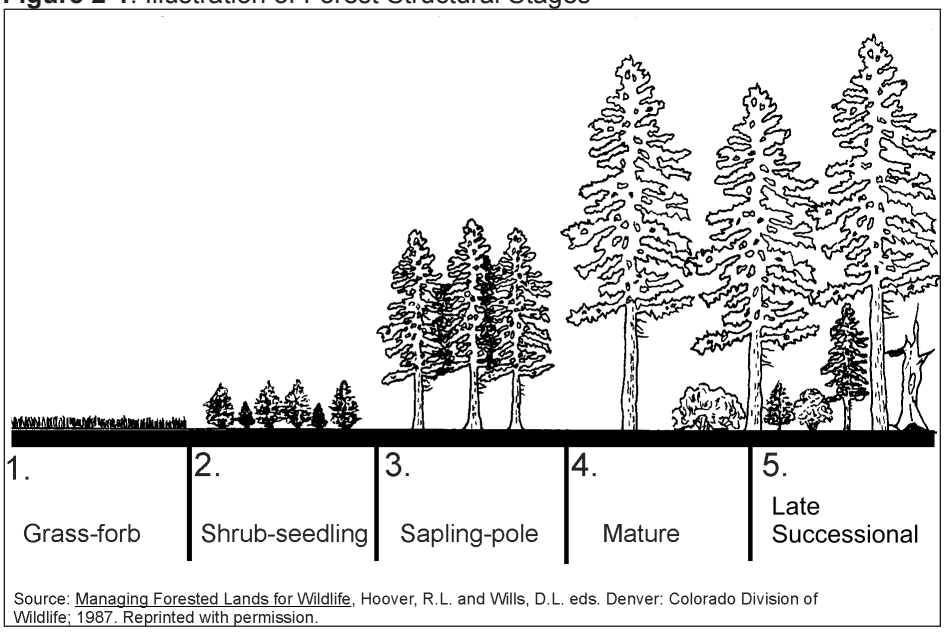
- The amount and distribution of ecological conditions on National Forest System (NFS)-administered lands
- Expected population changes associated with long- or short-term changing ecological conditions
- Species' natural history and expected response to ecological conditions
- Random environmental disturbances and variations that could be expected to influence the likelihood of species persistence
- Cumulative effects to species viability
- Ecological conditions on NFS-administered lands and on other ownerships
- Estimated population changes associated with ecological conditions on both NFS-administered lands and other ownerships
- Random environmental disturbances and variations on all ownerships that could be expected to influence the likelihood of species attaining specified outcomes

Structural stages are used throughout the Phase II analysis as an indicator of ponderosa pine forest structure and condition, along with several other indicators such as understory shrubs, tree size and non-ponderosa pine forest composition (hardwood, spruce, meadow, riparian, grassland, etc.) that represent the ecosystem (see Final EIS Chapter 1 Section 1.6.1.1) indicators of species viability. Structural stage and forest composition objectives are key components used to define the action alternatives. The structural stages (SS) used are defined below:

- SS1 (Grass/Forb): An early forest successional stage during which grasses and forbs are the dominant vegetation. SS1 is defined as non-stocked, with a forest cover of less than 10 percent.
- SS2 (Shrubs/Seedlings): This is a developmental stage that is dominated by tree seedlings less than 1-inch diameter breast height (dbh) and shrub species.
- SS3 (Sapling/Pole): This developmental stage is dominated by trees 1- to 7-inch dbh, 10 to 50 feet in height and usually less than 50-years old. This structural stage is further broken down into three overstory crown closure classes to reflect different stand densities and habitat components
    - 3A – Crown closure of 10 to 40 percent
    - 3B – Crown closure of 40 to 70 percent
    - 3C – Crown closure of 70 to 100 percent

- SS4 (Mature): This structural stage consists of a tree component that is larger and older than those that make up SS3. SS4 is further broken down into three crown closure classes to reflect different stand densities and habitat components.
  - 4A – Crown closure of 10 to 40 percent
  - 4B – Crown closure of 40 to 70 percent
  - 4C – Crown closure of 70 to 100 percent
- SS5 (Late successional): This structural stage is generally characterized by very large trees (very large trees are defined as a stand with an average stand quadratic mean diameter of 16 or more inches) and a general stand age of 160 years or more.

Figure 2-1. Illustration of Forest Structural Stages



Source: Managing Forested Lands for Wildlife, Hoover, R.L. and Wills, D.L. eds. Denver: Colorado Division of Wildlife; 1987. Reprinted with permission.

The focus of forest condition (also termed forest health) in the Phase II Amendment is fire-hazard reduction; with fire-hazard reduction in ponderosa pine, resistance to mountain pine beetle also generally increases. Ponderosa pine and white spruce plant communities cover approximately 83 percent and 2 percent of the Black Hills NF, respectively; various conditions of these communities contribute to the primary fire-hazard concern on the Forest. Differences among the alternatives in how forest health issues are addressed generally centers on fire-hazard reduction around at-risk communities (ARCs) (see Appendix B) and if, and where, fire-hazard reduction actions are targeted on the other areas of the Forest.

Fire hazard for any particular forest stand or landscape reflects the potential magnitude of fire behavior and effects as a function of fuel conditions. Crown fires are generally considered the primary threat to ecological and human values and are the primary challenge for fire managers (Peterson et al. 2003).

Conifer fire hazard was estimated using the Forest Vegetation Simulator as described in Appendix B. Areas with a very high fire-hazard rating (4) have the potential to exhibit more extreme crown fire behavior with more severe effects on vegetation and soils than those with a low fire-hazard rating (1) (see Final EIS Chapter 3 Section 3-7.1 Natural Disturbance Processes, Fire). Other cover types including those classified as water, rock, roads, hardwoods, riparian areas, grasslands and shrubs have a low fire-hazard rating. Omi and Martinson (2002) found that the correlation between crown-fire hazard rating and fire severity is generally good. These ratings are generally linked to stand age and crown density. A mature

ponderosa-pine stand with a smaller average tree diameter can generally indicate a likely significant conifer understory component contributing to ladder fuels that could be expected to increase the likelihood of fire accessing the forest canopy and aid in sustaining a crown fire. A mature ponderosa-pine stand with a larger average tree diameter is generally expected to indicate less understory components to act as ladder fuels.

The mountain pine beetle hazard ratings used variables from the corporate Rocky Mountain Resource Information System (RMRIS) database and were supported by research to calculate ratings. These ratings were linked to structural stage codes (see Appendix B). Treatments that would generally move high mountain pine beetle hazard-rated stands to medium hazard stands include thinning to a 50- to 60-square basal area that is expected to increase the vigor and resistance of the remaining trees. It would generally require an overstory removal harvest method followed by subsequent understory thinning or clear-cut harvest methods of the stand to reduce a high or medium mountain pine beetle hazard-rated stand to a low hazard-rated stand.

The structural stages, fire hazard, and mountain pine beetle risk are generally linked as follows:

Table 2-1. General Link Between Structural Stage and Fire Hazard and Insect Risk

Structural Stage	Fire Hazard	Insect Risk
1	Low	Low
2	Medium	Low
3A	Medium	Low
3B	High	Medium
3C	Very High	High
4A>9 “ QMD*	Medium	Medium
4A<9” QMD	Very High	Medium
4B>9” QMD	High	High
4B<9” QMD	Very High	High
4C>9” QMD	Very High	High
4C<9” QMD	Very High	High
5	Very High	High

*QMD – Quadratic Mean Diameter; tree size measurement.

2-1.3. Management Indicator Species

Given the 2000 Settlement Agreement, the Black Hills NF conducted a new MIS analysis using the new MIS selection process (Hayward et al. 2001) that explains why species previously considered as MIS were or were not selected for the Black Hills. The results of that analysis are located in the MIS Selection Report (SAIC 2005) and the MIS as a result of that process are included in the Phase II Amendment Action Alternatives 3, 4, and 6.

2-1.4. Research Natural Areas

The Nature Conservancy completed a 2-year Black Hills plant community inventory of the Black Hills ecoregion. The Phase II Amendment utilized that information (Marriott and Faber-Langendoen 2000a) in a process to identify candidate research natural areas (RNAs) (SAIC 2002a). As a result of that process, nine locations were included as candidate RNAs in the Phase II Alternatives to be considered for potential recommendation to the national RNA system. Four to nine candidate RNAs are included within Alternatives 3, 4 and 6.

2-2. Development of the Alternatives

The purpose and need (Section 1-3) identified species viability and diversity (including MIS), analysis of RNAs, and fire-hazard and insect-risk management as decision areas requiring a need to change in the Phase II Amendment Final EIS. Based on the purpose and need, proposed action, and input from public and internal scoping, the ID Team developed an initial set of alternatives, worked with cooperating state and local agencies to identify and evaluate potential alternatives, conducted open houses to explain alternatives to the public, and invited public comment on the alternatives.

In defining alternatives, the ID Team considered how current conditions on the Forest might affect the desired conditions. Very few, if any, areas of the Forest are now considered to be in a natural, undisturbed condition. Decades of fire suppression, range management, forest management, mining, recreation, and the introduction or invasion of non-native species, have generally contributed to environmental conditions that would not have occurred naturally. Moreover, private property development for ranching, farming, commercial, and residential use in and around the Forest continues to occur. The proximity of this development next to and within the Forest boundary generally means that to allow entirely natural processes, such as wildfire and insect epidemics, to occur unabated would increase risks to human life and property. Management is needed to achieve the desired condition on the Forest as defined by the goals of each of the alternatives (see Appendix D). Achieving the desired condition for each alternative would be a gradual process. Even with aggressive management actions, desired conditions of the Forest may not be attained for decades.

Based on input received from the public and recommendations from cooperating agencies, the ID Team developed five alternatives to be considered for detailed analysis in the Phase II Amendment. The alternatives selected for analysis address the Phase II purpose and need, are able to be implemented, and meet legal and policy requirements. In addition, these alternatives address the 1999 Appeal Decision and the 2000 Settlement Agreement (see Administrative Record file appeal_settlement_issue_resolution).

Action alternatives were developed with different approaches to achieve desired forest conditions for species viability and diversity, and reduced fire hazard and insect risk. Candidate RNAs were identified based on existing conditions that meet RNA establishment parameters and were assigned to the action alternatives based on the approach of each alternative to display a range of possible RNA allocations.

2-2.1. Monitoring

Action Alternatives 3, 4, and 6 propose change to Forest Plan monitoring for emphasis species and for Goals 10 and 11 (see monitoring discussions included for each of the Alternatives discussed later in this chapter). Strategic monitoring is included as direction in Chapter 4 of the Phase II Amended Forest Plan (see monitoring items in Appendix D). Monitoring specifics are included in the Monitoring Implementation Guide (USDA Forest Service 2005f).

Monitoring items tie back to specified Forest Plan objectives summarized in the Chapter 2 alternative descriptions or as displayed in detail in Appendix D and in the monitoring items found at the end of Appendix D in an adaptive management approach.

2-3. Description of the Alternatives

The five alternatives (Alternatives 1, 2, 3, 4, and 6) considered for detailed analysis in this Phase II Final EIS are summarized in this section. Alternative 5 was eliminated from further detailed analysis (refer to Section 2.4). These alternatives consider each of the decision areas identified in Section 1-4: species viability, RNAs, and fire hazard and insect risk. Each alternative meets the purpose and need described in Section 1-3.

