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Draft Revised Forest Plan

Helena - Lewis and Clark National Forest

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Draft Revised Forest Plan

Helena - Lewis and Clark National Forest

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Abstract: The Helena - Lewis and Clark National Forest has developed this draft revised forest plan, in accordance with the 2012 National Forest System land management planning rule (planning rule) adopted by the U.S. Department of Agriculture.

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List of Abbreviations

DC – desired condition (plan component)
FS – Forest Service
FW – forestwide
GA – geographic area
GDL – guideline (plan component)
GO – goal (plan component)
HLC NF – Helena – Lewis and Clark National Forest
NFS – National Forest System
OBJ – objective (plan component)
STD – standard (plan component)
SUIT – suitability (plan component)
USDA – United States Department of Agriculture
USFWS – United States Fish and Wildlife Service

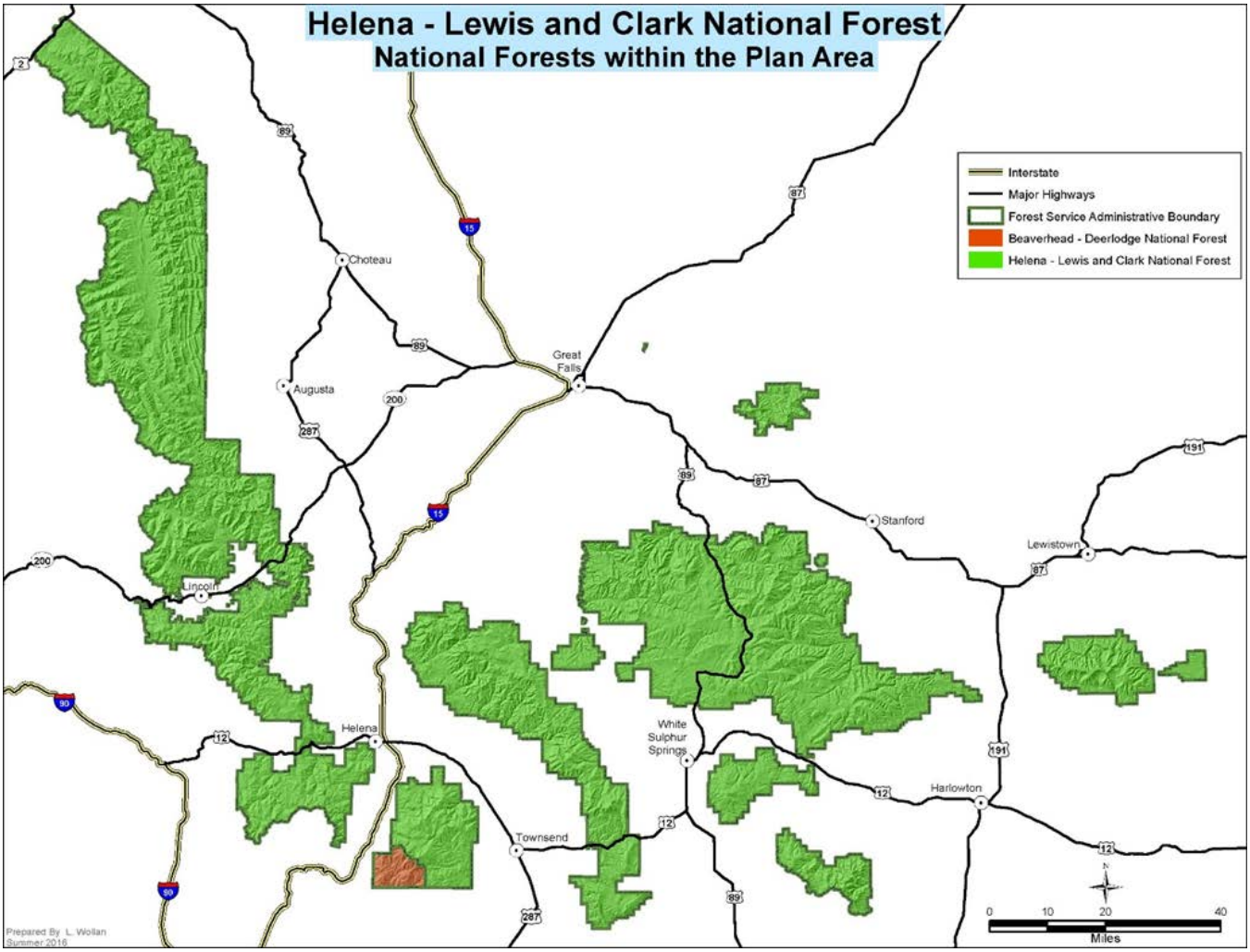
Chapter 1. Introduction

Helena - Lewis and Clark Consolidation

The Helena National Forest and the Lewis and Clark National Forest were recently combined. The consolidation of the two forests was approved by the Under Secretary for Natural Resources and the Environment on Dec. 11, 2015. The official name of the combined forests is the Helena - Lewis and Clark National Forest. For the purposes of this document, it will be referred to as the HLC NF.

Prior to the consolidation, each forest had its own forest plan (both dated 1986). In 2010 the Regional Forester decided to combine the programs of the Helena and the Lewis and Clark National Forests. The combination of the two forests programs was consistent with the Northern Region's direction for sharing leadership. Part of implementing this consolidation included a combined forest plan revision effort.

Figure 1. Helena - Lewis and Clark National Forest and vicinity



Purpose of this Land and Resource Management Plan

The HLC NF is proposing to revise its Land and Resource Management Plan (hereinafter referred to as "forest plan" or "land management plan"). This document describes the draft revised forest plan ("draft plan"). The purpose of the draft plan is to have an integrated set of plan direction (referred to as components from here on out) to provide for social, economic, and ecological sustainability and multiple uses of the HLC NF lands and resources. This forest plan sets the overall context for informed decision making by evaluating and integrating social, economic, and ecological considerations relevant to management of the forest. In May of 2012, the United States Forest Service (FS) began using new planning regulations (2012 Planning Rule) to guide collaborative and science-based revision of land management plans that promote the ecological integrity of national forests while considering social and economic sustainability. The 2012 Planning Rule specifies the following primary decisions that are to be made in forest plans:

- Forestwide components to provide for integrated social, economic, and ecological sustainability, and ecosystem integrity and diversity, while providing for ecosystem services and multiple uses. Components must be within FS authority and consistent with the inherent capability of the plan area (36 Code of Federal Regulations 219.7 and 219.8–219.10).
- Recommendations to Congress (if any) for lands suitable for inclusion in the National Wilderness Preservation System and/or rivers eligible for inclusion in the National Wild and Scenic Rivers System (36 Code of Federal Regulations 219.7(2)(v) and (vi)).
- The plan area's distinctive roles and contributions within the broader landscape.
- Identification or recommendation (if any) of other designated areas (36 Code of Federal Regulations 219.7 (c)(2)(vii).
- Identification of suitability of areas for the appropriate integration of resource management and uses, including lands suited and not suited for timber production (36 Code of Federal Regulations 219.7(c)(2)(vii) and 219.11).
- Identification of the maximum quantity of timber that may be removed from the plan area (36 Code of Federal Regulations 219.7 and 219.11 (d)(6)).
- Identification of GA or management area specific components (36 Code of Federal Regulations 219.7 (c)(3)(d).
- Identification of watersheds that are a priority for maintenance or restoration (36 Code of Federal Regulations 219.7 (c)(3)(e)(3)(f).
- Plan monitoring program (36 Code of Federal Regulations 219.7 (c)(2)(x) and 219.12.

It is important to note that this plan does not authorize site-specific prohibitions or activities; rather it establishes broad direction, similar to zoning in a community. Project or activity decisions will need to be made following appropriate procedures. Site-specific analysis in compliance with the National Environmental Policy Act would need to be conducted in order for activities to be in compliance with the broader direction of the forest plan.

The revised plan will provide guidance for project and activity-level decision making on the Forest for approximately the next 15 years.

Plan Structure

This draft plan is designed to communicate the concepts of strategic guidance and adaptive management for the HLC NF. The draft plan is organized as follows:

Chapter 1 describes the purpose of the land management plan, plan content, future project consistency with the plan, rights and interests, and how best available science will be considered.

Chapter 2 contains forestwide plan direction; the plan components related to physical and biological ecosystems; fire; air quality; the economic, cultural and social environment; and human uses and designations of the forest.

Chapter 3 contains geographic area (GA) plan direction and distinctive roles and contributions of each GA. Plan components specified at the GA level are those that are not adequately addressed by forestwide plan components. The HLC NF is divided into ten GAs.

Following chapter 3 is a glossary of terms and appendices as follows:

- Appendix A - Monitoring Program
- Appendix B - Maps
- Appendix C - Potential Management Approaches and Possible Actions
- Appendix D – Vegetation Classifications and Descriptions
- Appendix E – Priority Watersheds
- Appendix F – Analysis Process for Recommended Wilderness
- Appendix G - Wild and Scenic Rivers Eligibility Study Process
- Appendix H – Northern Rockies Lynx Management Direction, Record of Decision
- Appendix I – Northern Continental Divide Ecosystem Grizzly Bear Amendment
- Appendix J – Scenic Character Descriptions
- Appendix K – Readers Guide for Resource Topics

Plan Content

This section describes the content of the draft revised forest plan (“draft plan”) and includes:

- Forestwide and geographic area desired conditions, goals, objectives, standards, and guidelines
- The suitability of lands for specific multiple uses, including those lands suitable for timber production
- An estimate of the long-term sustained yield and projected timber sale quantity
- A description of the plan area’s distinctive roles and contributions within the broader landscape
- The identification of priority restoration watersheds
- Proposed management actions and strategies that may occur on the plan area over the life of the plan
- Areas proposed to be recommended to Congress for inclusion in the National Wilderness Preservation System

- Rivers identified as eligible for inclusion as part of the Wild and Scenic River System
- Changes to the list of proposed research natural areas
- The plan monitoring program

The draft plan does not include information on focal species or specific species of conservation concern. Focal species will be addressed in the draft environmental impact statement. Wildlife, fish, and plant species of conservation concern for the HLC NF are being identified at the regional level. The draft list can be reviewed at www.fs.usda.gov/goto/R1/SCC.

Numbers such as acres, miles, and volumes are approximate due to the use of geographic information system data and rounding.

Plan Components

Introduction

Plan components guide future projects and activities and the plan monitoring program. Plan components are not commitments or final decisions approving projects or activities. Some plan components have also been designed to address drivers and stressors of ecosystems (refer to the *Assessment of the Helena and Lewis and Clark National Forests* for description of drivers and stressors).

Every plan must have management areas, GAs, or both. The plan may identify designated or recommended areas as management areas or GAs (36 Code of Federal Regulations 219.7(d)). The HLC NF proposes to use GAs to describe how plan components would apply to specific parcels of HLC National Forest System (NFS) land. Plan components have been developed forestwide and by GA. Forestwide components would apply to NFS land, unless otherwise stated under GA components. This proposed plan presents two types of components:

- Forestwide components that apply across the landscape, but may be applicable to specific areas as designated on a map
- GA components that are specific to an area or place, such as a river basin or valley, and reflect values and local conditions within that specific GA

The forestwide components would apply to the GAs unless other direction is noted within the GA section. If so noted, this direction may supplement or supersede what is stated in the forestwide section. If no mention is made to a particular resource component in the GA section, then the forestwide direction is to be followed. The GA components allow us to focus on specific circumstances in specific geographic locations.