The alternatives are summarized in the sections that follow but are explained in detail through the management goals, objectives, standards, and guidelines that will make up the Phase II Alternatives (see Appendix D Land and Resource Management Plan Direction by Alternative). To aid the reader and avoid confusion concerning the objectives, standards, and guidelines that fall within the scope of the Phase II decision, Appendix D contains only objectives, standards, and guidelines that are subject to change in the Phase II Amendment. The Black Hills NF Plan as amended by Phase I contains a complete set of goals, objectives, standards, and guidelines for the reader's reference and can be found on the Forest's web site (http://www.fs.fed.us/r2/blackhills/projects/planning/index.shtml)

The 1997 Revised Forest Plan contains the following nine goals:

- Protect basic soil, air, water, and cave resources.
- Provide for a variety of life through management of biologically diverse ecosystems.
- Provide for sustained commodity uses in an environmentally acceptable manner. This includes timber harvest, livestock grazing, and locatable and leaseable mineral extraction.
- Provide for scenic quality, a range of recreational opportunities, and protection of heritage resources in response to the needs of the Forest visitors and local communities.
- In cooperation with other landowners, strive for improved land ownership and access that benefit both public and private landowners.
- Improve financial efficiency for all programs and projects.
- Emphasize cooperation with individuals, organizations, and other agencies while coordinating planning and project implementation.
- Promote rural development opportunities.
- Provide high-quality customer service.

While fuel- and insect-hazard direction is present in Alternatives 1 and 2, the direction lacks the weight of separate and distinct goals for Forest fuel and insect hazard. The solution proposed is to include Forest Plan goals for fire-hazard and insect-risk management to better balance the project decisions and the overall Forest condition.

Two additional goals are evaluated in the Phase II Amendment Final EIS. These goals include objectives for fire-hazard and insect-risk reduction and the recovery of burned areas following stand-replacing events. Objectives for Goals 10 and 11 vary among the action alternatives.

- Goal 10 Establish and maintain a mosaic of vegetation conditions to reduce occurrences of stand-replacing fire and insect epidemics and facilitate insect management and firefighting.
- Goal 11 Enhance or maintain the natural rate of recovery after significant fire and other natural events while maintaining a mosaic of fuel-loading conditions to facilitate future fire-suppression activities.

The Phase II Amendment alternatives contain different objectives, standards, and guidelines that relate to reducing risks and targeting the conservation of emphasis species, diversity, RNAs, and fire hazard and insect risk. These differences occur primarily in direction that target Goals 2, 10, and 11. No differences in objectives being considered in the Phase II Amendment relate to Goals 1, 3, 4, 5, 6, 7, 8, or 9. Therefore, the description of alternatives focuses on the differences in objectives in Goals 2, 10, and 11.

Standards and guidelines relating to other goals are modified in Alternatives 3, 4, and 6 where they conflict with or are needed to support the objectives under Goals 2, 10, and 11and are part of the alternative descriptions (Sections 2-3.1 through 2-3.5).

Key differences among Phase II Amendment Alternatives considered in this document are presented in Sections 2-3.1 through 2-3.5. Table 2-2 provides a summary comparison of the key components of each alternative.

Each alternative presumes the use of one or more strategies for targeting Forest Goals, which include conserving emphasis species and targeting the maintenance of species viability and diversity. The strategies considered are:

- Design Criteria for management activities using Forest Plan standards and guidelines.
- Targeting Ecological Restoration and emulating conditions expected under natural disturbance regimes.
- Providing Adequate Conditions needed by emphasis species by targeting Forest Plan objectives.

None of the alternatives attempt complete ecological restoration for the reasons explained in the 1996 Forest Plan Revision Final EIS (see Chapter 2, Alternatives Not Considered in Detail). Natural disturbance regime conditions are generally used as a guide or ecological reference when considering new direction for the Forest Plan. All alternatives target the accomplishment of some restoration; however, the restoration is targeted at ecosystem components (aspen, other hardwoods, meadow, etc.) versus the ecosystem as a whole.

As for design criteria and adequate conditions, alternatives vary the blend of the use of design criteria (standards and guidelines) and target of adequate conditions (objectives). Depending on the balance between design criteria and adequate conditions, alternatives are described as emphasizing design criteria or emphasizing adequate conditions to achieve Forest Goals.

To compare alternatives for species viability and diversity and fire hazard and insect risk, the key objectives are described in the first alternative in which they occur. If the objective varies among alternatives, the new or altered objective language is presented in the alternative where it differs. The number, name, and acreage of candidate RNAs are described in the alternatives, including the standards and guidelines (see also Table 2-2 and Appendix D). Full implementation of all alternatives, including Alternative 1, would be expected to be consistent with direction in the National Forest Management Act (NFMA) for species viability (see Appendix B, Section 3-1.2).

2-3.1. Alternative 1 – The 1997 Forest Plan

Alternative 1 is the 1997 Forest Plan. Alternative 1 retains species viability and diversity and fire and insect direction included in the 1997 Revised Plan, including the management areas (MAs) designated to manage for late successional habitat conditions (MA 3.7). This alternative retains the 1997 MIS list. The alternative does not include any candidate RNAs, nor does it include Goals 10 and 11, as described above. See also Table 2-2 for a comparison of key differences between alternatives.

2-3.1.1. Species Viability And Diversity

Alternative 1 places more emphasis on the use of standards and guidelines as design criteria for conservation strategies for species viability. In addition, the following 1997 Forest Plan objectives targeted species conservation:

- Objective 201 targets increases in existing and historic hardwood communities by conserving and restoring 10 percent over 1995 conditions on sites capable of supporting these communities. This objective restores the hardwood condition on the Forest by decreasing ponderosa pine, the dominant tree on the Forest.
- Objective 202c targets pine in mountain-mahogany stands for vegetative diversity.
- Objective 204 targets conservation and management of white spruce, lodgepole pine, limber pine, and Douglas-fir.
- Objective 205 targets the restoration of meadows and prairie-grasslands by 10 percent over 1995 conditions. As with hardwood restoration, this objective restores the acreage by decreasing ponderosa pine encroachment.
- Objective 206 targets the maintenance or establishment of a minimum of 20 percent of the forested area of a planning unit (diversity unit, watershed, and/or land-type association) to provide vertical diversity.
- Objective 207 targets the conservation of at least 5 percent of the forested land base as late succession
- Objective 214 targets the increase of riparian-shrub communities by 500 acres on those sites capable of supporting them.
- Objective 215 targets the rehabilitation of riparian areas along three stream reaches.
- Objective 221 targets the conservation or enhancement of habitat for sensitive species and Alternative 1 MIS listed in Chapter 2.
- Objective 222 targets the completion the following habitat projects each year during the plan period:

  Wildlife - 1,000 acres and 100 structures

  Fish - 50 acres and 50 structures

  Range - 600 acres and 30 structures

Standards and guidelines included in Alternative 1 are those in the 1997 Forest Plan.

2-3.1.2. Management Indicator Species

Alternative 1 in the 1997 Forest Plan identified MIS as a combination of threatened and endangered species, R2 sensitive species, species of special interest, and habitat elements. The MIS list included species such as the black bear, which does not occur on the Forest, and the list does not include a fish or aquatic species.

The 1997 Forest Plan identified 20 MIS[1] and 10 ecological communities[2] as management indicators. Although both MIS and management indicators were included at that time, only MIS are a legal requirement of Forest Plans (See 36 Code of Federal Regulations 219.19 [a] [1]). By definition, MIS are "vertebrate and/or invertebrate species present in the area."

1 Striate disc, Cooper's mountain snail, regal fritillary, bald eagle, black-backed woodpecker, brown creeper, northern goshawk, three-toed woodpecker, osprey, pygmy nuthatch, black bear, elk, fringed myotis, American marten, Merriam's turkey, mountain goat, mountain lion, mule deer, Townsend's big-eared bat, white-tailed deer

2 Ponderosa pine, white spruce, aspen, bur oak, mountain mahogany, riparian areas seral stage and trend, water quality, instream fisheries habitat, snags, dead and down woody material

2-3.1.3. Research Natural Areas

Alternative 1 does not include any candidate RNAs and selection of this alternative would not include any sites for proposal to the national system. As with all alternatives, no changes would be associated with the existing Upper Pine Creek RNA located in MA 1.1 Black Elk Wilderness (the Wilderness) (see RNA maps in Appendix G). Upper Pine Creek RNA management resembles that of the Wilderness except that the RNA is designated unsuitable for livestock grazing. In general, mineral leases and utility corridors are prohibited in the Wilderness, and there are certain recreation restrictions in this area, including motorized and mechanized transportation prohibition and maximum camper party-size regulations. Any new trails developed in the Wilderness are to be located away from the Upper Pine Creek RNA.

2-3.1.4. Fire Hazard And Insect Risk

Neither Goal 10 nor Goal 11 existed in the 1997 Forest Plan; fire-hazard and insect-risk management is addressed under Goal 2: "Provide for a variety of life through management of biologically diverse ecosystems" and key objectives for Alternative 1 are as follows:

- Objective 223 targets the use management-ignited fires and prescribed natural fires to achieve desirable vegetative diversity and fuel profiles on 8,000 acres per year for the next decade and to use natural fire on a limited basis under specifically prescribed conditions.
- Objective 224 targets to reduce or otherwise treat fuels commensurate with risks (fire occurrence), hazard (fuel flammability), and land and resource values common to the area, using the criteria in forest-wide Guideline 4110. The 1997 Forest Plan incorrectly referred to this as a standard. This was corrected in the Phase I Amendment.
- Objective 225 targets the management of wildfires using the appropriate suppression response (confine, contain, or control) based on Manage Area emphasis, existing values, and ignition risk and fuel hazard within a given area.
- Objective 226 targets the development of fuel management and protection strategies for intermixed land ownerships in partnership with private, state, and other federal agencies.
- Objective 227 targets the management of 28,900 acres of activity fuels and 4,000 acres of natural fuels each year during the next decade, consistent with the need to protect life, property, and natural resources from wildfire threats. This acreage includes those specified in Objective 223.
- Objective 228 targets the examination of planning units (diversity unit, watershed and/or landscape association) for mountain pine beetle (MPB) outbreaks that could threaten management objectives for ponderosa pine (especially where timber production is desired), and maintain or reduce ponderosa pine stand acreage in medium or high-risk infestation condition.
- Objective 229 targets the use of insect-and-disease population analysis to determine where suppression strategies are needed to meet management objectives and minimize tree vegetation value loss in areas affected by insect and disease outbreaks.

Standards and guidelines 4101 through 4113 set standards and guidelines by which fire suppression, prescribed fire, and fuel treatments are to be implemented.

2-3.1.5. Monitoring

See Chapter 4 of the 1997 Forest Plan, including the Monitoring Items Table.

2-3.2. Alternative 2 – The 1997 Plan As Amended By Phase I-the No Action Alternative

Alternative 2 is the 1997 Forest Plan as amended by the Phase I Amendment. Selection of this alternative would retain the direction from the Phase I Amendment. Alternative 2 is a no action alternative and retains species viability, diversity, and fire and insect direction included in Phase I Amendment (USDA Forest Service, 2001c), including the MAs designated to manage for late successional habitat conditions (MA 3.7). This alternative retains the Phase I MIS list. The alternative does not include any candidate RNAs, nor does it include Goals 10 and 11, as described above. Alternative 2 includes increased or additional species and habitat protection direction over the 1997 Forest Plan, with primary emphasis on late successional species. Implementation of Forest Plan objectives, standards, and guidelines below are generally expected to achieve the specified conditions in the first 10 years of the plan (see **Table 2-2** for a comparison of key differences between alternatives).

2-3.2.1. Species Viability And Diversity

Alternative 2 places more emphasis on the use of standards as design criteria for conservation strategies for species viability. Most Alternative 2 objectives are the same as those identified for Alternative 1. There was some modification to Forest Objectives 211, 224, 309, and 416 (see Appendix D).

Environmental protection guidelines in Alternative 1 are changed to standards in Alternative 2 (see Phase I Environmental Assessment, Appendix E. USDA Forest Service, 2001c). Alternative 2 modified or added Forest-wide standards to those of the 1997 Forest Plan (Alternative 1) to provide additional direction for snag retention (2301), green tree retention (2306), down-woody material (2308), snails (3103), northern goshawk (3108, 3109, 3111, and 3114), raptors (3204), Black Hills redbelly snake (3116), American marten (3117), black-tailed prairie dog (3118), and white spruce structural stages (3215).

2-3.2.2. Management Indicator Species

The Phase I Amendment, Alternative 2, modified the 1997 Forest Plan MIS list by deleting the black bear and adding five fish species. The Phase I Amendment identified 24 MIS[3] and 10 ecological communities[4] as management indicators (see Alternative 1 MIS discussion above).

2-3.2.3. Research Natural Areas

Alternative 2 is identical to Alternative 1.

2-3.2.4. Fire Hazard And Insect Risk

Management for fire-hazard and insect-risk reduction is identical to Alternative 1.

2-3.2.5. Monitoring

The monitoring precision and reliability for sensitive species was improved to A. See Chapter 4 of the 1997 Forest Plan as amended by Phase I (USDA Forest Service 2001c), including the monitoring items beginning on Table IV-5.

3Striate disc, Cooper's mountain snail, regal fritillary, brook trout, brown trout, finescale dace, lake chub, mountain sucker, bald eagle, black-backed woodpecker, brown creeper, northern goshawk, northern three-toed woodpecker, osprey, pygmy nuthatch, Rocky Mountain elk, fringed myotis, American marten, Merriam's turkey, mountain goat, mountain lion, mule deer, Townsend's big-eared bat, white-tailed deer

4Ponderosa pine, white spruce, aspen, bur oak, mountain mahogany, riparian areas seral stage and trend, water quality, instream fisheries habitat, snags, dead and down woody material

2-3.3. Alternative 3

Alternative 3 emphasizes diversity through ecological restoration and retention of various habitat components across the landscape as part of the strategy for targeting the conservation of species viability and diversity. The needs of a number of the emphasis species are targeted through structural stage objectives for ponderosa pine and forest composition objectives for non-pine species as well as through other species conservation objectives, standards and guidelines. Emphasis species conservation is also targeted through further management for a diversity of landscapes across the Black Hills NF including the restoration of 46,000 acres of aspen, 4,000 acres of bur oak, 2,400 acres of meadow, 12,000 acres of grassland, doubles the riparian restoration objective of Alternatives 1 and 2. Similar to Alternatives 1 and 2, Alternative 3 continues to manage areas specifically for late successional conditions (see MA 3.7), manages for mature and late successional conditions through structural stage objectives in some specific MAs (see below) and retains the Black Elk Wilderness Area (MA 1.1A) that includes late-successional condition features. Fire-hazard and insect-risk reduction is targeted in the wildland-urban interface (WUI) in Objective 10-01, by specifying a target of 50 percent moderate-to-low fire-hazard rating in the WUI and for emphasis species conservation. Objective 10-03 targets the reduction of fire hazard in areas between RNAs and designated at-risk communities (ARCs). Fuel-reduction activities adjacent to late-successional habitats would be targeted to increase the likelihood of conserving emphasis species associated with late-successional habitats. Following a wildfire, dead trees are generally expected to be available for value recovery except under certain conditions. See **Table 2-2** for a comparison of key differences between alternatives.

2-3.3.1. Species Viability And Diversity

Alternative 3 emphasizes providing adequate habitat for emphasis species as a conservation strategy.

- Objective 201 targets the restoration of 46,000 acres of aspen (double the current aspen acres), and 4,000 acres of bur oak (an approximately 33-percent increase over current acres) during the life of the Forest Plan. The highest priority for hardwood restoration is where conifers (e.g., spruce and pine) have outcompeted aspen adjacent to riparian systems that once supported beaver.
- Objective 205 targets restoration of 12,000 acres of prairie grasslands and 2,400 acres of meadow to remove pine encroachment, which would almost triple the current meadow acres during the life of the Forest Plan.
- Objective 214 targets riparian-shrub community restoration across the Forest by 1,000 acres during the Forest Plan period on sites generally expected to be capable of supporting riparian shrub communities.
- Objective 215 targets the rehabilitation of riparian areas along five stream reaches.
- Objective 202c is deleted (see Alternative 1) from this alternative to reduce the likelihood of pine encroachment into mountain-mahogany stands by removing the source of pine seed.

- MA Objectives 4.1-203, 5.1-204, 5.4-206, 5.43-204, and 5.6-204 (structural stage objectives) target the following percentages of structural stages in ponderosa pine across the landscape in a diversity of sizes and shapes and manage for 15 percent of structural stages 4 and 5 basal area in the 15- to 18.9-inch size class and 10 percent of the structural stages 4 and 5 basal area in the 19+ size class and the following structural stage proportions.

SS1 -5 percent	SS 4A -20 percent
SS2 -5 percent	SS 4B -30 percent
SS 3A -10 percent	SS 4C -10 percent
SS 3B -10 percent	SS 5 -5 percent
SS 3C -5 percent	

- Objective 206 is deleted (see Alternative 1) and replaced with structural stage objectives, which when combined cover approximately 76 percent of the land base and 86 percent of forested land on the Forest. In addition, many MA objectives present in Alternatives 1 and 2 (e.g., Objective 5.4-205) are deleted because they are replaced with the new MA structural stage objectives.
- Objective 200-01 targets the maintenance or restoration of mature and late successional (structural stages 4 and 5) spruce acres, except within 300 feet of buildings and where spruce has encroached into hardwoods, or in areas where beaver reoccupation is desired for conservation of other emphasis species. Spruce is to be favored where it is encroaching into pine stands, especially where it improves connectivity between spruce stands. Spruce may be removed for fire-hazard reduction within 300 feet of structures, for hardwood restoration, and emphasis species conservation.

While many Alternative 3 species conservation standards and guidelines are from the 1997 Forest Plan or Phase I Amendment, many have been changed to address species viability and diversity, changes in Forest Service Manual direction and changes in Forest Service Handbook direction. Others have been changed to simplify implementation without changing their basic intent or by further clarifying through language modification or by combining more than one standard or guideline. Finally, a number of standards are deleted and replaced with objectives that are generally expected to target associated habitat conditions for emphasis species. Examples include Standards 2302, 3.32-3202 in Alternatives 1 and 2 that have been replaced by the Alternative 3 structural stage objectives, such as MA Objective 5.4-205.

Generally, Phase I Amendment standards and guidelines pertaining to habitat effectiveness for deer and elk are deleted or replaced with MA structural stage objectives. Other standards or guidelines are deleted in Alternative 3 because the intent of the guideline or standard was generally expected to be better specified as an objective (e.g., Guideline 2306) or because implementation of the standard or guideline could be expected to preclude the attainment of another Forest Plan objective (e.g., Guideline 3.31-3202). Some existing guidelines are changed to standards where it is important to provide additional protection to emphasis species or their habitats (e.g., Guideline 2205 and Guideline 2305). Other standards and guidelines have been reworded either to provide additional focus or to provide greater conservation for emphasis species or their associated habitats or habitat components (e.g., Guideline 2107). Some of the reworded guidelines have been changed to standards (see Appendix D).

2-3.3.2. Management Indicator Species

For the Phase II Amendment, the Forest re-evaluated the species and habitat elements used as management indicators in the 1997 Forest Plan and the Phase I Amendment in accordance with R2 MIS selection protocol (Hayward et al. 2001)

Alternative 3 retains mountain sucker, black-backed woodpecker, brown creeper and white-tailed deer from Alternatives 1 and 2, and adds golden crowned kinglet, ruffed grouse, song sparrow, grasshopper sparrow and beaver (see MIS Selection Report, SAIC 2005).

2-3.3.3. Research Natural Areas

No changes would be associated with the existing Upper Pine Creek RNA other than this area is to be managed under MA 2.2; however, the area is also located within a congressionally designated area (Black Elk Wilderness) and management will also need to be within the limits of that required for the Wilderness. Four candidate RNAs are included in Alternative 3: Canyon City, Fanny/Boles, Geis Spring, and Sheep Nose Mountain (see candidate RNA maps in Appendix G). The candidate RNA assessment process was focused on targeting specified plant series. Candidate RNAs in Alternative 3 include areas of bur oak, ironwood (also known as hop-hornbeam), ponderosa pine, montane willow, riparian grassland, riparian shrubland, mountain mahogany/skunkbrush, and white spruce. Management specific to RNAs have been included in Alternative 3 and are included as MA 2.2 direction.

- Standard 2.2-1001 directs the conservation, which may include restoration, of the natural ecological communities, species, and processes that the RNA was designated to represent and protect.
- Standard 2.2-2501 prohibits the increase in domestic livestock use (specified in the measurement of animal-unit-months) or developments prior to management plan development for sites to be established as RNAs.
- Standards 2.2-1501, 2.2-2401, 2.2-4101, 2.2-4102, 2.2-4103, 2.2-5201, 2.2-5401, 2.2-8301, 2.2-9101, and 2.2-9102 restrict mineral entry, timber harvest, mechanized or motorized use, special forest product collections, and may require restricted public access. Restricting public access may include obliterating closed or existing roads or closing a RNA, or a portion of a RNA, to any public use. Standards also include a requirement for the implementation of minimum impact suppression techniques in suppressing wildfire.
- Guidelines 2.2-1002, 2.2-4201, 2.2-5101, 2.2-5202, and 2.2-5601 allow uses providing that values for which the RNA was designated can be maintained, or specify actions or restrictions to also target management for those values. Further, if some type of use or disturbance is resulting in adverse effects to a feature of the general purpose or to a basic objective for which the RNA was designated, that use is to be limited or prohibited.

2-3.3.4. Fire Hazard And Insect Risk

Fire-hazard and insect-risk management is included in the objectives associated with Goal 10. Management specified to achieve targeted conditions following a high intensity/high severity event is specified in objectives associated with Goal 11. Those objectives that are relocated from Goal 2 (Alternatives 1 and 2) to Goal 10 (Objective 223, 224, 225, 226, 227, 228, and 229) in Alternative 3 are not included in the discussion below. New Alternative 3 Goal 10 objectives are described below:

- Objective 10-01 targets the management of a 50-percent moderate-to-low fire hazard in the WUI and throughout the forest for emphasis species conservation and to reduce fire hazard within proximity of structures to current National Fire Protection Act standards except in MA 1.1 Black Elk Wilderness, MA 2.2 Research Natural Areas, MA 3.1 Botanical Areas, MA 3.7 Late successional Forest Landscapes, MA 4.2B Peter Norbeck Scenic Byway, and MA 5.4A Norbeck Wildlife Preserve.
- Objective 10-02 targets the scenic integrity objectives (SIOs) within the WUI to moderate-to-low for 2 to 4 years after management activities have been completed.

- Objective 10-03 targets management for a moderate-to-low-fire hazard on the lands between RNAs and designated ARCs or other resources at risk (e.g., sensitive plants, heritage resources, etc.) within 5 years of formal RNA designation, except for lands within Wilderness, the Norbeck Wildlife Preserve or the Norbeck Scenic Byway. Treatments would generally be expected to occur where the topography, wind conditions, and fuels would be expected to create the potential for wildfire spread from an RNA to the ARC or other resource.
- Objective 10-04 targets the use of management-ignited fires to achieve desirable vegetative diversity and fuel profiles on approximately 4,000 acres (plus or minus 15 percent) per year and to use natural fire on a limited basis under specifically prescribed conditions.
- Objective 10-08 targets treating approximately 20,000 acres (plus or minus 15 percent) of activity and natural fuels annually to improve condition class, protect communities and restore ecosystem components including acres specified in Objective 10-04.