Desired conditions, goals, objectives, standards, guidelines, monitoring questions, and monitoring indicators (in appendix A) have been given alpha-numeric identifiers for ease in referencing within the forest plan. The identifiers include:

- The level of direction (forestwide = FW, for GA direction the GA abbreviation is used)
- The resource (for example, WTR = watershed)
- The type of direction (where DC = desired condition, GO = goal, OBJ = objective, STD = standard, GDL = guideline, SUIT = suitability, MON=monitoring question, IND=monitoring indicator)
- A unique number (a numerical order starting with “01”)

For example, forestwide direction for watershed desired conditions would be identified starting with FW-WTR-DC-01. The Big Belts GA watershed desired conditions would be identified starting with BB-WTR-DC-01. The identifiers are included as part of the headings in chapters 2 and 3 with the unique number preceding each plan component.

Following are the definitions and where necessary, a description of their context for the required plan components (36 Code of Federal Regulations 219.7(e)).

Desired Conditions

A desired condition (DC) is a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Desired conditions must be described in terms that are specific enough to allow progress toward their achievement to be determined, but not include completion dates (36 Code of Federal Regulations 219.7(e)(1)(i)).

Desired conditions are not commitments or final decisions approving projects and activities. The desired condition for some resources may currently exist, or for other resources may only be achievable over a long time period.

Goals

A plan may include goals (GO) as plan components. Goals are broad statements of intent, other than desired conditions, usually related to process or interaction with the public. Goals are expressed in broad, general terms, but do not include completion dates. (36 Code of Federal Regulations 219.7(e)(2)). Goals may be appropriate to describe a state between current conditions and desired conditions but without specific amounts of indicators. Goals may also be appropriate to describe overall desired conditions of the plan area that are also dependent on conditions beyond the plan area or FS authority.

Objectives

An objective (OBJ) is a concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Objectives should be based on reasonably foreseeable budgets (36 Code of Federal Regulations 219.7(e)(1)(ii)). Objectives describe the focus of management in the plan area within the plan period. Objectives will occur over the life of the forest plan, considered to be over the first 15 years of plan implementation, unless otherwise specified. As with desired conditions, objectives can be forestwide or specific to GAs.

It is important to recognize that objectives were developed considering historic and expected budget allocations, as well as professional experience with implementing various resource programs and activities. It is possible that objectives could either exceed or not meet a target based upon a number of factors including budget and staffing increases/decreases, increased/decreased planning efficiencies, unanticipated resource constraints, etc.

Standards

A standard (STD) is a mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements (36 Code of Federal Regulations 219.7(e)(1)(iii)). As with desired conditions, standards can be developed for forestwide application or specific to a GA.

Guidelines

A guideline (GDL) is a constraint on project and activity decision-making that allows for departure from its terms, so long as the purpose of the guideline is met. Guidelines are established to help achieve or maintain a desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements (36 Code of Federal Regulations 219.7(e)(1)(iv)). As with desired conditions, guidelines can be forestwide or specific to a GA.

Suitability of Lands

Specific lands within the Forest will be identified as suitable (SUIT) for various multiple uses or activities based on the desired conditions applicable to those lands. The plan will also identify lands within the Forest as not suitable for uses that are not compatible with desired conditions for those lands. The suitability of lands need not be identified for every use or activity (36 Code of Federal Regulations 219.7 (e)(1)(v)). Suitability identifications may be made after consideration of historic uses and of issues that have arisen in the planning process.

Identifying suitability of lands for a use in the forest plan indicates that the use may be appropriate, but does not make a specific commitment to authorize that use. Final suitability determinations for specific authorizations occur at the project or activity level decision making process. Generally, the lands on the Forest are suitable for all uses and management activities appropriate for national forests, such as outdoor recreation, range, or timber, unless identified as not suitable. Every plan must identify those lands that are not suitable for timber production (§ 219.11). (36 Code of Federal Regulations 219.7(e)(1)(v)). For forestwide suitability determinations, please see chapter 2 and for GA specific suitability determinations, see chapter 3.

Other Required Plan Content

This draft plan is designed to communicate the concepts of strategic guidance and adaptive management for the HLC NF. In addition to plan components, it includes information on priority watersheds, distinctive roles and contributions of the plan area, monitoring, and proposed and possible actions.

Priority Watersheds

The Planning Rule requires land management plans to identify watershed(s) that are a priority for maintenance or restoration (36 Code of Federal Regulations 219.7(f)(1). The identification of these watersheds is done to focus efforts on the integrated restoration of watershed conditions in these areas. Information about priority watersheds in the plan area can be found in appendix E.

Distinctive Roles and Contributions within the Broader Landscape

The description of the plan area's distinctive roles and contributions within the broader landscape reflects those things that are truly unique and distinctive (36 Code of Federal Regulations 219.2(b)). This description is important because it is a source of motivation or reasons behind desired conditions. It is important to have an understanding of the ecological, social/economic, and cultural/historic context of the plan area in order to better gauge the relative importance of each role. Doing so helps to set realistic and achievable desired conditions, which are the basis for management direction over the next 15 years. Each of the ten GAs has its own set of distinctive roles and contributions and can be found in chapter 3. Within the broader landscape, the ecological; social and economic; and cultural and historic characteristics are described as follows.

Ecological characteristics

The HLC NF stretches over 150 miles north to south and 200 miles east to west and encompasses roughly 2.9 million acres of National Forest System land. The plan area is made up of a series of distinctive landscapes and "island" mountain ranges, identified as GAs. It straddles the Continental Divide in southwestern and central Montana, and is characterized by the topographical transition between western mountainous terrains and eastern prairie grasslands. The elevation ranges from about 3,000 feet along the Missouri, Clark Fork, and Blackfoot rivers to over 9,000 feet on mountain peaks. The dissected nature of the area has unique implications for ecosystem function.

The plan area extends into three distinct ecoregion sections: the Belt Mountain section, the Bitterroot Valley section, and the Rocky Mountain Front section. The Belt Mountain section encompasses most of the plan area east of the Rocky Mountain Front. This area is characterized by high mountains, gravel-capped benches, and intermontane valleys bordered by terraces and fans. The Bitterroot Valley section covers some portions of the Upper Blackfoot and Divide GAs west of the Continental Divide, and is characterized by high, glaciated mountains with alpine ridges and cirques at higher elevations and glacial lakes. The Rocky Mountain Front section covers the Rocky Mountain Range GA in the northwestern part of the plan area. It is characterized by glaciated mountains with limestone scarps and ridges interspersed with glacial lakes and river valleys.

Bisected by the Missouri River and the Continental Divide, the plan area supports a wide diversity of vegetation due to its geographic extent, topography, natural disturbance regimes, and climate. The diversity of vegetation communities includes grassland prairie at the low elevations, open savannas and forests on dry foothills, dense coniferous forests and higher elevation grassland and shrublands, and alpine communities on cold, rocky sites at the highest elevations. Forests are most commonly dominated by Douglas-fir or lodgepole pine, but many other species are present including Rocky Mountain juniper, limber pine, ponderosa pine, aspen, cottonwood, western larch, Engelmann spruce, subalpine fir, and whitebark pine. There is also a wide diversity of nonforested vegetation types, including grasslands, shrublands, riparian and wetland areas, and alpine ecosystems, which support a wide variety of plant species. Rare habitat features such as cliffs, waterfalls, caves, and fens are present which support equally unique plant communities.

The HLC NF is inhabited by hundreds of species of native mammals, birds, fish, reptiles, amphibians, and invertebrates. The diversity of wildlife species is enhanced by the diverse ecology and large geographic span of the plan area. A number of wildlife species are at either the eastern or western edge of their range on the HLC NF, with some (for example, Canada lynx, flammulated owl, Lewis's woodpecker, harlequin duck) occurring only in the eastern or western GAs. A number of carnivore species occur, including black bear, mountain lion, pine marten, and wolverine. Grizzly bears are known to occur in the westernmost GAs and individuals may be present throughout most of the HLC NF.

The Rocky Mountain Range and Upper Blackfoot GAs are part of the Northern Continental Divide Ecosystem for grizzly bears, and within the Northern Continental Divide Ecosystem grizzly bear Recovery Zone. The grizzly bear population is currently expanding eastward from the Rocky Mountain Range GA into historic habitat on the plains, and southward into the Divide GA. Grizzly bears occasionally moving south through the Divide, Elkhorns, and possibly the Big Belts GAs may provide some genetic connectivity with the population of grizzly bears in the Greater Yellowstone Ecosystem.

The Rocky Mountain Range, Upper Blackfoot, and Divide GAs also support Canada lynx, and are wholly or partly within unit 3 of critical habitat for Canada lynx as designated under the Endangered Species Act. The remaining GAs are not occupied by Canada lynx and provide much less in the way of potential lynx habitat. These GAs are geographically isolated from the rest of the northern Rockies lynx population.

The HLC NF spans the Continental Divide, with the portions to the west of the divide draining into the Upper Clark Fork and Blackfoot Rivers and the portions to the east draining into the Missouri River. Prominent streams include the Little Blackfoot and Blackfoot Rivers west of the divide and multiple prominent drainages within each GA east of the divide, including the Sun and Judith Rivers. The networks of streams within the GAs are important aquatic ecosystems that support diverse riparian and wetland areas. Several bull trout fisheries occur on the west side of the divide, and westslope cutthroat trout inhabit multiple streams on both sides of the divide.

The HLC NF also has thirteen research natural areas (12 existing, 1 proposed), which are part of a national network of ecological areas for research, education, and maintenance of biological diversity. Additionally, the HLC NF is home to the Tenderfoot Creek Experimental Forest where research focuses on the sustainable productivity and biodiversity of lodgepole pine forests and watersheds.

Social and economic characteristics

The HLC NF serves as a backdrop, workplace, and playground for not only the small rural communities of central Montana, but also for visitors from around the world. Island mountain ranges with unique geology, scenic river valleys, mountain silhouettes, vast expanses of natural appearing forests, and striking visual contrasts, enhance the quality of life for residents and visitors. Deeply rooted in the culture and traditions of both Native American and early Euro-American settlers, the Forests' recreation settings and opportunities are enhanced by the many visible and accessible remnants of the past. A network of historic and modern era trails and roads gives visitors a chance to follow in the footsteps of Native Americans, the Lewis and Clark expedition, and early homesteaders and miners in search of silver and gold because of the numerous mineralized areas resulting from the Forests unique geologic landscape. Historic cabins and lookouts continue to serve as overnight destinations for today's visitors. Small, family owned ranches and livestock grazing on public lands are an important component of the backdrop and culture of the rural communities surrounding the forest areas.

The Forest has numerous instances of private land inholdings within the confines of the Forest boundaries. These private properties, mostly vestiges of the gold rush era in the form of patented mining claims, provide management challenges unique to the area. Additionally, large private land ownership surrounding the island mountain ranges present challenges for forest users wishing to obtain access to their public lands. These issues with private/public land interface provide challenges for all resource areas in trying to keep up with the social demands for power, water, access, and recreational needs.

There is a wide range of recreation opportunities available throughout the HLC NF. These year-round opportunities range from highly developed sites to more primitive and dispersed recreation opportunities. Unique developed recreation opportunities include cabin and lookout rentals, historic lodges, regionally significant ski areas, and a large visitor center that focuses on the journey of Lewis and Clark. Recreation opportunities include a network of motorized and nonmotorized roads and trails that provide access for hunting, fishing, wildlife viewing, and camping. Winter recreation includes extensive trail networks for snowmobiling, cross country and downhill skiing, snowshoeing, and dogsledding. Outfitter and guides provide additional access to unique backcountry, hunting, and floating opportunities along the Smith River.

Over 500,000 acres of the 2.9 million acre HLC NF are designated wilderness including portions of the Bob Marshall and Scapegoat Wilderness Areas and the entire Gates of the Mountains Wilderness Area. Additionally, approximately 50% of the Forest is allocated as inventoried roadless areas. These inventoried roadless areas, when combined with designated wilderness, provide for vast landscapes that allow for more primitive recreation experiences. The Forests' recreation program contributes to the economic sustainability of central Montana's rural communities.

The HLC NF has contributed to the forest products industry, which has been a dominant feature of some local economies. Livestock grazing is a prominent multiple use in many areas, owing to the native grass and shrub lands on the HLC NF. The HLC NF also provides hunting opportunities which is an important social and economic activity in Montana.

In addition, the Forest provides abundant water for drinking and downstream uses as well as four municipal watersheds: Tenmile Creek (Helena), McClellan Creek (East Helena), Shorty and O'Brien Creeks (Neihart), and Willow Creek (White Sulphur Springs). The Forest is the headwaters of the groundwater aquifers to the east and west.

Cultural and historical characteristics

Historically, the plan area was the ancestral homeland and travel way of native bands now referred to as the Assiniboine, Blackfeet, Chippewa Cree, Confederated Salish and Kootenai, Crow, Eastern Shoshone, Gros Ventre, Sioux, Nez Perce, Northern Arapahoe, Northern Cheyenne, Shoshone-Bannock, and Little Shell Tribes. Most prominent among these groups found in the plan area were those historically known as the Blackfeet, Gros Ventre, Salish, Shoshone, Kootenai, and Metis. The landscape is significant to archaeological history because it strongly influenced Native American travel and settlement patterns. Most Native American groups within the plan area followed a nomadic lifeway with groups of various sizes moving across the landscape following food sources. However, there are a few examples of groups following a semi-nomadic lifeway or settlement pattern. One interesting example would be the Metis, whom historically were children of Indian mothers and French fathers (the fathers where typically fur trappers). Several groups of Metis travelled back and forth between Canada and the unspoiled valleys of central Montana, hunting and trapping along the way. Unlike other nomadic groups, the Metis typically built cabins and stayed sometimes for several years in one location. Metis established a permanent settlement on Spring Creek near present day Lewistown in 1879 and other dispersed settlements west of Choteau followed in 1885. These Choteau-area settlements are just east of land now managed by the Rocky Mountain Ranger District.

Native American use of the plan area over the centuries is manifest in hundreds of archaeological sites, sacred sites, and other areas of traditional cultural importance, many of which are listed or eligible to be on the National Register of Historic Places. In addition to the National Register of Historic Places listed sites, one traditional cultural property related to tribal cultural values, and two national historic trails are identified. Plus, numerous cultural resources have been formally determined to be eligible for listing on the National Register of Historic Places by the FS and the Montana State Historic Preservation Officer but have not yet been formally nominated to the Register.

The arrival of the Corps of Discovery to the plan area in 1805 marks the beginning of the historic period for central Montana. Following the Corps of Discovery's eastward departure from the plan area in 1806, a slow trickle and then a tide of fur trappers/explorers entered central Montana. A series of expeditions surveyed the people, resources, and travel routes within the plan area. This period in Montana was also characterized by steamboat travel, the fur trade, the arrival of missionaries like Pierre-Jean DeSmet, and the earliest ranching and gold mining discoveries.

The discovery of gold in and around Helena ushered in a wave of settlement and land use that transformed the plan area's natural and political landscape. Thousands of miners and businesses sprang up overnight in makeshift towns along with an emerging transportation system. Millions of dollars of gold, silver, and copper were initially extracted from the plan area. This locally produced capital provided an important source of hard currency for the Union during the Civil War. Thus the economic impetus for, and political organization of, the Montana Territory at the time of its formation in 1864, and later statehood in 1889, had its initial origins squarely within the plan area. Today, thousands of historic mining

features can be found throughout the plan area and embody a historic theme complete with ecological, economic, political, and social implications.

Alongside the mining that developed in and around ore sources, which is typically found in mountainous areas, open-range livestock (cattle or sheep) ruled in the flat open landscapes. The first farming of the plan area began in the fertile river valleys adjacent to the mining camps. Early producers of agricultural products sold their crops to mining communities and nearby military forts, which were in place by the late 1860's. The agricultural industry grew to keep pace with the influx of miners. The entry of the railroads into the area boosted the agricultural industry considerably. Not only did railroad access provide transport for produce, it sought out and attracted farmers to Montana. The railroads portrayed great opportunity for farmers in the plan area and promoted dry land farming, as well as irrigation methods.

Plan Monitoring Program

The monitoring program is designed to test assumptions used in developing plan components and to evaluate relevant changes and management effectiveness of the plan components. Typically, monitoring questions seek additional information to increase knowledge and understanding of changing conditions, uncertainties, and risks identified in the best available scientific information as part of an adaptive management framework. Best available scientific information can identify indicators that address associated monitoring questions. The best available scientific information is also important in the further development of the monitoring program as it may help identify protocols and specific methods for the collection and evaluation of monitoring information (from FS Handbook 1909.12 07.11). See appendix A for the monitoring program and additional information about adaptive management.

Proposed and Possible Actions

The 2012 planning rule requires land management plans to "…contain information reflecting proposed and possible actions that may occur on the plan area during the life of the plan, including: the planned timber sale program; timber harvesting levels; and the proportion of probable methods of forest vegetation management practices expected to be used (16 United States Code 1604(e)(2) and (f)(2)). Such information is not a commitment to take any action and is not a 'proposal' as defined by the Council on Environmental Quality regulations for implementing the National Environmental Policy Act (40 Code of Federal Regulations 1508.23, 42 U.S.C. 4322(2)(C)). (36 Code of Federal Regulations 219.7(f)(1))." Management approaches and strategies presented in this section may include suggestions for on-the-ground implementation, analysis, assessment, inventory or monitoring, and partnership and coordination opportunities the Forest is proposing as helpful to make progress in achieving its desired conditions. The potential approaches and strategies are not intended to be all-inclusive, nor commitments to perform particular actions.

The possible actions and potential management approaches and strategies the HLC NF may undertake to make progress in achieving the desired conditions described in this plan can be found in appendix C.

Project and Activity Consistency with the Plan

As required by the National Forest Management Act of 1976, subject to valid existing rights, all projects and activities that would be authorized by the FS, after the record of the decision for the revised plan, must be consistent with the forest plan (16 United States Code 1604 (i)) as described at 36 Code of Federal Regulations 219.15. This is accomplished by a project or activity being consistent with applicable plan components.

When a proposed project or activity would not be consistent with the applicable plan components, the responsible official shall take one of the following steps, subject to valid existing rights:

- Modify the proposed project or activity to make it consistent with the applicable plan components.
- Reject the proposal or terminate the project or activity.
- Amend the plan so that the project or activity will be consistent with the plan as amended.
- Amend the plan contemporaneously with the approval of the project or activity so that the project or activity will be consistent with the plan as amended. This amendment may be limited to apply to the project or activity.

Determining Consistency

Because of the many types of projects and activities that can occur over the life of the plan, it is not likely that a project or activity can maintain or contribute to the attainment of all desired conditions, nor are all desired conditions relevant to every activity (for example, recreation desired conditions may not be relevant to a fuels treatment project). Most projects and activities are developed specifically to maintain or move conditions toward one or more of the desired conditions of the plan.

Every project and activity must be consistent with the applicable plan components. A project or activity approval document must describe how the project or activity is consistent with applicable plan components by meeting the following criteria (36 Code of Federal Regulations 219.15(d)):

1. **Goals, desired conditions, and objectives.** The project or activity contributes to the maintenance or attainment of one or more goals, desired conditions, or objectives, or does not foreclose the opportunity to maintain or achieve any goals, desired conditions, or objectives, over the long term.
2. **Standards.** The project or activity complies with applicable standards.
3. **Guidelines.** The project or activity:

   i. Complies with applicable guidelines as set out in the plan; or

   ii. Is designed in a way that is as effective in achieving the purpose of the applicable guidelines (§ 219.7(e)(1)(iv)).
4. **Suitability.** A project or activity would occur in an area:

   i. That the plan identifies as suitable for that type of project or activity; or

   ii. For which the plan is silent with respect to its suitability for that type of project or activity.

Rights and Interests

The revised forest plan will provide a strategic framework that guides future management decisions and actions. As such, the plan will not create, authorize, or execute any ground-disturbing activity. The plan will not subject anyone to civil or criminal liability and will create no legal rights. The plan will not change existing permits and authorized uses.

Use of Best Available Science

The 2012 planning rule requires the responsible official to use the best available scientific information to inform the development of the proposed plan, including plan components, the monitoring program, and plan decisions. The foundation from which the plan components were developed for the proposed action was provided by the *Assessment of the Helena and Lewis and Clark National Forests*, and the best available scientific information and analyses therein. From this foundation, resource specialists used a number of resources that included peer-reviewed and technical literature; databases and data management

systems; modeling tools and approaches; information obtained via participation and attendance at scientific conferences; local information; workshops and collaborations; and information received during public participation periods for related planning activities. Resource specialists considered what is most accurate, reliable, and relevant in their use of the best available scientific information. The best available scientific information includes the publications listed in the literature cited sections of the Assessment and DEIS, as well as any additional information that may have been used, and included, in the literature cited section of the FEIS or the planning record prior to the record of decision.

Other Planning Efforts

The HLC NF contributes to the accomplishment of national strategic guidance in accordance with its own unique combination of social, economic, and ecological conditions. This draft plan helps define the Forest's role in advancing the agency's national strategy and reflects the national goals. This draft plan is reflective of the mission of the Forest Service, "to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations."

This draft plan considered direction from other applicable tribal, federal, state, county, and city plans and strived to incorporate their goals by considering the broader landscape in which this draft plan would operate. More information can be found in the Draft Environmental Impact Statement and the project record.

Chapter 2. Forestwide Direction

Introduction

This chapter contains proposed direction that applies forestwide, unless additional or more restrictive direction is found in chapter 3. Forestwide direction includes desired conditions, goals, objectives, standards, and guidelines. Other FS direction, laws, regulations, policies, executive orders, and FS directives (manual and handbook) are not repeated in the forest plan. The plan components are described here as they relate to the HLC NF.