Four new objectives are added under Goal 11 in Alternative 3:

- Objective 11-01 targets achieving a non-emergency watershed condition (see Forest Service Handbook 2509.13) as soon after an event as possible but generally no later than 3 to 5 years.
- Objective 11-02 targets achieving a fuel-loading mosaic within 3 to 5 years of an event, with reassessment as conditions change over time.
- Objective 11-03 targets making dead trees available for value recovery following a wildfire event, except for 50 percent of the recent (0 to 5 years) stand-replacing fire acreage Forest-wide, up to 10,000 acres reserved from value recovery. Highest priority to retain is areas with greater than 70-percent pre-fire canopy closure. Standard 2301a does not apply to the salvaged area.

2-3.3.5. Monitoring

Forest Plan monitoring is an ongoing process. Generally, baseline data need to be obtained before monitoring protocols or designs are developed. Protocols or designs are located in, or included as developed, into the Forest Plan Monitoring Implementation Guide (see http://www.fs.fed.us/r2/blackhills/projects/planning/MonGuide.pdf). In developing monitoring protocols, consultation is targeted as needed, with State Heritage programs, the Rocky Mountain Research Station, the Forest Service Inventory and Monitoring Institute, the Forest Service Rocky Mountain Regional Office, and other National Forests with the same emphasis species as well as available published research.

The Forest Plan direction for monitoring is located in Chapter 4 of the 1997 Forest Plan as amended by Phase I (see Appendix D - Monitoring Items table). Changes to the monitoring items for Alternative 3, as compared to what had been specified for Plan as amended by Phase I can be found on the two monitoring items tables included in Appendix D (located near the end of Appendix D). Such changes include: monitoring item categorization changes; reference updates; whether the monitoring information is indicated to be gathered at the project, forest or other level; the specified precision or reliability level for gathering data; and the frequency of how often it is planned that information for a specific monitoring item is to be reported on. Examples of some the changes include:

- Monitoring Items Associated within the Vegetative Diversity Resource category:
  - Late succession, and thermal cover monitoring items are no longer specific individual items in the monitoring item table, but are included into the structural stages in the item column
  - Monitoring designed for the snag habitat component is no longer listed as snag retention, but is now listed as snags in the item column
- Additional monitoring items have been specified in association with new and revised objectives addressing vegetative diversity components. Items included are: structural stages, large trees, and burned forest habitat.

- In conjunction with new Goals 10 and 11 and associated objectives (see Objectives 10-01, 10-03, 10-07, 10-08, 10-09, 10-10, 11-01, 11-02, 11-03), a number of revisions have been made to the Items and References columns for the resource identified as fire.
- The monitoring items for insects and diseases have been revised to reflect new Goal 10 and associated objectives.
- Revised or developed monitoring protocols for all emphasis species and/or their habitat.

2-3.4. Alternative 4

This alternative emphasizes dense mature and late successional conifer conditions. In Alternative 4, Objective 207 retains the statement to manage at least 5 percent of the forested land base for late succession, similar to Alternatives 1 and 2. In addition, Objective 207 includes direction to maintain conditions of all existing late successional and dense mature stands (structural stages 5 and 4C). The primary focus of this alternative is on species associated with late successional forest conditions. Long-term species viability and diversity for these species is expected to be provided primarily through Forest Plan direction emphasizing a mature-forest community. Deer and elk habitat effectiveness guidelines are deleted in Alternative 4. Similar to Alternatives 1 and 2, this alternative requires all vegetation management projects in watersheds not meeting the minimum hard snag direction to be designed to move hard snag densities towards this objective. Similar to Alternative 2, Alternative 4 directs the retention of large trees for the purpose of snag recruitment. See Table 2-2 for a comparison of key differences between alternatives.

2-3.4.1. Species Viability And Diversity

Alternative 4 emphasizes design criteria (standards and guidelines) as the primary species viability and diversity strategies.

Key Alternative 4 objectives are the same as those identified in Alternatives 1 and 2.

Standards and guidelines in Alternative 4 are primarily the same as those in Alternative 2; however, a number of standards or guidelines added or changed in Alternatives 3 and 6 are also present in Alternative 4 to provide additional conservation to emphasis species. Standards added include the following: Standards 3100-2 through 3100-6 and Standards 3100-8 through 3100-10. Guideline 3105 is an example of a changed guideline. Similar to Alternative 3, some guidelines have become standards to provide additional conservation for emphasis species (e.g., Guidelines 2206 and 2207).

2-3.4.2. Management Indicator Species

The MIS for Alternative 4 is the same as those for Alternative 3.

2-3.4.3. Research Natural Areas

The nine candidate RNAs are included in this alternative to reflect the emphasis of this alternative to target more mature conifer conditions and natural processes. The candidate RNAs are Canyon City, Cranberry Springs, Fanny/Boles, Geis Spring, Iron Mountain North, Lemming Draw, North Fork Castle Creek, Sheep Nose Mountain, and Upper Sand Creek (see RNA maps in Appendix G). These candidates include bur oak, ironwood (hop-hornbeam), montane grassland, ponderosa pine, montane willow, riparian grassland, riparian shrubland, mountain mahogany/skunkbrush, and white spruce.

MA 2.2 specifying direction for RNAs would be the same as that described in Alternative 3.

2-3.4.4. Fire Hazard And Insect Risk

Fire-hazard and insect-risk management under Alternative 4 includes similar objectives to Alternative 3, except that the focus of fire-hazard management is limited to the WUI as defined by ARCs, and does not target management of fire-hazard reduction near emphasis species. Objective 10-03 (included in Alternative 3) that targets to manage for a moderate-to-low fire hazard between RNAs and ARCs or other resources, is not included in Alternative 4.

- Objective 10-01 targets a 50-percent moderate-to-low fire hazard in the WUI and a reduction of fire hazard within proximity of structures to current NFPA standards, except in MA 1.1 Black Elk Wilderness, MA 2.2 Research Natural Areas, MA 3.1 Botanical Areas, MA 3.7 Late successional Forest Landscapes, MA 4.2B Peter Norbeck Scenic Byway, and MA 5.4A Norbeck Wildlife Preserve.
- Objectives 10-04 and 10-08 target fewer acres as compared to Alternative 3. In Alternative 4, management-ignited fires or prescribed natural fire would be targeted on about 2,000 acres annually and approximately 12,500 acres of activity and natural fuels would be targeted for treatment annually.

Similarly, objectives under Goal 11 are the same for Alternative 4 as Alternative 3 except that value recovery is not included in Alternative 4 (Objective 11-03).

2-3.4.5. Monitoring

See Chapter 4 of the 1997 Forest Plan as Amended by Phase I and Alternative 4 includes the same basic direction as for Alternative 3 monitoring, except for changes noted in Appendix D of the Phase II Final EIS. The changes in the monitoring for Alternative 4, as compared to Alternative 3, are primarily based on non-applicability for some monitoring items:

- Monitoring for structural stages is not applicable since structural stage objectives for MAs are not specified in Alternative 4.
- Monitoring for large trees is not applicable since this is associated with managing for the structural stage objectives for MAs that are not specified in Alternative 4.
- Snag monitoring in not applicable for Alternative 4 since direction is to retain all snags.
- Burned forest habitat monitoring is not applicable for this alternative since no portion of burned forest is available for value recovery.
- Fire-hazard monitoring for the Forest interior is not applicable in Alternative 4 since fuel treatments are not included in for areas outside of the WUI.
- Fuel-treatment monitoring would only be applicable in the WUI; fuel treatment monitoring outside of the WUI would not be applicable in this alternative.

2-3.5. Alternative 6 - Proposed Action

Alternative 6 increases the acreage of the Forest to be targeted at moderate-to-low fire-hazard and insect-risk rating conditions, except within certain Forest MAs. Restoration and management for aspen and targeting the removal of conifers to restore or manage areas for less flammable cover types such as hardwoods and riparian shrublands is emphasized. Restoration direction for various ecosystem components is similar to restoration specified in Alternative 3. This alternative manages fewer acres for structural stages 4C (dense mature) and 5 (late successional) in MAs 4.1, 5.1, 5.4, 5.43, and 5.6 as compared to Alternatives 3 and 4. Alternative 6 includes four candidate RNAs that represent a majority of the target vegetation types. See also Table 2-2 for a comparison of key differences between alternatives.

2-3.5.1. Species Viability And Diversity

Alternative 6 emphasizes providing adequate habitat for emphasis species as a viability and diversity strategy, including the retention of areas to be managed for late successional conditions in MA 3.7 (same as Alternatives 1 and 2). Forest direction is different from Alternative 3 and 4, in that in Alternative 6, MA 3.7 (Late-successional Landscapes) conditions are to be modified to achieve a 50- to 75-percent moderate-to-low fire-hazard condition within any WUI or areas adjacent to structures (see Objective 10-01).

- Objective 201 targets managing a minimum of 92,000 acres for aspen (double current aspen acres) and 16,000 acres for bur oak (approximately 33-percent increase) during the life of the Forest Plan similar to Alternative 3. The highest priority for hardwood restoration is where conifers (e.g., spruce and pine) have outcompeted aspen adjacent to riparian systems that once supported beaver. Bur oak increases are to be focused away from the Bear Lodge Mountains where bur oak is abundant.
- Objective 205 targets managing for 122,000 acres of prairie grassland and 3,600 acres of meadow during the life of the Forest Plan. Restored meadow acres will not be considered suitable for timber production (similar to Alternative 3).
- Objective 214 targets an increase in riparian shrub-community restoration by 500 acres across the Forest during the Forest Plan period on sites capable of supporting this community.
- Objective 215 targets the rehabilitatin of riparian areas along five streams.
- Objective 202c is deleted (same as Alternative 3).
- MA 4.1 Objectives 4.1-203, 5.1-204, 5.4-206, 5.43-204, and 5.6-204 (structural stage objectives) target management for the following percentages of structural stages in ponderosa pine across the landscape in a diversity of sizes and shapes. Alternative 6 structural stage objectives, when compared to Alternative 3 structural stage objectives, add an understory shrub component and target a more open forest condition consistent with the focus of reducing fire hazard and insect risk.

SS1 -5 percent	SS 4A -25 percent
SS2 -5 percent	SS 4B -25 percent
SS 3A -10 percent	SS 4C -5 percent
SS 3B -15 percent	SS 5 -5 percent
SS 3C -5 percent	

- Ten percent of the structural stage 4 ponderosa pine acreage in the MA is to be managed to have a very large tree size (very large trees are defined as a stand with an average stand quadratic mean diameter of 16 or more inches), similar to Alternative 3. Opportunities are to be identified to increase understory shrubs in open-canopy structural stages. Active management is allowed, and may be necessary, to achieve desired late successional characteristics in structural stage 5.
- Objective 206 is deleted (see Alternative 1), same as in Alternative 3.
- Objective 200-01 targets to manage for 20,000 acres of spruce across the Forest using management to achieve multiple use objectives. This objective allows a decline from the approximately 25,000 acres of spruce on lands administered by the Forest to be able to treat spruce for other needs: spruce is to be treated within 200 feet of buildings to reduce fire-hazard conditions, where spruce has encroached into hardwoods, and for the conservation of various Forest emphasis species. The 20,000-acre objective is 5,000 acres more than historical acreage estimates and similar to the 1995 spruce type acreage level.
- Alternative 6 standards and guidelines are similar to those in Alternative 3 except that several are modified to emphasize fire-hazard reduction or for species conservation. For example, Standard 3207 clarifies wording so that vegetation changes are allowed only if needed near bat hibernacula to maintain bat, and Guideline 2420, specific to Alternative 6, specifies focusing the issuance of fuel wood permits to occur within the WUI.