The HLC NF intends to move toward these proposed forestwide desired conditions over the next 15 years, although they may not all be achieved for many decades. Some desired conditions may be very difficult to achieve, but it is important to move toward them over time.

The plan components are organized by resource area, first the ecological resources followed by social, cultural and economic resources. The benefits to people: multiple uses and ecosystem services section covers additional ecological, social and economic resources that have direct ties to social and economic sustainability. However, all sections contain plan components that contribute to social and economic sustainability.

Aquatic Ecosystems

Introduction

This introduction provides a brief synopsis of aquatic components on the Forest and the themes used for plan component development, including native fish, aquatic habitat, riparian areas, water quality, water quantity, and conservation watershed network. The conservation watershed network and priority watersheds under the Watershed Condition Framework can be found in appendix E, which goes into more depth regarding strategies to protect and restore native fish and water quality. Appendix C contains a list of possible management approaches or strategies on implementation of plan components.

Lands supply high quality water that supports a variety of uses throughout the HLC-NF. The Forest is also the headwaters of many downstream water users including municipal water systems, irrigation districts, and small instream flow rights. Aquatic ecosystems, watersheds, and wetlands have changed from historic conditions. Current conditions and trends indicate:

- A decline in migratory bull trout numbers on the west side of the planning area has occurred during the past several decades due primarily to changes in climate, habitat alterations, and invasive species. However, bull trout are present within some headwater streams in the Divide GA and are part of a functioning population in the Blackfoot GA.
- Threats to bull trout and westslope cutthroat trout include the presence and expansion of nonnative species (rainbow trout, brown trout, and brook trout) and climate change. Westslope cutthroat trout are found in isolated populations and occupy roughly 4% of the historic range within the plan area on the east side. They remain strong in isolated stream reaches throughout the HLC NF though they have a low potential for long-term viability without continued monitoring and habitat restoration.
- Stream flow alterations occur throughout the planning area from both private and federal lands. Flow alterations have resulted in habitat degradation leading to dewatering of critical habitats, stream alterations, and low flows during critical times.

- Historic mining has impacted streams throughout the planning area. Water quality and habitat alterations from legacy mine activities remain.
- Multiple inventoried road culverts are confirmed to be partial barriers or total barriers to native trout during some part of the year. In some cases, these barriers may be beneficial for retention of native fish populations by creating refugia that excludes nonnative fish, but in many cases these barriers are disrupting the natural migration patterns of native fish.
- Fifty five stream reaches have been listed as water quality impaired by the Montana Department of Environmental Quality (2016) under the Clean Water Act, as a result of forest practices, such as roads, grazing, and mining.
- Soil, watershed, and aquatic habitats are being restored through partnerships and in cooperation with other agencies by implementing best management practices, removing excess roads, improving and relocating roads and trails to reduce sedimentation, removing fish migration barriers, reclaiming abandoned and inactive mines, and implementing riparian conservation strategies as well as threatened and endangered species conservation strategies.
- 103 or 35% of watersheds on the forest are in Class 1 condition (functioning appropriately) as determined by the Watershed Condition Framework Assessment completed in 2011. There are 159 (54%) rated as Class 2 (functioning at risk). Class 3 (non-functioning) watershed make up 12% or 34 watershed on the Forest.

The Forest has highly diverse wetland environments including marshes, swamps, wet meadows, fens, peatlands, glaciated ponds, wooded vernal pools, and riparian areas. Federally recognized species (including proposed, candidate, and recently delisted species), species of conservation concern, and other species of local concern are associated with these and other unique habitats. Aquatic species of conservation concern for the Helena-Lewis and Clark are being identified at the regional level. The draft list can be reviewed at www.fs.usda.gov/goto/R1/SCC.

Watershed (WTR)

Introduction

The plan area is located in 296 subwatersheds. Subwatersheds, or 6 level-12 digit hydrologic unit code watersheds, range in size from 10,000 to 40,000 acres. According to the 2011 Watershed Condition Framework data, 103 subwatersheds were rated as functioning properly, 159 subwatersheds were rated as functioning at risk, and 34 subwatersheds were rated as impaired. The main impairments to the planning area watersheds were aquatic biota (nonnative species) and water quality. Largely, the impairments have been attributed to grazing and transportation infrastructure impacts. At the time of this plan revision, there are six subwatersheds designated as ‘priority’ within the Watershed Condition Framework where planning or ongoing restoration work is occurring. Restoration work is also planned and/or ongoing in other drainages as ‘priority’ under the Watershed Condition Framework.

The HLC NF headwaters provides high quality water to users on and off forest in support of municipal drinking water, agriculture, recreation, and stock growers. A large percentage of streams coming off the forest are diverted to supply these uses.

Riparian and wetland vegetation types are currently mapped on over 70,000 acres of the HLC NF’s administrative area, which is less than 3% of the area. This number likely underestimates total wetland/riparian lands within the HLC NF. Riparian areas are important elements of watersheds that provide critical transition zones linking terrestrial and aquatic ecosystems. Riparian management zones, with associated plan components, would be established to protect the ecological integrity of these areas.

Groundwater resources are important components of watershed function and biological integrity. Groundwater is an important storage of water providing base flow to perennial and intermittent streams helping to mitigating possible adverse effects of drought and climate change. It also provides important temperature refugia for aquatic species during drought and high water temperatures. Groundwater dependent ecosystems, which include wetlands, springs, seeps, bogs, fens, and wet meadows, maintain important biological diversity on the HLC NF. Groundwater also helps to maintain water quality at a level that sustains the biological, physical, and chemical integrity of aquatic systems and the survival, growth, reproduction, and mitigation of native aquatic species.

Properly functioning watersheds provide suitable conditions for sustainable clean water, healthy stable soils, timber growth, forage, aquatic and wildlife habitats, and the ability to withstand high intensity floods. Healthy watersheds contribute to local economies in the planning area including quality lands and water for, but not limited to, hunting, fishing, timber production, irrigation and ranching. Desired conditions provide a platform for future management actions.

Desired Conditions (FW-WTR-DC)

01 National Forest System subwatersheds provide the distribution, diversity, and complexity of landscape-scale features including natural disturbance regimes and the aquatic, wetland, and riparian ecosystems to which native species, populations, and communities are uniquely adapted within those watersheds. Watersheds and associated ecosystems retain their inherent resilience to respond and adjust to disturbance without long-term adverse changes to the physical or biological integrity.

02 Spatial connectivity exists within or between watersheds. Lateral, longitudinal, and drainage network connections include floodplains, groundwater, wetlands, upslope areas, headwater tributaries, and intact habitat refugia. These network connections provide chemically and physically unobstructed routes to areas critical for fulfilling the requirements of aquatic, riparian-associated plants and animals.

03 The timing, variability, and duration of floodplain inundation is within the natural range of variation. Floodplains are accessible to water flow and sediment deposits. Over-bank floods allow floodplain development and the propagation of flood-associated riparian plant and animal species.

04 Upland areas surrounding wetlands that have the most direct influence on wetland characteristics, as well as stream segments that flow directly into wetlands, sustain the characteristics and diversity of those wetlands. Non-forested areas in and surrounding wetlands are composed of plant and animal communities that support and contribute to wetland ecological and habitat diversity.

05 Water quality, including groundwater, meets or exceeds applicable state water quality standards and fully supports beneficial uses, surrounding communities, municipal water supplies, and natural resources. Flow and habitat conditions in watersheds, streams, lakes, springs, wetlands, and groundwater aquifers fully support beneficial uses, and meet the ecological needs of native species (including species of conservation concern and threatened and endangered species).

06 The Forest has no documented lands or areas that are delivering water, sediment, nutrients, and/or chemical pollutants that would result in conditions that violate the State of Montana’s water quality standards (for example, total maximum daily loads) or is permanently above natural or background levels.

07 The sediment regime within water bodies is within the natural range of variation. Elements of the sediment regime include the timing, volume, rate, and character of sediment input, storage, and transport.

08 Beaver habitat (including wetlands and riparian areas) benefits and enhances groundwater, surface water, and floodplain and riparian habitat complexity.

09 The timing, variability, and water table elevation in groundwater aquifers are within the natural range of variation and are not measurably altered by management activities or special use permits for on-forest withdrawals or injections.

10 Water rights for consumptive and nonconsumptive water uses, obtained in the name of the FS, support instream flows that provide for channel maintenance, water quality, aquatic habitats, and riparian vegetation. Water quality and beneficial uses are fully protected under special use permits related to water uses.

11 In-stream flows are sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing. The timing, magnitude, and duration of peak, high, and low flows are retained. Stream flow regimes maintain riparian ecosystems and natural channel and floodplain dimensions. Stream channels transport sediment and woody material over time while maintaining reference dimensions (for example, bankfull width, depth, entrenchment ratio, slope and sinuosity).

12 Stream channels transport sediment and woody material over time while maintaining reference dimensions (for example, bankfull width, depth, entrenchment ratio, slope, and sinuosity). Stream habitat features, including large woody material, percent pools, residual pool depth, median particle size, and percent fines are within reference ranges.

13 Groundwater dependent ecosystems, including peatlands, fens, wetlands, wet meadows, seeps, springs, riparian areas, groundwater-fed streams and lakes, and groundwater aquifers persist in size, seasonal and annual timing, and water table elevation within the natural range of variation in order to maintain biodiversity of flora and fauna (including potential species of conservation concern, as well as soil and hydrologic functions). Wetland and groundwater dependent ecosystem vegetation communities are resilient to drought, climate change and other stressors. Also see Plant Species at Risk.

14 Cave ecosystems exhibit natural hydrologic and environmental functions.

Goals (FW-WTR-GO)

01 Water rights are attained to preserve instream flows for nonconsumptive water uses to provide for channel maintenance, water quality, aquatic habitats, and riparian vegetation under Montana Code Annotated 2015, 85-20-1301; USDA-FS-Montana compact ratified.

02 Federal, tribal, state and local governments cooperate to identify and secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.

03 Work cooperatively with Montana Department of Environmental Quality on development of watershed restoration plans, water quality issues, monitoring, as well as wetland mapping.

Objectives (FW-WTR-OBJ)

01 Within at least 4 priority watersheds, complete essential work as defined by the Watershed Restoration Actions Plans identified in the Watershed Condition Framework.

02 Improve soil and watershed function and resiliency on at least 4,000 acres with an emphasis on priority watersheds under the Watershed Condition Framework and Conservation Watershed Network.

03 Plan and implement restoration activities on 1-5 acres of groundwater dependent ecosystems every 5 years.

Standards (FW-WTR-STD)

01 Management activities conducted in source water protections areas will be consistent with source water protections and goals. Short-term effects from activities in source water protection areas may be acceptable when those activities support long-term benefits to aquatic resources. (Footnote:4 As defined by the Safe Drinking Water Act or any subsequent laws applicable to public water systems that provide water for human consumption.)

02 Projects that withdraw (i.e. pump) water from surface water features or groundwater must ensure that water is maintained at levels that will protect management uses and forest resources, including water quality and aquatic species and their habitat (including groundwater dependent ecosystems - fens, springs).

03 Project-specific best management practices (including both Federal and the State of Montana Best Management Practices) shall be incorporated in land use and project plans as a principle mechanism for controlling nonpoint pollution sources, to meet soil and watershed desired conditions, and to protect beneficial uses.

04 Portable pump set-ups shall include containment provisions for fuel spills and fuel containers shall have appropriate containment provisions. Vehicles shall be parked in locations that avoid entry of spilled fuel into streams.

Guidelines (FW-WTR-GDL)

01 Management activities in impaired watersheds with approved TMDL plans should be designed to comply with the completed TMDL load allocations.

02 Methods that would avoid future risks to aquatic resources should be used when closing travel routes such as roads, skid trails, temporary roads, and trails. Also see Infrastructure, Roads and Trails.

03 To support aquatic habitat quality and resiliency, beaver complexes (including wetlands and riparian areas) should be enhanced or maintained unless their activities directly threaten roads/other human developments, or create habitat conditions that threaten reproduction and survival of threatened and endangered fish species or fish species of conservation concern.

04 Watershed restoration projects should promote the long-term ecological integrity of ecosystems, water quality and conserve the genetic integrity of native species.

Riparian Management Zones (RMZ)

Introduction

Riparian management zones are portions of watersheds where riparian-associated resources receive primary emphasis, and management activities are subject to specific standards and guidelines. Riparian management zones include traditional riparian corridors, wetlands, intermittent streams, and other areas that help maintain the integrity of aquatic ecosystems by 1) influencing the delivery of coarse sediment,

organic matter, and woody debris to streams, 2) providing root strength for channel stability, 3) shading the stream, and 4) protecting water quality. Another critical function of riparian management zones is to provide for wildlife habitat use and connectivity.

Desired conditions for riparian management zones have been expanded to focus on key ecological processes and functions, highlight vegetation structure and composition, and provide suitable connected wildlife habitat rather than being fish-centric under the Inland Native Fish Strategy. Vegetation management within riparian management zones is allowed but riparian and aquatic conditions must be maintained, restored, or enhanced. Many activities that can cause soil compaction or soil erosion are restricted or minimized. Riparian management zones are not "no management zones" since treatment may be necessary to achieve desired conditions. However, guidance is provided for activities within riparian management zones.

Desired Conditions (FW-RMZ-DC)

01 Riparian management zones reflect a natural composition of native flora and fauna and a distribution of physical, chemical, and biological conditions appropriate to natural disturbance regimes affecting the area. The species composition and structural diversity of native plant communities in riparian management zones provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration. They will supply amounts and distributions of nutrients, coarse woody debris, and fine particulate organic matter sufficient to sustain physical complexity and stability. See Table 1 below for typical width of a riparian management zone.

02 Riparian management zones feature key riparian processes and conditions that function consistent with local disturbance regimes, including slope stability and associated vegetative root strength, wood delivery to streams and within the riparian management zones, input of leaf and organic matter to aquatic and terrestrial systems, solar shading, microclimate, and water quality.

Objectives (FW-RMZ-OBJ)

01 Improve 300 to 1,000 acres of riparian habitat during the life of the forest plan. Improvement can be actions such as, but are not limited to, road obliteration, riparian planting, and reconstructing floodplains by removing road prisms or berms.

Standards (FW-RMZ-STD)

01 Riparian management zones shall be delineated as follows:

Category 1 Fish-bearing streams: Riparian management zones consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest.

Category 2 Permanently flowing nonfish bearing streams: Riparian management zones consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest.

Category 3 Constructed ponds and reservoirs, and wetlands greater than 1 acre: Riparian management zones consist of the body of water or wetland and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the wetland greater than 1 acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.

Lakes and natural ponds - RMZs consist of the body of water and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance, whichever is greatest.

Category 4 Seasonally flowing or intermittent streams, wetlands, seeps and springs less than 1 acre, and unstable and potentially unstable areas: This category applies to features with high variability in size and site-specific characteristics. At a minimum, the riparian management zones should include:

- The extent of unstable and potentially unstable areas (including earthflows).
- The stream channel and extend to the top of the inner gorge.
- The stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, extending from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest. A site-potential tree height is the average maximum height of the tallest dominant trees for a given site class.
- Intermittent streams are defined as any non-permanent flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria. Fish-bearing intermittent streams are distinguished from non-fish-bearing intermittent streams by the presence of any species of fish for any duration. Many intermittent streams may be used as spawning and rearing streams, refuge areas during flood events in larger rivers and streams or travel routes for fish emigrating from lakes. In these instances, the guidelines for fish-bearing streams would apply to those sections of the intermittent stream used by the fish.

In order to achieve watershed desired conditions, the riparian management zone is broken into two areas called the inner and outer zones (see Table 1). Some activities are prohibited or restricted in the inner zone, whereas more active management is allowed in the outer zone. Riparian management zones are not intended to be “no touch zones,” but rather “carefully managed zones” with an increase in protections in close proximity to water resources.

Table 1. Typical widths of inner and outer areas within riparian management zones.

Stream type	Inner (ft)	Outer (ft)	Total width (ft)
Category 1 – Fish bearing stream	100	200	300
Category 2 – Perennial, nonfish bearing Stream	100*	50	150*
Category 3 – Natural Lakes and ponds, Constructed Ponds and Reservoirs, and wetlands greater than 1 acre	100	50	150*
Category 4a – Intermittent steep (>35% side slope)	100*	0	100
Category 4b – Intermittent flat (<35% side slope) Disconnected intermittent MT State Class 3 and wetland <1 acre.	50	50	100

*Management zone widths extend either to the distance listed or to the top of the inner gorge slope break, whichever is greater.

02 Ensure vegetation management activities proposed are consistent with state law (for example, State of Montana Streamside Management Law).

03 Vegetation management shall only occur in the inner riparian management zone in order to restore or enhance aquatic and riparian-associated resources. Non-mechanical treatments, may be authorized with site-specific analysis as long as aquatic and riparian-associated resources are maintained.

04 Vegetation management may occur in the outer RMZs to meet desired conditions, so long as project activities in RMZs do not prevent attainment of desired conditions for wildlife and the inner RMZ.

05 Herbicides, pesticides, and other toxicants and chemicals shall only be applied within riparian management zones if needed to maintain, protect, or enhance aquatic and riparian resources or to restore native plant communities.

06 Storage and refueling sites shall be located outside of riparian management zones to minimize effects to aquatic resources. If refueling or storage is needed within riparian management zones, the locations must be approved by the FS and have an approved spill containment plan.

07 Salvage harvest shall not occur in the inner riparian management zone.

Guidelines (FW-RMZ-GDL)

01 Trees felled inside RMZs should be left onsite unless they will be in excess of what is needed to achieve aquatic and riparian desired conditions. Trees left onsite should be directionally felled towards or into streams, where it is safe and practical to do so.

02 To maintain stream channel stability and aquatic habitat, large woody debris should not be cut and/or removed from stream channels unless it threatens critical infrastructure, such as mid-channel bridge piers or fire control breaks.

03 Management activities that would potentially disturb or compact soil or damage vegetation should be excluded within 100 feet of peatlands, fens, and other groundwater dependent ecosystems unless site-specific information, such as topography, drainage features/patterns, and rare plant association, support a smaller or larger buffer.

04 To reduce the likelihood of sediment input to streams, new road and landing construction should be avoided, including temporary roads, in riparian management zones except where:

- necessary for stream crossings, or
- a road relocation contributes to attainment of aquatic and riparian desired conditions, or
- Forest Service authorities are limited by law or regulation.

05 During wildfire and prescribed fire operations, fire lines should be rehabilitated to limit the creation of new stream channels.

06 When conducting unplanned fire operations within riparian management zones, minimum impact suppression tactics should be used to minimize impacts to riparian management zones, with a focus on minimizing heavy equipment usage.

07 New sand and gravel borrow pit development or gravel mining should not occur within riparian management zones to minimize ground disturbance and sediment inputs.

08 Temporary fire facilities (for example, incident bases, camps, wheelbases, staging areas, helispots, and other centers) for incident activities should be located outside riparian management zones. When no practical alternative exists, all appropriate measures to maintain, restore, or enhance aquatic and riparian dependent resources should be used.

09 New landings, designated skid trails, staging, and decking should be located outside riparian management zones to minimize effects to riparian and aquatic resources. If landings are needed inside of riparian management zones, minimize the disturbance area footprint and locate activities outside the active floodplain.

10 Aerial application of chemical retardant, foam, or other fire chemicals and petroleum should be avoided in mapped aerial retardant avoidance areas (refer to latest regional avoidance map) in order to minimize impacts to the riparian management zone and aquatic resources.

11 Clearcut harvest should not occur in riparian management zones.

12 Activities in riparian management zones should protect key riparian processes, including maintenance of stream bank stability, input of organic matter, temperature regimes, and water quality.

Fisheries and Aquatic Habitat (FAH)

Introduction

The goal of the following plan components is to maintain or restore watershed conditions so that managed watersheds are moving towards or are in concert with reference watersheds when considered at a National Forest scale. Changes between the 1986 plans, as amended, and the revised forest plan are captured in the components below. Current threatened and endangered species and species of conservation concern are also included in this direction.

Desired Conditions (FW-FAH-DC)

01 Watersheds and associated aquatic ecosystems retain their inherent resilience to respond and adjust to disturbances and climatic fluctuations without long-term, adverse changes to their biological integrity. Components of this biological integrity include supporting native fish, amphibians, birds, and invertebrates, as well as productive recreational fish populations. Essential characteristics of this resilience are healthy, functioning aquatic, riparian, upland, and wetland ecosystems.

02 Instream habitat conditions for managed watersheds move in concert with or towards those in reference watersheds. Aquatic habitats are diverse, with channel characteristics and water quality reflective of the climate, geology, and natural vegetation of the area. Stream habitat features across the forest, such as large woody material, percent pools, residual pool depth, median particle size, and percent fines are within reference ranges as defined by agency monitoring.

03 Aquatic systems and riparian habitats express physical integrity, including physical integrity of shorelines, banks, and bottom configurations, within their natural range of variation.

04 Connectivity between water bodies provides for movement between habitats associated with species' life stages (for example, fish migration to spawning areas, amphibian migration between seasonal breeding, foraging, and overwintering habitats), and for processes such as recolonization of historic habitats.

05 Habitats favor native aquatic species. Impacts of nonnative fish species on native salmonids, such as hybridization, competition, replacement and predation, are minimized to the extent possible.

06 Aquatic ecosystems are free of invasive species such as zebra mussels, New Zealand mud snails, quagga mussels, and Eurasian milfoil. Nonnative plant and amphibian species are not expanding into water bodies that support native amphibian breeding sites (for example, nonnative bullfrogs, chytrid fungus, or reed canary grass are not expanding into boreal toad breeding sites).

07 Streams, lakes, and rivers provide habitats that contribute toward recovery of threatened and endangered fish species and address the habitat needs of all native aquatic species, as appropriate.

08 The risk to the genetic diversity and population viability of aquatic threatened, endangered, or species of conservation concern is reduced through the expansion and enhancement of habitat.

Goals (FW-FAH-GO)

01 Appropriate agencies cooperate to prevent and control invasion from aquatic invasive species (for example, zebra mussels, quagga mussels, Eurasian milfoil, and reed canary grass).