2-3.5.2. Management Indicator Species

MIS for Alternative 6 is the same as those for Alternative 3.

2-3.5.3. Research Natural Areas

Candidate RNAs Canyon City, Fanny/Boles, Geis Spring and North Fork Castle Creek are included in this alternative (see candidate RNA maps in Appendix G). This differs from Alternative 3 through the inclusion of North Fork Castle Creek and does not include Sheep Nose Mountain. Existing Upper Pine Creek RNA information is the same as that included in Alternatives 3 and 4. The inclusion of the candidate RNAs for this alternative was focused on targeted plant series, as well as reducing conflicts. Alternative 6 candidate RNAs include the same targeted plant series as Alternative 3. MA 2.2 direction is the same as that described in Alternative 3.

2-3.5.4. Fire Hazard And Insect Risk

Fire-hazard and insect-risk management is the key feature of Alternative 6, and objectives clearly reflect the difference in approach of this alternative.

- Objective 10-01 targets managing for 50- to 75-percent moderate-to-low fire hazard in the WUI and reduce fire hazard within proximity of structures to current NFPA standards except in MA 1.1 Black Elk Wilderness, MA 2.2 Research Natural Areas, MA 3.1 Botanical Areas, MA 4.2B Peter Norbeck Scenic Byway, and MA 5.4A Norbeck Wildlife Preserve. Manage the remainder of the Forest for 50-percent moderate-to-low fire hazard except in MA 1.1 Black Elk Wilderness, MA 2.2 Research Natural Areas, MA 3.1 Botanical Areas, MA 3.7 Late successional Forest Landscapes, MA 4.2B Peter Norbeck Scenic Byway, and MA 5.4A Norbeck Wildlife Preserve. Objectives 10-04 and 10-08 have been combined into Objective 10-01, where they are retained separately in Alternative 3.
- Objective 10-03. Within 5 years of a formal RNA designation management is to target for a moderate-to-low-fire hazard between RNAs and ARCs and other resources as needed where the topography, wind conditions, and fuels could create the potential for wildfire spread to the ARC or resource (e.g., sensitive plants, heritage resources, etc.), except any that may be designated in MA 1.1 Black Elk Wilderness.

Objectives under Goal 11 are the same as those in Alternative 3 except for Objective 11-03.

- Objective 11-03 indicates following a wildfire, dead trees will be available for value recovery. Retain 50 percent of the recent (0 to 5 years) stand-replacing fire acreage up to 10,000 acres Forest-wide. Generally, the highest priority areas to retain are those with greater than 70-percent pre-fire canopy closure. The following is to be included in determining if the 10,000-acre figure has been met: stand-replacing fire and associated out-year fire/insect mortality and relatively large blocks of stand-replacing insect outbreaks that can be combined into 1,000-acre areas.

2-3.5.5. Monitoring

Monitoring is shown in Appendix D - Monitoring Items (Alternatives 3, 4 and 6) It is the same as Alternative 3 except for the following:

- Objectives 10-04 and 10-08 are no longer referenced as direction from the objectives has been incorporated into Objective 10-01, and Objectives 10-04 and 10-08 were deleted.

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Aspen	Restore hardwoods by 10 percent over 1995 conditions (approximately 500 acres per year of all hardwoods), treatments dispersed across forest	Same as Alternative 1	Restore 46,000 acres of aspen during the life of the Forest Plan, restored areas are non-suited timberland, treatments dispersed across forest, conserve live aspen with cavities	Restore 20 percent over 1995 conditions (approximately 1000 acres per year), treatments dispersed across forest	Manage for 92,000 acres of aspen during the life of the Forest Plan; restored areas are non-suited timberland; treatments are dispersed across forest; conserve live aspen with cavities
Bur Oak	Restore hardwoods by 10 percent over 1995 conditions (approximately 500 acres per year of all hardwoods	Same as Alternative 1	Restore 4,000 acres of bur oak, restored areas are non-suited timberland.	Restore 20 percent over 1995 condition.	Manage for 16,000 acres; restored areas are non-suited timberland
Mountain Mahogany	Maintain ponderosa pine in mountain mahogany stands for diversity	Same as Alternative 1	Deleted	Same as Alternative 1	Same as Alternative 3

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
White Spruce	See Forest Tree Diversity below	Same as Alternative 1	Maintain or restore mature and late successional (SS 4 and 5) spruce acres, except within 300 feet of buildings, where spruce has encroached into hardwoods, or in areas where beaver reoccupation is desired for conservation of other emphasis species. Favor spruce where it is encroaching into pine stands, especially where it improves connectivity between spruce stands	Same as Alternative 1	Manage for 20,000 acres of spruce across the Forest using active management to achieve multiple-use objectives. Treat spruce within 200 feet of buildings, where spruce has encroached into hardwoods, and for emphasis species management
Willow (Emphasis Species)	Conservation management for *Salix candida* and *Salix serissima* through designation and management of McIntosh Fen Botanical Area	Same as Alternative 1	Livestock grazing or access to willow emphasis species is not permitted; site specific restoration measures to be identified for Middle Boxelder Creek *Salix serissima* occurrence	Same as Alternative 1	Same as Alternative 3
Forest Tree Diversity	Conserve spruce, lodgepole, limber pine, and Douglas fir	Same as Alternative 1	Conserve birch/hazelnut, lodgepole, limber pine, and Douglas fir	Same as Alternative 1	Same as Alternative 3

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Hardwoods	Leave no more than 10 overstory conifers/acre during treatment; shift dominance from conifers to hardwoods	Same as Alternative 1	Favor hardwoods where conifers encroach; remove all conifers during treatment	Same as Alternative 1	Same as Alternative 3
Late Successional Forest	Manage at least 5 percent of forested land base for late succession; Late-successional MA 3.7; Late successional conditions are included in the Black Elk Wilderness and Upper Pine Creek RNA (MA 1.1A), and some of the Forest designated Botanical Areas and Developed Recreation Complexes (MA 8.2)	Same as Alternative 1	Manage 5 percent of ponderosa pine cover types in MAs 4.1, 5.1, 5.4, 5.43, and 5.6; late-successional conditions are included in the Black Elk Wilderness (MA 1.1A), Upper Pine Creek RNA (MA 2.2), some of the Forest designated Botanical Areas and Developed Recreation Complexes (MA 8.2)	Same as Alternative 1; maintains conditions of all late-successional stands (SS 4C and 5)	Similar to Alternative 3 with following exception: MA 3.7 (Late-successional) areas are to be managed for a 50 to 75 percent moderate-to-low fire hazard in the WUI and within proximity to structures
Grassland	Restore by 10 percent grasslands (meadows and prairies) over 1995 conditions (approximately 1,040 acres per year) (5 percent of timber harvest area)	Same as Alternative 1	Restore 12,000 acres during the life of the Forest Plan; specific objectives by management area; maintain 20 percent of prairie grasslands with high grass/forb cover; prescribe burn no more than 60 percent of contiguous grassland; burn in early spring or fall	Same as Alternative 1	Manage for 122,000 acres (similar to combined acreage of existing and those targeted for restoration in Alternative 3); prescribe burn no more than 60 percent of contiguous grassland; burn in early spring or fall

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Meadows	Restore grasslands (meadows and prairies) by 10 percent over 1995 condition (approximately 10 acres per year)	Same as Alternative 1	Restore 2,400 acres of meadow during the life of the Forest Plan; restored areas will not be considered suitable for timber production	Same as Alternative 1	Manage for 3,600 acres of meadow during the life of the Forest Plan (similar to combined acreage of existing and those targeted for restoration acres for Alternative 3); restored areas will not be considered suitable for timber production
Rangeland	Maintain in satisfactory range condition	Same as Alternative 1	Maintain or achieve satisfactory rangeland condition	Same as Alternative 3	Same as Alternative 3
Riparian Shrubs	Restore 500 acres	Same as Alternative 1	Restore 1,000 acres	Same as Alternative 1	Same as Alternative 1
Riparian Systems	Restore 3 stream reaches	Same as Alternative 1	Restore 5 stream reaches	Same as Alternative 1	Same as Alternative 3
Streams	Recreational panning/ sluicing allowed; allow only activities that maintain or improve water body health	Recreational panning/ sluicing allowed; allow only activities that maintain or improve water body health and riparian ecosystem condition	Allow only activities that maintain or improve waterbody health and riparian ecosystem condition	Same as Alternative 3	Same as Alternative 3

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Coarse Woody Debris (down wood material)	On conifer forested sites retain an average of at least 50 linear feet per acre of coarse woody debris with a minimum diameter of 10 inches	Same as Alternative 1	Retain an average of at least 50 feet per acre with diameter greater than 10 inches of coarse woody debris in ponderosa pine forested types; retain at least 100 feet per acre with a minimum diameter of 10 inches in spruce forested types	Same as Alternative 1	Same as Alternative 3

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Snags	Attain 1.08 hard snags per acre in all planning units; if not meeting snag objective, manage to move towards objective; provide live tree replacements	In ponderosa pine forested portions of a watershed, maintain an average of two hard snags per acre on south-facing slopes and four hard snags per acre on north-facing slopes, well-dispersed across watersheds. Calculate as a per acre average for the watershed; some acres may have no snags while other acres within the watershed may exceed the average. In other forest types maintain an average of six hard snags per acre, well-dispersed across the watershed. If not meeting snag objective, all vegetation management activities to move towards objective; provide 1 green tree per acre for replacements	In conifer forested portions of the forest, provide an average of three hard snags greater than 9-inch dbh and 25-feet high per acre, well-dispersed across the forest, 25 percent of which are greater than 14-inch dbh. Salvage of wildfire-killed trees is limited to 50 percent until 10,000 acres of 0- to 5-year old wildfire-killed snags are retained for habitat Forest-wide	Same as Alternative 2; In addition, material from tree mortality associated with wildfires is not to be salvaged	Within a management area in conifer forested portions of the forest, provide an average of three hard snags greater than 9-inch dbh and 25-feet high per acre, well-dispersed across the forest, 25 percent of which are greater than 14-inch dbh. Retain all snags greater than 20-inch dbh unless they present a risk to safety; retain six snags per acre in hardwoods. Salvage of wildfire-killed trees is limited to 50 percent until 10,000 acres of 0- to 5-year old wildfire and certain insect-killed snags are retained for habitat Forest-wide
Vertical Diversity	At least 20 percent of forested area	Same as Alternative 1	Specific structural objectives specified by management area	Same as Alternative 1	Same as Alternative3