02 Work with Montana Fish, Wildlife, and Parks to contribute to the expansion of core populations of bull trout as outlined in the Bull Trout Conservation Strategy (or the latest guiding document).

03 Work with Montana Fish, Wildlife, and Parks to contribute to the expansion of core populations of WCT as outlined in the Westslope Cutthroat Trout Conservation Strategy (or the latest guiding document).

04 The Forest Service coordinates with federal agencies (including section 7 consultation, as required), state agencies, tribes, counties, interested groups, and interested private landowners to recover threatened and endangered species.

05 The Forest Service works with federal, state, tribal, and private land managers towards an all-lands approach to management and cooperation, including efforts to mitigate threats or stressors, provide for wildlife and fish habitat connectivity, and to provide social, economic and ecological conditions that contribute to mutual objectives.

06 Work with Montana Fish, Wildlife, and Parks to provide information and preventive measures on aquatic invasive species at water-based recreation sites (such as boat ramps) to inform the public. Also see Public Information, Interpretation, and Education (CONNECT).

Objectives (FW-FAH-OBJ)

01 Improve the habitat quality and hydrologic function of at least 20 miles of aquatic habitat during the life of the plan with a focus on streams with listed species, species of conservation concern. Activities include, but are not limited to, berm removal, large woody debris placement, road decommissioning or stormproofing, riparian planting, and channel reconstruction.

02 In streams with recreational fishing populations, improve the habitat quality and hydrologic function of 20 linear miles of habitat during the life of the plan. Prioritize impacted, highly productive stream segments.

03 Reconnect at least 10 miles of habitat in streams disconnected by roads or culverts where aquatic and riparian-associated species' migratory needs are limiting distribution of those species.

Standards (FW-FAH-STD)

01 New stream diversions and associated ditches shall be screened to prevent capture of fish and other aquatic organisms.

Guidelines (FW-FAH-GDL)

01 When improving existing stream diversions or constructing new diversions and associated ditches, the design should prevent capture of fish and other aquatic organisms.

02 Prior to use in a water body or when moving between watersheds, equipment (including boats, rafts, drafting equipment, water tenders, and helicopter buckets) should be inspected and cleaned to reduce the potential for the introduction of aquatic invasive species, including aquatic pathogens.

03 When drafting water from streams, pumps should be screened to prevent capture of fish. During the spawning season for native fish, pumping sites should be located away from spawning gravels.

04 New and revised livestock management plans should be designed to maintain water quality by minimizing disturbance from livestock grazing in active livestock allotments. Also see Benefits to People, Livestock Grazing (GRAZ).

05 Construction activities within the ordinary high-water mark that may result in adverse effects to native or desirable nonnative aquatic species, or have the potential to directly deliver sediment to their habitats, should be limited to times outside of spawning and incubation seasons. Specific time periods are coordinated through the permitting process with Montana Fish, Wildlife, and Parks.

06 Human created migration barriers to aquatic species should be absent unless they are needed to prevent invasions by nonnative species.

Conservation Watershed Network (CWN)

Introduction

The conservation watershed network is a specific subset of watersheds (10 or 12 digit hydrologic unit codes) where prioritization for long-term conservation and preservation of bull trout and pure westslope cutthroat trout occurs, specifically in areas with an absence of nonnative competition. Evaluation of management activities in conservation watershed networks will follow appropriate levels of review prior to resource management. See appendix E.

Desired Conditions (FW-CWN-DC)

01 Conservation Watershed Networks have functionally intact ecosystems that provide high-quality water and contribute to and enhance the conservation and recovery of threatened or endangered fish species and aquatic species of conservation concern.

Objectives (FW-CWN-OBJ)

01 Repair 2 road/stream crossings every 5 years at locations where chronic sediment sources are found (for example, up-size culverts, reduce sediment delivery to waterways from roads, realign stream constraining road segments, improve livestock stream crossings and trailing, etc.). Give precedence to priority watersheds as identified in the conservation watershed network.

02 Conservation watershed networks are the highest priority for restoration actions for the aquatic environment. Stormproof 15 to 30% of the roads in the conservation watershed network prioritized

for restoration to benefit at-risk aquatic species and municipal watersheds. See appendix C for specific strategies for discussion of treatment options and for prioritization.

Guidelines (FW-CWN-GDL)

01 For subwatersheds included in the conservation watershed network, net increases in stream crossings and road lengths should be avoided in riparian management zones, unless the net increase would improve ecological function in aquatic ecosystems. The net increase is measured from beginning to end of each project.

02 Roads in conservation watershed networks should be prioritized for closure relocation or other strategies to reduce sediment delivery to benefit aquatic species (for example, bull trout). See appendix C for specific strategies for discussion of treatment options and for prioritization such as roads paralleling streams versus ridge top roads.

03 Livestock grazing should be managed to minimize damage to aquatic ecosystems, vegetation and streambanks.

Soil (SOIL)

Introduction

The National Forest Management Act states that management activities on NFS lands will not produce substantial and permanent impairment of soil productivity. Productivity is maintained by establishing soil quality standards. During the last planning cycle, physical soil disturbance has been the focus of soil management on the HLC NF managed lands. In 2010, FS Manual Chapter 2550 Soil Management was revised at the national level. The emphasis of soil management was changed to include long-term soil quality and ecological function. The manual defines six soil functions: soil biology, soil hydrology, nutrient cycling, carbon storage, soil stability and support, and filtering and buffering. The objectives of the national direction on NFS lands are 1) to maintain or restore soil quality, and 2) to manage resource uses and soil resources to sustain ecological processes and function so that desired ecosystem services are provided in perpetuity. In order to provide for multiple uses and ecosystem services in perpetuity, these six soil functions need to be active. In addition to the plan components in this section, also see the Livestock Grazing, Timber, and Infrastructure sections.

Desired Conditions (FW-SOIL-DC)

01 Soil quality and productivity are not impaired and support desired conditions for terrestrial and aquatic ecosystems. See Table 2.

Table 2. Soil ecological functions with attributes, indicators, and desired conditions

Soil Function	Selected Attributes	Soil Quality Indicator	Desired Condition
Biological Integrity	Roots and Aeration	Root Growth	Root growth, both vertically and laterally, is unimpeded by compaction.
	Flora and Fauna	Community Composition	The soil is capable of supporting a distribution of desirable plant species by vegetative layer (trees, shrubs, herbaceous) as identified in the potential plant community (based on ecological site descriptions or equivalent). The site has not transitioned to an undesirable state.

Soil Function	Selected Attributes	Soil Quality Indicator	Desired Condition
		Canopy cover and Ground Cover	Soil temperature and moisture regimes are maintained in conditions to support desired plant communities.
Hydrologic	Infiltration	Surface Structure	Surface structure is as expected for the site (for example, granular, subangular blocky, single grain). Surface crusting and pore space are as expected for the site.
Nutrient Cycling	Organic Matter Composition	Forest or Rangeland Floor	Forest and rangeland floor is appropriate for vegetation type and successional stage. Rangeland to be determined by ecological site descriptions specific to soil type.
		Coarse Woody Material (Greater than 3 inches)	Coarse woody material is on site in various stages of decay and size classes in amounts appropriate for habitat type. See FW-DC-VEGF-10 and FW-GDL-VEGF-10.
	Nutrient Availability	Surface (A) horizon or mollic layer	"A" horizon is present, well distributed, not fragmented.
Support and Stability	Stability	Surface erosion (wind, rill, or sheet)	Erosion is occurring at natural rates or not evident. Bare ground is within expected ranges for soil and habitat type.
		Site stability (mass erosion, landslide prone)	Site stability potential is unchanged or stability has been improved.

02 Biological soil crusts (mosses, lichens, algae, liverworts) occurring on very dry sites are stable.

Standards (FW-SOIL-STD)

01 Land management activities shall be designed and implemented in a manner that conserves soil physical, chemical, and biological function and improves these functions where impaired.

02 Vegetation management activities shall not create detrimental soil conditions on more than 15 percent of an activity area. In activity areas where less than 15 percent detrimental soil conditions exist from prior activities, the cumulative detrimental effect of the current activity following project implementation and restoration must not exceed 15 percent. In areas where more than 15 percent detrimental soil conditions exist from prior activities, the cumulative detrimental effects from project implementation and restoration must not exceed the conditions prior to the planned activity and rehabilitation must address the current impaired soil functions to improve the long term soil condition.

03 Project specific best management practices and design features shall be incorporated into land management activities as a principle mechanism for protecting soil resources.

Guidelines (FW-SOIL-GDL)

01 To protect soil quality, ground-based equipment should only operate on slopes less than 35 percent. Exceptions to the slope limitations may be considered after site-specific analysis.

02 During management actions, existing or past disturbed areas should be used before creating new disturbances for temporary roads, landings, skid trails, or other activity areas (such as burn piles or mining sites).

03 To maintain soil quality and stability, ground-disturbing management activities should not occur on soils prone to mass wasting. Exceptions may be considered after site-specific soils analysis.

04 Project activities should provide sufficient effective ground cover with a post-implementation target of 85 percent to provide nutrients and reduce soil erosion. Exceptions to the target may be considered based on site potential.

05 To maintain organic matter for soil function, management activities (including prescribed fire) should conserve coarse woody debris at levels that correspond to soil and habitat type. Management activities should either retain forest floor at half the current thickness or no less than 1 cm thick on average across activity areas. Also see FW-VEGF-GDL-03.

06 After a road is decommissioned or after cessation of management activities on temporary roads, soil function appropriate to the site potential should be restored, using demonstrably effective methods.

07 When reclaiming skid trails, landings, burn pile scars, and non-system roads, soil quality should be restored using demonstrated effective treatment methods.

Air Quality (AQ)

Introduction

Clean air is an important environmental benefit provided by forests. Clean air is necessary for all life on Earth, and air pollution has been associated with a range of adverse health and environmental effects. Trees absorb and sequester greenhouse gases through photosynthesis and produce oxygen for people and animals to breathe. Trees also play an important role in capturing air pollutants deemed hazardous to human health: ground-level ozone, particulate matter, nitrogen dioxide, and sulfur dioxide as documented by Nowak et al. (2014). The pollutants come from dust, pollen, smoke, ash, motor vehicles, and industrial sources such as power plants. There are two primary types of air quality effects concerning the Forest and Forest operations. First, the effects of regional air pollution on Forest natural resources and human health. Second, the effects of Forest emissions on Forest natural resources, human health, and regional air sheds.

Air pollution affects the natural quality of Forest lands, particularly wilderness areas or Air Quality Related Values (AQRV) or Wilderness Air Quality Values (WAQV). High ozone concentrations can injure sensitive vegetation. Fossil fuel burning emits sulfur dioxide (SO2) and nitrogen oxides (NOx) into the atmosphere. Certain types of agricultural activities, such as livestock grazing and dairy production, emit ammonia (NH3) to the atmosphere. Such emissions can lead to atmospheric deposition of sulfuric acids, nitric acids, and ammonium to national forest ecosystems above critical load (CL) thresholds. Atmospheric deposition can cause lake body acidification, eutrophication, and hypoxia, soil nutrient changes, and vegetation impacts. Deposition of toxic metals such as mercury and lead can be harmful to both aquatic and terrestrial ecosystems. Visibility in most national forests is obscured some portion of the year by anthropogenic haze of fine pollutant particles. In addition, the Clean Air Act (CAA) requires Forest Service operations and permitted operations such as prescribed burning, fossil fuels development and production, and mining to comply with National Ambient Air Quality Standards (NAAQS) and protection of AQRV/WAQV.