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Bald Eagle	Chlorinated hydrocarbons prohibited	Same as Alternative 1	Organochlorine pesticides prohibited as a chemical agent; avoid harvest when in stands being used by bald eagles on a transitory basis; prohibits disturbance activities for nests and traditional winter roost areas	Same as Alternative 3	Same as Alternative 3, except for timing restrictions for nests.
Bats	Protect nurseries and hibernacula; seasonally close public access to caves; design physical closures to caves so bat movement not impeded; no ground disturbance within 100 feet of cave	Protect nurseries, hibernacula, day and night roosts; seasonally close public access to caves; design physical closures to caves so bat movement not impeded; no ground disturbance within 500 feet of cave	Protect nurseries, hibernacula, day and night roosts; avoid vegetation changes within 500 feet of caves and abandoned mines that serve as nurseries or hibernacula, unless needed to maintain bat habitat; seasonally close public access to caves; design physical closures to caves so bat movement not impeded; no ground disturbance within 100 feet of cave	Protect nurseries, hibernacula, day and night roosts; seasonally close public access to caves; design physical closures to caves so bat movement not impeded; no ground disturbance within 100 feet of cave	Protect nurseries, hibernacula, day and night roosts; avoid vegetation changes within 500 feet of caves and abandoned mines that serve as nurseries or hibernacula, unless needed to maintain bat habitat or topography or other features to protect the openings from disturbance; seasonally close public access to caves; design physical closures to caves so bat movement not impeded; no ground disturbance within 100 feet of cave
Big Horn Sheep	Not Addressed	Same as Alternative 1	In lambing areas, sheep have priority over livestock between April 1 through Jun 30	Same as Alternative 1	Same as Alternative 3, except dares are between april and June 15

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Burrowing Owl	Not Addressed	Same as Alternative 1	No pesticide use within 0.25 mile of nest	Same as Alternative 1	Same as Alternative 3
Butterflies	Design prairie/meadow burns to conserve habitat components of regal fritillary butterflies	Same as Alternative 1	Design prairie/meadow burns to conserve habitat components of regal and Atlantis fritillary butterflies, especially between September through April	Same as Alternative 3	Same as Alternative 3
Goshawk	Limit activities in three 30-acre nest stands in historically active territory; limit activities in three replacement nest stands	Conduct nest survey; exclude acreage including nest; exclude some acreage of nearby nest; protected area includes 180 acres of best suited nesting habitat within 0.5 mile of nest; acreage must be in greater than 30-acre units	Identify 180-acre areas around historically active nests best suited for nesting habitat within 0.5 mile of nest; acreage must be in greater than 30-acre units; limit activities in areas around nests to those maintaining or enhancing value for goshawks; meet SS objectives in MAs 4.1, 5.1, 5.4, 5.43, and 5.6	Same as Alternative 2	Same as Alternative 3

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Marten	Not Addressed	Leave eight logs per acre for den and resting sites; leave one pile of woody material per 2 acres for prey habitat; try to improve connectivity of marten habitat	Leave one pile of woody material per 2 acres for prey habitat following timber harvest. Maintain canopy cover of 40 percent in areas identified as important connectivity corridors	Same as Alternative 2	Same as Alternative 3, except 50 percent canopy cover in connectivity corridors
Mountain Plover	Not Addressed	Same as Alternative 1	No new facilities within 0.25 mile of nests or nesting area; no activity within 0.25 mile between March 14 and July 31; design new structures with low profiles/perch inhibitors	Same as Alternative 3	Same as Alternative 3
Prairie Dogs	Not Addressed	Maintain existing population	Maintain grassland near towns; prohibit construction in towns; design new structures near towns with low profiles/perch inhibitors; limit oil and gas to one well per 80 acres in colonies	Same as Alternative 3	Manage for 200 to 300 acres of prairie dog towns across the Forest, in at least three separate towns; design new structures near towns with low profiles/perch inhibitors; limit oil and gas to one well per 80 acres in colonies
Redbelly Snake	Not Addressed	Avoid creating barriers between hibernacula and wetlands	Aspen and hardwood restoration creates habitat.	Same as Alternative 2	Same as Alternative 3

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Snails	Conserve habitat at colonies of snail species of special concern	Ensure that colonies of R2 sensitive snails and five other snail species are protected from adverse effects of livestock use and other management activities	For R2 sensitive species and species of local concern snails, maintain mesic site conditions and surface organic material or enhance habitat	Same as Alternative 2	Conserve R2 sensitive species and species of local concern snails through the use of snail conservation measures
Turkeys	Provide two to six turkey-roost sites per section	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Provide two to six turkey-roost sites/section outside of the WUI
Raptors	Protect active raptor nests; power poles with unsafe configurations shall be replaced in specified areas	Protect current and historic raptor nests; power poles with unsafe configurations shall be replaced in specified areas	Protect known raptor nests; prohibit certain activities within time periods and within specified distances from nests and roosts for bald eagles, golden eagles, Cooper's hawk, sharp-shinned hawk, merlin, ferruginous hawk, broad-winged hawk, peregrine falcon, northern harrier, burrowing owl, and other raptors; power poles with unsafe configurations to be replaced	Protect active raptor nests; prohibit certain activities within time periods and within specified distances from nests and roosts for bald eagles, golden eagles, Cooper's hawk, sharp-shinned hawk, merlin, ferruginous hawk, broad-winged hawk, peregrine falcon, northern harrier, burrowing owl, and other raptors; power poles with unsafe configurations to be replaced in specified areas	Protect known raptor nests; power poles with unsafe configurations to be replaced

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Emphasis Species (General)	Protect riparian/wetland plant species locations during and after trail, road, or highway construction; implement monitoring	Same as Alternative 1	Maintain a low crown-fire hazard where fire presents a risk to species persistence; develop and implement monitoring; collect plant material for recolonization; no new recreation sites near species locations; no development of springs/ seeps near species locations unless mitigates existing risk; avoid riparian/wetland species locations during ground disturbing activities; design facilities to cause users to avoid species locations; temporary stream diversions shall allow passage of aquatic life and protect emphasis species; address management direction on grazing allotments for species viability and diversity in Annual Operation Instructions	Collect seed/spores from plants; do not develop springs/seeps near species location unless mitigates existing risk; avoid riparian/wetland species locations during ground disturbing activities; design facilities to cause users to avoid species locations; address management direction on grazing allotments for species viability and diversity in Annual Operation Instructions	Maintain moderate to low crown fire hazard where fire presents a risk to persistence; develop/ implement monitoring; collect plant material for recolonization; no new recreation sites near species location; no development of springs/ seeps near species locations unless mitigates existing risk; avoid riparian/wetland species locations during ground disturbing activities; design facilities to cause users to avoid species locations; temporary stream diversions shall allow passage of aquatic life and protect emphasis species; address management direction on grazing allotments for species viability and diversity in Annual Operation Instructions

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Fire Hazard	Reduce wildfire risk to public and private developments and reduce fuel loading to acceptable standards	Same as Alternative 1	Treat approximately 20,000 acres plus or minus 15-percent acres per year; manage for 50 percent moderate-to-low fire-hazard rating in the WUI; manage for moderate-to-low fire-hazard rating between RNAs and the WUI and other resources at risk	Treat approximately 12,500 acres plus or minus 15 percent acres per year; manage for 50 percent moderate-to-low fire-hazard rating in the WUI	Manage for 50 to 75 percent moderate-to-low fire-hazard rating in the WUI and 50 percent moderate-to-low fire-hazard rating throughout other areas of the Forest. Manage for moderate-to-low fire-hazard rating between RNAs and the WUI and other resources at risk
Insect Risk	Where outbreaks of mountain pine beetle could present risks to management objectives for ponderosa pine maintain or reduce acreage of ponderosa pine stands that are in medium or high risk condition for infestation	Same as Alternative 1	Generally the same as Alternative 1	Same as Alternative 1	Same as Alternative 1. Tree stocking reduced to increase resistance to bark beetles

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Noxious Weeds	Determine risk of noxious weed introduction and spread for all projects/ activities and implement mitigation; prioritize treatments as follows: new invaders, new areas of infestation, spreading infestations, and existing infestations; treat individual plants/plant groups where practical. Treat 3,600 acres annually for noxious weeds	Same as Alternative 1	Determine risk of noxious-weed introduction and spread for projects/activities and implement mitigation and treatment. Prioritize treatments as follows: emphasis species locations, RNAs, botanical areas, new invaders, new and spreading areas of infestation, existing infestations. Monitor treatments at emphasis species locations and retreat as needed during season; treat individual plants/plant groups at emphasis species plant locations; use treatments posing least risk to emphasis species plants. Treat 6,000 acres annually for noxious weeds	Same as Alternative 3.	Same as alternative 3 except to treat 8,000 acres annually for noxious weeds

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
High Intensity Wildfire Event Recovery	Revegetate burned areas that will not naturally revegetate quickly	Revegetate burned areas that will not naturally revegetate quickly	Enhance or maintain natural recovery and achieve fuel-loading mosaic within 5 years; achieve non-emergency watershed conditions within 5 years; encourage and protect shrubs following moderate-to-high intensity fire for 5 years; revegetate burned areas that will not naturally revegetate quickly except in RNAs	Enhance or maintain natural recovery and achieve fuel-loading mosaic within 5 years; achieve non-emergency watershed conditions within 5 years; encourage and protect shrubs following moderate-to-high intensity fire for 5 years; revegetate burned areas that will not naturally revegetate quickly	Same as Alternative 3
Candidate Research Natural Areas (RNA)	No candidate RNAs (Existing established Upper Pine Creek RNA)	No candidate RNAs (Existing established Upper Pine Creek RNA)	Four candidate RNAs:	Nine candidate RNAs:	Four candidate RNAs:
			Canyon City Fanny/Boles Geis Spring Sheep Nose Mountain (Existing established Upper Pine Creek RNA)	Canyon City Fanny/Boles Geis Springs Sheep Nose Mountain North Fork Castle Creek Iron Mountain Lemming Draw Upper Sand Creek Cranberry Springs (Existing established Upper Pine Creek RNA)	Canyon City Fanny/Boles Geis Springs North Fork Castle Creek (Existing established Upper Pine Creek RNA)

Table 2-2. Key Differences In Alternative Direction

Resource Or Concern	Alternative 1 No-Action, 1997 Forest Plan	Alternative 2 No-Action, 1997 Forest Plan Amended By Phase I	Alternative 3	Alternative 4	Alternative 6 Proposed Action
Deer and Elk Habitat Effectiveness	Includes guidelines that require maintenance of habitat effectiveness above designated levels according to the HABCAP Model	Same as Alternative 1	Habitat elements are provided through structural stage objectives (replaced HABCAP habitat effectiveness guidelines used in Alternative 1 and 2). Also encourages and protects establishment of shrubs in moderate-to-high-intensity burn areas first 5 years following a wildfire	Encourages and protects establishment of shrubs in moderate-to-high-intensity burn areas first five years following a wildfire. HABCAP habitat effectiveness guidelines used in Alternative 1 and 2 are not included in this alternative	Same as Alternative 3, plus structural stage objectives also promote understory shrubs

2-4. Alternatives Not Analyzed In Detail

2-4.1. Detailed Public Alternatives

Two detailed alternatives were submitted by the public, one from the Biodiversity Conservation Alliance and one from the Black Hills Regional Multiple Use Coalition. Both alternatives contain substantial proposed direction that is outside the scope of the Phase II Amendment. These alternatives were reviewed and considered, but were not adopted as alternatives in whole. Specific points of these alternatives were considered in detail and included in the alternatives where appropriate.

Biodiversity Conservation Alliance Alternative

- Suggested that the Black Hills is a mixed-severity fire regime, not a low-severity, frequent fire regime. This suggestion was made in the FEIS.
- Proposed scientifically-based population objectives for 9 MIS that vary from the other alternatives.
- Provide fire protection through judicious fuels management in the WUI.
- Retain all snags in unburned areas, and provide snag retention measures for post-fire salvage areas. This provision was included in part in Alternatives 3, 4, and 6.
- Increase down woody debris retention for wildlife.
- Propose to manage the Forest for 20 percent old growth and 20 percent old growth recruitment.
- Increase in the number of large, mature trees was suggested. This was included in management area direction for Alternatives 3 and 6.
- The alternative proposed an additional 15 candidate RNAs that were not included in the Phase II DEIS alternatives. These additional areas were considered in the RNA screening process.
- The alternative proposed general travel management changes and wilderness recommendations, both of which are outside the scope of the Phase II decision.

The Phase II Final EIS analysis concluded that all FEIS alternatives (1, 2, 3, 4, and 6) are expected to provide for species viability for all native and desired non-native species. The Biodiversity Conservation Alliance Alternative as a whole has species protections, yet sets objectives expected to increase fire and insect hazard on approximately 22 percent of the ponderosa pine on the Forest. The substantial increase in fire hazard in its entirety does not meet the purpose and need to address fire hazard and insect risk. The attributes of the individual parts of the alternative were considered and included in the analysis.

Black Hills Regional Multiple Use Coalition Alternative:

- Adjust structural stage percentages and large trees to provide more diversity and reduce fire hazard and insect risk. These were considered, modified and included in Alternative 6.
- Manage 100 percent of the WUI for a moderate-to-low fire hazard. This was considered, but not adopted. Others suggested that 50 percent of the WUI be low to moderate, to avoid creating forest crowns that are too open, potentially conflicting with adjacent private landowners. The Alternative 6 objective was revised to provide 50- to 75-percent moderate-to-low fire hazard.

- Ensure a supply of timber volume from the national forest that maintains mill capacity; industry infrastructure is needed to cost-effectively reduce fire hazard and insect risk, and improve forest diversity. Timber sale levels and ASQ were determined in the 1997 Forest Plan and are not re-evaluated in the Phase II Amendment. Estimated timber volume produced by each of the alternatives is included in the Final EIS for effects analysis only, and is not part of the Phase II decision.

The Black Hills Regional Multiple Use Coalition Alternative included comments that are applicable to program guidance or for project-level planning such as harvest method, how to spend available funds, or how to lay out timber sales. These items are outside the scope of the Phase II decision. The attributes of the individual parts of the alternative were considered and included in the analysis.

2-4.2. Other Alternatives Considered But Eliminated

Alternatives considered but eliminated from further analysis are included in this section along with a brief rationale explaining why the alternative was eliminated.

- Harvesting the annual timber growth (originally was Alternative 5 included in the early development of the Phase II Alternatives).
- Alternative 5 was initially included in the early development of the Phase II Alternatives to be considered as a baseline in the analysis. However, the alternative is outside the scope of the Phase II Amendment purpose and need because it would require broad-scale management area changes (refer to Section 1-3).
- ointly manage the Jasper fire area as a tribal bison sanctuary or return it to the Sioux Nation.
- Having a large area of the Forest managed for buffalo by the tribes or any other entity is outside the scope of the Phase II Amendment purpose and need as defined in Chapter 1 because significant changes in management area allocations, grazing allotment direction, and termination of existing permits would be required.
- Elk Mountain should be in the suitable timber base.
- A suitable timber-base change is outside the scope of the Phase II Amendment as defined in Chapter 1 of the Final EIS, except in the case of considering candidate RNAs for inclusion in the national RNA network or meadow restoration.
- Preserve all roadless areas greater than 1,000 acres.
- A roadless area evaluation is outside the scope of the Phase II Amendment as defined in Chapter 1 of the Final EIS. A roadless area analysis was completed as part of the 1996 EIS (see pages III-401 to III-410). Analysis of species viability and diversity related to roads was conducted in the Chapter 3 effects analysis. Where roads were a limiting factor for species viability and diversity, specific standards and guidelines are either present in the current Forest Plan or were added into one or more of the action alternatives (see Final EIS Appendix D Forest-wide Standards and Guidelines). A broad-scale change to preserve 1,000-acre unroaded areas was not needed to address these species specific issues.
- Impose a moratorium on all new road construction or reduce road density and remove roads.
- A broad-scale change in Forest Plan direction is outside the scope of the Phase II Amendment. Analysis of species viability and diversity related to roads was conducted in the Chapter 3 effects analysis. Where roads were a limiting factor for species viability and diversity, specific standards and guidelines are either present in the current Forest Plan or were added into one or more of the action alternatives (see Final EIS Appendix D Forest-wide Standards and Guidelines). A broad-scale change in road policy was not needed to address these species specific issues.

- Stop commercial development.
- Commercial development (e.g., timber sales, domestic livestock grazing, and other resources or services from the national forests) is a basic component of national forest management policy. Changing this national policy is outside the scope of the Phase II Amendment as defined in Chapter 1.
- Address ways to help gold prospecting.
- Gold prospecting direction is outside the scope of the Phase II Amendment as defined in Chapter 1.
- Manage for 20-percent old growth and 20-percent old-growth recruitment.
  This alternative proposes to manage the Forest for 20-percent old growth and 20-percent old growth recruitment. Areas would generally be expected to resemble structural stages 5 (late successional) and 4C (dense mature) that have some of the highest fire-hazard and insect-risk conditions on the Forest. The purpose of the Phase II Amendment is to re-evaluate sufficiency of the 1997 Revised LRMP regarding diversity of plant and animal communities and species viability, identify candidate areas for possible RNA designation, and consider fire hazard and insect risk to address species viability and diversity as well as risks to human life and property, public lands and resources. This alternative is not considered to be able to provide for the viability or the long-term persistence of additional species, yet would set objectives that increase fire hazard and insect risk on 280,000 acres or 22 percent of the Forest (see Sections 3-7.1 Fire and 3-7.2 Insects and Phase II Administrative Record spreadsheet: frq_firehaz_rating worksheet BCA_alt_assessment). The substantial increase in fire-hazard ratings with no indication of decreasing risks to the long-term persistence of species as well as likely contributing to those species at risk from fire does not meet the purpose and need of the Phase II Amendment.
- Include more Candidate RNAs in the Final EIS
  Recommend an additional 15 candidate RNAs that were not analyzed in the Draft EIS alternatives. In all, 121 areas totaling 247,000 acres were included in an evaluation process for candidate RNA consideration, including the15 additional areas proposed (SAIC 2002a). These areas were eliminated in that process for one or more of the following reasons (SAIC 2003d):
  1. Small site less than 300 acres.
  2. Private roads.
  3. Extensive road network.
  4. Extensive noxious weed infestation.
  5. Extensive range developments
  6. Extensive historic or prehistoric sites that may require excavation or stabilization. RNA designation was considered an undertaking by the State Historic Preservation Officer.
  7. Extensive or recent timber logging.
  8. Nearby recreation, residential, or commercial developments.
  9. Nearby heavy developed recreation use.
  10. Nearby or on-site dispersed recreation use.
  11. Target vegetation communities are compromised.
  12. Target vegetation communities are better represented on other sites with fewer conflicts.

  The comment did not explain why the in depth RNA screening analysis available on the Forest's web page was considered to be in error.
- Requests for general Forest-wide travel management changes (examples include: reduce road densities and off-road travel, don't construct additional roads, promote walk-in areas and solitude) and for new wilderness recommendations to congress.
- Proposals for general travel management changes and wilderness recommendations are outside the scope of the Phase II Amendment. Travel effects to species were assessed. Travel-related design criteria were incorporated into the alternatives for species conservation and RNA management.
- Many public suggestions were project-level actions that are not considered in this programmatic level Forest-wide Final EIS. These include proposals to stop closing roads, which harvest methods to use, annual timber sale levels, how to spend available funds, how to lay out timber sales, or to include unsuitable lands in timber thinning.

- Return to pre-settlement conditions.
- Item 3 on page II-19 of the 1996 Final EIS indicates that too many changes have occurred on the Forest, many outside of the Forest's control, to allow a socially acceptable return to pre-settlement conditions. This alternative was identified and dropped from detailed study in the 1996 Forest Plan Final EIS.
- No timber harvest or harvest of trees greater than 13- to 14-inch diameter at breast height
- Items 6 and 7 on page II-21 of the 1996 Final EIS indicate a prohibition on "logging large trees to speed the Forest toward late succession" was not considered to be silviculturally or economically viable. Analysis of Phase II key decision areas in Chapter 1 did not suggest harvest limitation was necessary or desirable.

2-5. Summary Of Five Alternatives

This section summarizes the environmental consequences of the five alternatives considered in detail. **Table 2-3** summarizes the effects of the key issues for each alternative.

Table 2-3. Summary Of Consequences[1].

Issue	Issue Component	Alternative 1 No-action, 1997 Revised Forest Plan	Alternative 2 No-action, Phase I Amendment	Alternative 3 Diversity Across the Landscape	Alternative 4 Phase I with Additional Mature Forest	Alternative 6 Reduced Fire Hazard and Insect Risk [2]
Species Viability	Species abundance[3] - Late-successional pine forest (ss 4c and 5) - Brown creeper MIS	-Retains 5 percent of ponderosa pine as SS 5 -Does not have objectives for SS 4C -Has SS 4C conservation measures where management occurs	-Retains 5 percent of ponderosa pine as SS 5 -Does not have objectives for SS 4C -Has SS 4C conservation measures where management occurs	Maintains 15 percent of ponderosa pine as habitat	Maintains 18 percent of ponderosa pine as habitat	Retains 11 percent of ponderosa pine as habitat
	Species abundance - Early successional forest and understory shrubs - White-tailed deer MIS	Second greatest amount of open and early successional forest	Third greatest amount of open and early successional forest	Fourth greatest amount of open and early successional forest	Least amount of open and early successional forest	Greatest amount of open and early successional forest
	Species abundance - Aspen habitat - Ruffed grouse MIS	Least amount of aspen habitat	Same as Alternative 1	Greatest amount of aspen habitat	Second greatest amount of aspen habitat	Greatest amount of aspen habitat
	Species abundance - hardwood and riparian habitat - Beaver MIS	Least amount of hardwood and riparian habitat	Same as Alternative 1	Greatest amount of hardwood and riparian habitat	Third greatest amount of hardwood and riparian habitat	Second greatest amount of hardwood and riparian habitat
	Species abundance - White sprucehabitat - Golden-crowned kinglet MIS	Remains at current levels at 25,000 acres	Same as Alternative 1	Same as Alternative 1	Same as Alternative 1	Habitat declines to 1995 level, approximately a 20-percent decrease
	Species abundance - Shrubby riparian habitat - Song sparrow MIS	Half the riparian restoration as Alternative 3	Same as Alternative 1	Most riparian restoration (double that of the other alternatives)	Same as Alternative 1	Same as Alternative 1
	Species abundance - Grassland habitat - Grasshopper sparrow MIS	Second most grassland restoration	Same as Alternative 1	Most grassland restoration	Same as Alternative 1	Same as Alternative 3

Table 2-3. Summary Of Consequences[1].