The EPA establishes NAAQS as directed by the CAA, and the Montana Department of Environmental Quality (MDEQ) manages these standards within the state of Montana. The MDEQ, along with select counties, monitor for air pollution and provide reports summarizing air quality data. The NAAQS focus on six criteria pollutants including: ozone, carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, and

particulate matter –including both particulate matter 10 and particulate matter 2.5 as defined by the aerodynamic diameter of the particulate in microns.

Forest Service air quality policy directs coordination of National Forest activities with state and federal air quality control efforts. This is done by managing and/or mitigating the sources of air pollution emitted by Forest Service activities, such as prescribed burning, the construction and use of roads, and the operation of various facilities. Mandatory Class I federal areas have special protection afforded by amendments to the CAA and Wilderness Act. The Bob Marshall, Scapegoat, and Gates of the Mountains Wilderness Areas are Class I federal areas. The Forest Service has the responsibility to protect the air quality related values in Class I areas as directed by the Wilderness Act and Clean Air Act.

The air quality in and around the HLC NF is generally good and the state of Montana forecasts improving air quality conditions across the state and improving visibility in wilderness areas. However, air quality is compromised during winter months in communities where wood smoke causes health standard exceedances, and during fire season months when wildfires causes exceedances across broad portions of the state. Prescribed fires, agricultural burning, and agriculture dust can adversely impact air quality, although the pollutants do not generally reach unhealthy levels. The MDEQ and counties regulate open burning throughout the year while working with the Montana/Idaho Airshed Group to coordinate projects and identify potential air quality impacts from each prescribed burn.

Desired Conditions (FW-AQ-DC)

01 Good air quality contributes to visibility, human health, quality of life, economic opportunities, quality recreation, and wilderness values.

Goals (FW-AQ-GO)

01 Forest Service management activities affecting air quality are done in compliance with regulations enforced by the Montana Department of Environmental Quality. The Forest coordinates prescribed fire operations and wildfires managed for resource benefit purposes through participation in the Montana/Idaho Airshed Group.

Fire and Fuels Management (FIRE)

Introduction

Fire is a natural and essential ecological disturbance process that occurs along a spectrum of differing intensity, severity, and frequency that allows ecosystems to function in a healthy and sustainable manner. Fire is a necessary disturbance process within the HLC NF. It has shaped the structure and composition of forested and nonforested ecosystems. Fire influences the pattern of vegetation across the landscape and is a critical part of the life cycle for many plant and wildlife species. Over the past one hundred and fifty years, facilities and infrastructure to support economic activities such as recreation, outfitting, mining, timber extraction, farming and ranching have been established on lands surrounding and within the HLC. In addition, the development of residences has occurred on private lands on the borders of National Forest, as well as on private inholdings within the Forest. While wildfire plays an essential role in maintaining the health and function of the Forest's plant and animal communities, it can also threaten human safety, health, livelihoods, homes, and property. In some cases, wildfire may also pose an unacceptable threat to specific ecosystem components.

Fire management strives to balance the natural role of fire while minimizing the impacts from fire on values to be protected, especially in the wildland urban interface. This can be accomplished by

implementing a coordinated risk management approach to promote landscapes that are resilient to fire-related disturbances and preparing for and executing a safe, effective, and efficient response to fire.

Treatment of vegetation for fuels mitigation is typically designed to change predicted fire intensity and duration and/or mitigate the rate of fire spread. Treatments focus on restoring and maintaining fire regimes and reducing negative impacts of wildfires to watershed health, wildlife habitat, and community values at risk.

Fire management is achieved through prescribed fire, management-ignited fire and naturally ignited wildfire (ignited by lightning as opposed to humans), and mechanical methods. In many cases, natural ignitions--primarily resulting from lightning--can be managed without a full suppression response. Management can range from limiting human activity within the vicinity of the fire, monitoring fire behavior, and aggressive suppression of those areas of the fire at times and places where the fire may affect human values or ecosystem components. Full suppression of a fire is a management choice that should be utilized when fire poses an unacceptable risk to human values, ecosystem components, or when a fire is caused by human agency and is unplanned (e.g. abandoned campfire, arson, or equipment operation). Full suppression responses will vary depending on the individual fire and can include strategies to confine the fire. It is possible for a fire to be managed using multiple strategies including resource-benefit. All wildfire management decisions will be made with primary consideration given to both the health and safety of the public and of fire personnel. All decisions to manage wildfire will be made and documented through a decision support process and will emphasize public and fire personnel safety. With all wildland fire management actions it is critical to only implement actions that can be successful while taking into account actual values at risk with the least exposure necessary.

Please see the glossary for definitions related to fire and fuels management.

Desired Conditions (FW-FIRE-DC)

01 Wildfire maintains and enhances resources and, as nearly as possible, is allowed to function in its natural ecological role. Under favorable conditions, wildfires are managed to meet resource objectives and to restore and maintain fire as an ecological process. Please refer to the glossary for the definition of fire regimes.

02 Within the wildland-urban interface and around high value resources, surface fuel loading and crown spacing provide conditions for low severity surface fire that minimizes threats to values.

Goals (FW-FIRE-GO)

01 The HLC NF works with adjacent communities, landowners, permittees and state, local and other federal agencies to provide education about wildfire risk and that wildland fire is an ecological process.

02 The HLC NF coordinates with state, county and local cooperators to meet goals identified in community wildfire protection plans.

Objectives (FW-FIRE-OBJ)

01 Hazardous fuels treatments occur on a minimum of 15,000 acres per decade within the wildland urban interface. Use any available wildland fire management opportunity to reduce fire intensity and severity. Treatment includes initial entry and maintenance to ensure desired fuel conditions are achieved. Achieving this would also contribute to FW-VEGT-OBJ-01. See appendix C.

Standards (FW-FIRE-STD)

01 Suppression of wildfires will be at the lowest risk to fire personnel and public, taking into consideration costs and effects to resources and values at risk.

Guidelines (FW-FIRE-GDL)

01 When wildfires affect identified areas of tribal importance, the Forest Service should communicate and collaborate with tribal leadership during fire incident management to identify and, to the extent practical, protect tribal values and minimize impacts to resources or areas of tribal importance.

02 If fire management actions are required within designated wilderness areas, research natural areas, recommended wilderness areas, or the Continental Divide National Scenic Trail corridor, the Forest Service should apply minimum impact strategies and tactics to manage wildland fire, unless more direct attack is needed to protect life or adjacent property or mitigate risks to responders.

03 Hazardous fuel treatment, mechanical, and prescribed fire (planned ignition and naturally ignited) projects should allow opportunities for naturally ignited wildfire occurrence and provide fuel conditions that benefit fire management operations.

04 Wildland fire management strategies should promote vegetation conditions where wildfires result in fire severities that are “self-regulating” and reduce future risk

Vegetation

Introduction

This section addresses forest-wide plan components for terrestrial vegetation. The HLC NF supports a wide diversity of plant communities growing on sites that include warm, dry foothills; productive mesic slopes; and cold, steep timberline areas. Plant associations found include coniferous forests, dry grasslands and shrubland/woodlands, riparian and wetland vegetation, hardwood forests, mesic high elevation grass and shrublands, and alpine plant communities. Vegetation characteristics are influenced by fixed site features, such as soils and topography, which interact with dynamic system drivers such as climate, vegetative succession, fire, insects, disease, invasive species, floods, droughts, and human uses and developments. Vegetation conditions vary across time and space and are subject to continual change. These changes can be rapid (such as with fire) or slow and gradual (such as with succession).

The 2012 Planning Rule adopts a complementary ecosystem and species-specific approach, known as “coarse-filter/fine-filter”, to provide the natural diversity of plant and animal communities and ensure long-term persistence of native species in the plan area. Coarse-filter plan components are designed to maintain or restore ecological conditions for ecosystem integrity and diversity within agency authority and the inherent capability of the land. Fine filter plan components provide additional specific habitat needs, when those needs are not met through the coarse filter. Although many influences on vegetation are not easily controlled, the intent of plan components is to collectively provide for the full suite of native biodiversity across the plan area.

Plan components that address composition, structure, and function of vegetation communities represent the coarse filter. The fine filter is addressed by components specific to 1) threatened, endangered, proposed, and candidate species which are designated by the United States Fish and Wildlife Service; and 2) species of conservation concern, which are identified by the Regional Forester. Other species or communities which do not fall into the above categories, but are of local management interest, are described further in appendix C.

Lands across the HLC NF have been grouped into broad potential vegetation types which serve as a basis to describe ecological conditions. These groups classify ecosystems based on potential productivity, biodiversity, and natural processes. Broad potential vegetation types are assemblages of habitat types, which are aggregations of ecological sites of like biophysical environments that produce plant communities of similar composition, structure, and function. The vegetation community that would develop over time given no major disturbances (the "climax") would be similar within a potential vegetation type. However, existing vegetation may vary widely, reflecting each site's unique history, pattern of disturbances, and point in time along the successional pathway. Plan components address attributes such as cover type, size class, and density class. These attributes change through time whereas potential vegetation types generally remain constant. A consistent hierarchy of broad potential vegetation types developed for the Northern Region is used which can be mapped to show spatial extent on the landscape, and is appropriate for broad level analysis and monitoring. See appendix D.

Desired conditions describe the vegetation characteristics needed to maintain ecosystem integrity while contributing to social and economic sustainability. Analysis of the natural range of variation is the ecological reference model used to assess ecosystem integrity, and is therefore the underpinning for desired conditions. Desired conditions are also consistent with wildlife habitat needs, existing or anticipated human use patterns, potential future climate, resiliency to disturbances, and ecosystem services (such as production of forest products). Desired conditions for vegetation should be interpreted in the short-term (for example, the "life of the plan," which is 15 years) and the long-term because ecological, social and economic sustainability require a long-term perspective. To provide context for the desired trend during the initial phases of plan implementation, an "existing condition" value is included in some desired conditions. This reflects conditions that exist at the writing of this plan. The existing condition will change through time as reported by monitoring. The data and rationale used to identify desired conditions is provided in an appendix to the draft environmental impact statement and project record documents.

Some desired conditions use numeric ranges which are to be applied at the forestwide scale (as shown in this chapter), or at the GA scale (as shown in chapter 3). The goal is to provide a suite of components that represent the broad-scale planning unit and can be effectively monitored through time, while also capturing the unique contribution of each GA. Project-level activities are not required to apply the same numeric ranges at smaller analysis scales. Rather, projects and activities must either contribute towards or not preclude the achievement of the desired conditions at the larger scales. Standards and guidelines are designed to ensure that activities are conducted in a manner that move the Forest towards desired conditions. Appendix C provides descriptions of potential management approaches and actions that are expected to be used in the plan area, as well as further information to explain plan components.