Issue	Issue Component	Alternative 1 No-action, 1997 Revised Forest Plan	Alternative 2 No-action, Phase I Amendment	Alternative 3 Diversity Across the Landscape	Alternative 4 Phase I with Additional Mature Forest	Alternative 6 Reduced Fire Hazard and Insect Risk [2]
Species Viability-Continued	Species abundance - Snag and recently burned habitat - Black-backed woodpecker MIS	Least amount of the snag habitat component. 1.08 snags per acre requirement and no post fire objectives.	Second lowest amount of snag habitat component. Average of three snags per acre requirement but no post fire objectives.	Second highest amount of snag habitat component. Average of three snags per acre requirement and retains 50 percent of burned tree acres, up to 10,000 acres of recently burned acres.	Greatest amount of snag habitat component. Average of three snags per acre requirement and retention of all burned acres (no burned trees available for value recovery).	Third highest amount of snag habitat component. Average of three snags per acre requirement and retains 50 percent of burned tree acres, up to 10,000 acres of recently burned acres and includes insect killed acres associated with fire events.
	Species abundance - Aquatic habitat - Mountain sucker MIS	500 acres of riparian restoration. Habitat connectivity maintained (Standard 1203).	Same as Alternative 1	1000 acres of riparian restoration Habitat connectivity maintained (Standard 1203).	Same as Alternative 1	Same as Alternative 1
	Species abundance - White spruce connectivity - American marten	No direction to maintain mature spruce and movement corridors for marten. No direction to reduce interior fire hazard.	Direction to maintain mature spruce and movement corridors for marten. Maintains 25,000 acres of spruce. No direction to reduce interior fire hazard.	Direction to maintain mature spruce and movement corridors for marten. Maintains 25,000 acres of spruce. Second greatest reduction in forest wide fire hazard expected to reduce risk to marten habitat.	Direction to maintain mature spruce and movement corridors for marten. Maintains 25,000 acres of spruce. No direction to reduce interior fire hazard.	Direction to maintain mature spruce and movement corridors for marten. Maintains 20,000 acres of spruce. Greatest reduction in forest wide fire hazard expected to reduce risk to marten habitat.
	Species abundance - Moderately dense mature ponderosa pine habitat (SS 4B and 4C) - Goshawk	Provides the least habitat. Habitat capability allowed to decline by 10 percent per project and no direction to retain SS 4C.	Provides the third most habitat. No direction in the ecosystem approach to retain SS 4C.	Provides the most habitat. A proactive approach with a SS strategy, retention of late successional areas (such MA 3.7 and Wilderness) and reduced fire hazard.	Provides the second most habitat. Provides additional SS 4C habitat and reserves, but the lack of direction for interior fire hazard reduction places additional risk to goshawk nests.	Provides second least habitat. Greatest reduction in SS 4C but targets the most fire hazard reduction, placing the least fire risk to goshawk nests.
	Species abundance - sensitive plants	Least conservation measures targeted at plants. While many plant conservation measures are present in Alternative 1, it lacks the additional conservation measures provided by Alternatives 3 and 6. Hardwood and meadow restoration are 10 percent of levels in Alternatives 3 and 6.	Least conservation objectives targeted at plants. Very similar to Alternative 1 but many of the conservation measures found in Alternative 1 as guidelines are standards in Alternative 2.	Most active approach to conserving R2 Sensitive and SOLC plants through Objectives, Standards and Guidelines; restoration of hardwood, riparian and meadow conditions and fire hazard reduction adjacent to known occurrences.	Third most active approach has many of the same conservation measures as Alternatives 3 and 6 but Alternative 4 takes a passive approach to management placing many plant species at risk from wildfire. Alternative 4 has 20 percent of the hardwood and meadow restoration of Alternatives 3 and 6.	Is similar to Alternative 3 except Alternative 6 has 500 fewer acres of riparian restoration, 2,000 more acres of minimum level noxious weed treatment and places more emphasis on fire hazard reduction at ARCs and WUI (adds 300 feet) rather than at plant occurrence locations.

Table 2-3. Summary Of Consequences[1].

Issue	Issue Component	Alternative 1 No-action, 1997 Revised Forest Plan	Alternative 2 No-action, Phase I Amendment	Alternative 3 Diversity Across the Landscape	Alternative 4 Phase I with Additional Mature Forest	Alternative 6 Reduced Fire Hazard and Insect Risk [2]
Fire Hazard	Alternative emphasis	WUI is not emphasized in the Forest Plan although the Forest Plan is flexible enough to implement the Healthy Forest Restoration Act	Same as Alternative 1	Manage for 50 percent moderate-to-low fire-hazard rating in the WUI and to conserve emphasis species throughout the forest, with certain excepted areas. WUI is limited to the ARCs.	Manage for 50 percent moderate-to-low fire-hazard rating and reduced insect hazard in the WUI adjacent to ARC. WUI is limited to the ARCs.	Manage for 50 to 75 percent moderate-to-low fire hazard within the WUI and 50 percent across the rest of the Forest with certain excepted areas. The WUI is expanded from Alternatives 3 and 4 to include areas adjacent to non-federal lands.
	Potential reduction in acres severely burned	Similar to Alternative 4	Similar to Alternative 4	Second most potential	Third most potential	Most potential

Table 2-3. Summary Of Consequences[1].

Issue	Issue Component	Alternative 1 No-action, 1997 Revised Forest Plan	Alternative 2 No-action, Phase I Amendment	Alternative 3 Diversity Across the Landscape	Alternative 4 Phase I with Additional Mature Forest	Alternative 6 Reduced Fire Hazard and Insect Risk [2]
Candidate Research Natural Areas	Number of areas and acres recommended	The existing Upper Pine Creek Research Natural Area, designated in 1932. No additional areas recommended.	Same as Alternative 1	Canyon City, Fanny Boles, Geis Springs, Sheep Nose Mountain - (approximately 2,500 total acres)	Canyon City, Cranberry Springs, Fanny/Boles, Geis Springs, Iron Mountain, Lemming Draw, North Fork Castle Creek, Sheep Nose Mountain, Upper Sand Creek - (approximately 7,800 total acres)	Canyon City, Fanny/Boles, Geis Springs, North Fork Castle Creek - (approximately 2,300 total acres)
	Targeted plant series	Ponderosa Pine	Same as Alternative 1	Bur Oak, Hop-hornbeam (Ironwood) Ponderosa Pine, Montane Willow, Riparian Grassland, Riparian Shrubland, Mountain Mahogany/ Skunkbrush, White Spruce	Bur Oak, Hop-hornbeam (Ironwood) Montane Grassland, Ponderosa Pine, Montane Willow, Riparian Grassland, Riparian Shrubland, Mountain Mahogany/ Skunkbrush, White Spruce	Bur Oak, Hop-hornbeam (Ironwood), Ponderosa Pine, Montane Willow, Riparian Grassland, Riparian Shrubland, Mountain Mahogany/ Skunkbrush, White Spruce
	Fire hazard a concern to nearby ARC	No	No	One ARC (Silver City) located approximately 0.5 mile from candidate RNA boundary; boundary had been adjusted to reduce the concern issue.	Same as Alternative 3	Same as Alternative 3
	Extensive ATV use a concern	No	No	No	Yes	No
	Mountain bike use on system trail	No	No	Yes	Yes	No
	Miles of road to close	0	0	5.2	13.7	3.4
	New mining claims	No	No	No	Yes	No
	Number of grazing allotments affected	1	1	5	11	4
	Grazing planned within candidate RNAs	No	No	No	Potentially within Lemming Draw	No
	Livestock trailing through RNA used to access other areas	No	No	Canyon City	Canyon City	Canyon City
	Water developments and fence to be removed	No	No	One candidate RNA.	Four candidate RNAs.	One candidate RNA.
	Fence construction needed	No	No	Fencing needed.	Fencing needed.	Fencing needed.
	Distance to private land or other ownerships	Greater than 0.5 mile.	Greater than 0.5 mile.	One within 0.2 mile on top ridge. Two within 0.25 mile One with 0.05 mile One within 0.5 mile	One within 0.20 mile on top ridge. Four within 0.25 mile One with 0.05 mile Four within 0.5 mile	One within 0.20 mile on top ridge. One within 0.25 mile One with 0.05 mile Two within 0.5 mile

Table 2-3. Summary Of Consequences[1].

Issue	Issue Component	Alternative 1 No-action, 1997 Revised Forest Plan	Alternative 2 No-action, Phase I Amendment	Alternative 3 Diversity Across the Landscape	Alternative 4 Phase I with Additional Mature Forest	Alternative 6 Reduced Fire Hazard and Insect Risk [2]
Water Quality	Current water quality maintained through design criteria	Yes	Yes	Yes	Yes	Yes
	Cumulative benefit to aquatic ecosystems	Second most	Second most	Most	Second most	Most
Air Quality	Air quality standards maintained	Yes	Yes	Yes	Yes	Yes
Scenic Resources	Visual quality maintained.	Yes	Yes	Scenic integrity objectives can be moderate to low in the WUI 2 to 4 years after treatments. Least WUI acres treated.	Scenic integrity objectives can be moderate to low in the WUI 2 to 4 years after treatments. Least WUI acres treated.	Scenic integrity objectives can be moderate to low in the WUI 2 to 4 years after treatments. Most WUI acres treated.
Recreation Travel	Restrictions on travel and recreation access	Fewest restrictions	Second fewest restrictions	Second most restrictions	Most restrictions	Third most restrictions
Estimated Average Annual Decadal Sale Volume	MMCF sawtimber	18.1	10.9	18.1	14.3	18.1
	MMCF products other than logs	2.1	1.3	2.1	1.7	2.1
Domestic Livestock Grazing	Impacts due to livestock exclusions or added livestock management costs for species viability and diversity standards and guidelines, or RNA establishment.	Least impacts to livestock industry	Second least impacts to livestock industry	Second most impacts to livestock industry	Most impacts to livestock industry	Third most impacts to livestock industry
	Additional forage provided through treatments to serve as alternative domestic livestock forage.	Third most additional forage	Second least additional forage	Second most additional forage	Least additional forage	Most additional forage
Locatable and Leaseable Minerals	Species viability and diversity and RNA impacts on the opportunity to discover and develop minerals	Least impacts to mineral discovery and development.	Second least impacts to mineral discovery and development.	Second most impacts to mineral discovery and development.	Most impacts to mineral discovery and development.	Third most impacts to mineral discovery and development.
Heritage Resources	Potential to affect heritage resources through ground disturbance.	Third most likely to affect.	Second least likely to affect.	Second most likely to affect.	Least likely to affect	Most likely to affect

Table 2-3. Summary Of Consequences[1].

Issue	Issue Component	Alternative 1 No-action, 1997 Revised Forest Plan	Alternative 2 No-action, Phase I Amendment	Alternative 3 Diversity Across the Landscape	Alternative 4 Phase I with Additional Mature Forest	Alternative 6 Reduced Fire Hazard and Insect Risk [2]
Socio-Economic	Employment in wood products firms	Most likely to sustain current wood products firms and jobs	Lease likely to sustain current wood products firms and jobs	Most likely to sustain current wood products firms and jobs	Second most likely to sustain current wood products firms and jobs	Most likely to sustain current wood products firms and jobs
	Economic and financial efficiency as measured by present net value (PNV)	Third greatest PNV	Second greatest PNV	Second lowest PNVt	Greatest PNV	Lowest PNV
	Effects on school enrollment decline	Contributes the most to maintaining school enrollment	Contributes the most to school enrollment decline.	Contributes the most to maintaining school enrollment	Contributes the second most to school enrollment decline.	Contributes the most to maintaining school enrollment
	Contributes to minority employment with higher benefits and wages	Contributes the most to minority employment	Contributes the least to minority employment	Contributes the most to minority employment	Contributes the second least to minority employment.	Contributes the most to minority employment
	Stand replacing fire concern on tourism, public safety, private property, community stability	Least able to satisfy public concern on stand replacing fire	Least able to satisfy public concern on stand replacing fire	Second best able to satisfy public concern on stand replacing fire	Least able to satisfy public concern on stand replacing fire	Best able to satisfy public concern on stand replacing fire

[1]This table presents only that information that varies by alternative or if information is anticipated to be of interest to the reader. For full species discussions on TES Species refer to Phase II FEIS Appendix C

[2] Alternative five was not analyzed in detail; see Phase II Final EIS Section 2-4

[3] Species abundance corresponds to the quantity and quality of suitable habitat. If habitat components or conditions increase or improve species abundance could be expected to increase provided other species components are available or increase. If habitat components decline, species abundance could be expected to decline.

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