Desired conditions may be achieved through both natural processes and management activities. Vegetation conditions anywhere within the specified range at the scale specified would meet the desired condition. Fluctuations in vegetation conditions over time are expected. Managing a particular vegetation characteristic at the upper, lower, or mid-point of the desired range may be appropriate, as influenced by other ecological, social or economic objectives. Monitoring assists in evaluation of vegetation change over time, and supports an adaptive management approach to forest management (36 CFR 219.12). See appendix A for the monitoring plan.

All Terrestrial Vegetation (VEGT)

Introduction

This section includes components that apply broadly to all terrestrial vegetation types.

Desired Conditions (FW-VEGT-DC)

01 Vegetation occurs across the landscape in a diverse pattern of compositions and structures within the natural range of variation that are resilient to future climates and disturbances such as fire, insects, disease, invasive species, floods, and droughts. Conditions are such that effective recovery of vegetation is possible following disturbances. These conditions are described in Table 3 and further quantified under desired conditions in the VEGF and VEGNF sections.

Table 3. Forestwide desired conditions by forested and nonforested broad potential vegetation groups

Forested R1 Broad Potential Vegetation Types[1]	
Warm dry	Forest resilience is achieved by emphasizing fire adapted species and structures. An increase in the extent and dominance of ponderosa pine, limber pine, and aspen occurs relative to the existing condition, while Douglas-fir decreases (but remains common). Rocky mountain juniper occurs but its abundance is limited on historically nonforested areas. Other species such as Engelmann spruce and lodgepole pine may thrive where moisture is less limiting. The quantity and extent of large and very large size classes and individual live trees increases relative to the existing condition. Savannas occur on the driest sites, and some sites may be maintained in a nonforested condition by frequent disturbance or restoration. Seedling/sapling and small forest size classes occur but are limited, because large tree remnants are retained as is characteristic of a high frequency, low intensity disturbance regime. Stands in the large and very large tree size classes are often open or clumpy, with the large tree component comprised of long-lived fire resistant species (ponderosa pine and Douglas-fir). Complex landscape patterns of size class and density occur, with open, uneven-aged forests and high within-stand variability common. In some riparian areas, groves of large Engelmann spruce develop. Forests with low to medium density increase relative to the existing condition, while forests with high density decrease. Stands with higher densities occur on more mesic sites, and are interspersed with open forests and meadows. Early successional forest patches are relatively small. Plant understories include Idaho fescue, bluebunch wheatgrass, sagebrush, common juniper, and bitterbrush on the driest sites and Oregon grape, snowberry, pinegrass, kinnickinnick, white spiraea, heartleaf arnica, elk sedge, and ninebark on more mesic sites. Snags are scattered as individuals or small groups. Coarse woody debris is fairly low.
Cool moist	Forest resilience is achieved through diversity of species and age/size class. The extent and dominance of lodgepole pine, aspen, and whitebark pine increase relative to the existing condition, although Douglas-fir, subalpine fir, and Engelmann spruce are also common. The spruce/fir cover type includes dense, multistoried stands that provide high quality multistory lynx habitat. Small size classes are common due to preponderance of lodgepole pine; but a decrease in the small size class with increases in large and very large classes still occurs relative to the existing condition. There is wide variability in conditions because of the high severity, low frequency disturbance regime. Most especially, high diversity in size class occurs in lodgepole pine to ensure insect and fire disturbances occur at a scope and scale within their natural range of variation. Large Engelmann spruce occur in sheltered riparian settings. The amount of low/medium and medium/high density classes increase while the high density class decreases relative to the existing condition primarily in lodgepole pine and Douglas-fir forests. Large and very large trees, primarily Douglas-fir, are clumpy but scattered across the landscape to provide seed. Single-storied and single-aged conditions are common in lodgepole pine. Early successional forest patches tend to be fairly large. Understory plant species present may include twinflower, beargrass, huckleberry, grouse whortleberry, pinegrass, heartleaf arnica, elk sedge, and western meadowrue. Other species such as menziesia and alder may be found on the wettest sites. Snags occur in pulses and in clumpy distribution. Coarse woody debris levels vary widely.

Forested R1 Broad Potential Vegetation Types[1]	
Cold	Forest resilience is achieved by emphasizing the presence of whitebark pine. Tree species and cover type diversity on cold sites is limited. Increases in whitebark pine occur relative to the existing condition, focusing on open ridges and harsher aspects. On these sites, there is a decrease in subalpine fir and Engelmann spruce relative to the existing condition. Subalpine fir remains common and dominates northerly and easterly aspects, swales, moist basins, and riparian areas. Lodgepole pine is present as well, mainly on the warmer sites. The abundance of the small forest size class is decreased relative to the existing condition, with an increase in the large size class. Whitebark pine is the primary large tree component, tolerant of moderate or low severity fires, but large subalpine fir and Engelmann spruce are also promoted on productive sites. The proportion of forests in the low/medium density class is increased with decreases in the high cover class relative to the existing condition, focusing on restoration of resilient, open multi-aged whitebark pine forests where dense multistoried spruce/fir or single-storied lodgepole pine dominate. Natural patch sizes reflect a mixed fire regime. Understory plant species present, such as grouse whortleberry and beargrass, may be sparse at the highest elevations where alpine vegetation is interspersed with bare ground and rock. Snags occur in pulses. Coarse woody debris levels vary widely.
Nonforested R1 Broad Potential Vegetation Types	
Xeric Grass-land	Xeric Grassland plant communities have high diversity of tall and medium height, cool and warm season grasses (for example, bluebunch wheatgrass, western needlegrass, needle-and-thread, blue grama), and short grasses (for example, Sandberg bluegrass, pine junegrass). Sub-shrubs and shrubs are present at less than 10% canopy cover. There is a variety of forbs in varying amounts. The diversity of plant species present allows for drought tolerance. Individual species can vary greatly in the amount of production depending on growing conditions. Vegetation typically has strong and robust root systems that allow production to increase considerably with favorable growing conditions. This plant community provides for soil stability and a properly functioning hydrologic cycle. Plant litter is a common component and is available for soil building and moisture retention. Plant litter is properly distributed with very little movement off-site, with natural plant mortality typically being low. Bare ground is present because of the warm dry nature of these sites but at low amounts. Encroachment by conifers and juniper is limited, since these grassland are either maintained by a natural high frequency low severity fire regime, or are maintained by site conditions (i.e., they do not require fire to maintain the grassland vegetation). These vegetation types are generally tolerant of fire when fire frequency is in the range of 5 -15 years, although recovery is dependent on fire intensity and species. Maintenance of grasslands is dependent, in part, on periodic fires to remove residual litter and encroaching shrubs and trees, which may increase the burn intensity and possibly damage the dominant grassland species. Microphytic crust is maintained as a key feature.
Mesic Grass-land	Mesic grassland communities have greater amounts of mesic forbs, denser cover, and more species richness than xeric grasslands. The functional plant groups are characterized by long lived, moderately deep rooted cool grass species (for example, rough fescue, Idaho fescue, timber oatgrass, upland sedges, tufted hairgrass, etc.) with a wide variety of mesic forbs present in varying amounts. Shrubs may be present with minor cover. Introduced species are rare. Bare ground is typically low (less than 3%) across most sites with litter being a common component and available for soil building and moisture retention. Plant litter movement is expected to be limited with plant litter being properly distributed and rarely moving off-site. These vegetation types are generally tolerant of moderate intensity wildfire. Common dominant grasses, such as rough fescue and Idaho fescue, may be topkilled, but the root crowns and associated growing points are protected and they respond favorably with vigorous regrowth. Within just a few years these species usually recover to pre-fire levels. Frequent burning maintains diversity in these vegetation types. Microphytic crust is maintained as a key feature.

Forested R1 Broad Potential Vegetation Types[1]	
Xeric Shrub-land / Wood-land	Xeric shrubland plant communities support shrub species such as Wyoming big sagebrush, basin big sagebrush, low sagebrush and black sagebrush. Overstory species vary by location and site type. For example, low sagebrush tends to occupy the lower, drier and hotter sites with shallow soils whereas basin big sagebrush typically dominates sites with deeper soils and more plant available moisture. The understory is typically dominated by graminoid species such as needle-and-thread, Sandberg bluegrass and bluebunch wheatgrass. Canopy cover varies depending on the site and growing conditions, but is typically low to moderate. Bare ground is present in higher amounts relative to mesic shrubland sites. Xeric woodlands are typically hot and dry or are steep, with shallow, skeletal soil. The dominant overstory species varies but includes Rocky Mountain juniper and mountain mahogany. Mountain mahogany is restricted to steep rocky soils and rock outcrops. Encroachment by conifers is limited, as it is maintained by a natural high frequency low severity fire regime. While sagebrush and mountain mahogany are often killed by fire, nonlethal or mixed severity fires that burn in a mosaic pattern leave live individuals and promote age class diversity while promoting the sprouting of other shrub (e.g. rabbitbrush, horsebrush) and grass species. The natural fire regime of this vegetation type maintains a patchy distribution of shrubs, so the general aspect of the vegetation is shrub-steppe grassland. Periodic low intensity burns can reduce sagebrush cover and increase herbaceous abundance of herbaceous species, creating a mosaic of burned and unburned patches. Microphytic crust is maintained as a key feature.
Mesic Shrub-land	Mesic shrubland plant communities are generally more moist and productive than xeric sites. Shrub species such as mountain big sagebrush and mesic deciduous shrubs (for example, bitterbrush, snowberry, ninebark, serviceberry) are the dominant over story species with grass species (such as rough fescue, Idaho fescue, mountain brome) and various mesic forbs (for example, cinquefoil, prairie smoke) typically dominating the understory. Canopy cover varies depending on the site and growing conditions (for example, temperature, timing and amount of precipitation), but is typically moderate to high, and may result in lower cover of understory species. Encroachment by conifers is limited. Most shrub species respond well to light and mixed severity fire. With the exception of mountain big sagebrush most of the mesic shrub species are vigorous root crown sprouters and respond favorably to fire, typically sprouting immediately following fire. However, extremely hot and intense fires that occur during summer months can cause damage to these shrublands and seed banks. Periodic burns can maintain this system. Microphytic crust is maintained as a key feature.
Riparian/ Wet-land	Riparian systems are comprised of a mosaic of communities dominated by species which tolerate and are adapted to periodic flooding and an associated seasonally high water table. Decidious trees, particularly cottonwood, may be present along with riparian shrubs and herbaceous species. In wide valley bottoms, the vegetation typically is a mosaic of all lifeforms with patterns reflecting the meander patterns of the stream/river. Black cottonwood is the dominant tree species although other tree species may include aspen, narrowleaf cottonwood, Engelmann spruce and subalpine fir; on drier sites, Douglas fir and Rocky Mountain juniper may be present. Dominant shrubs may include mountain alder, various species of willows, river birch, dogwood, hawthorn, chokecherry, rose, silver buffaloberry, Rocky Mountain maple and/or snowberry, among others. A wide variety of herbaceous species, including, grasses, sedges, rushes, spikerushes, bulrushes and forbs, are present in the understory in varying amounts. Wetlands are characterized by dominant vegetation adapted to saturated (anaerobic) soil conditions. The vegetation complex is usually represented by a mosaic of herbaceous and woody plant communities that armor streambanks and create floodplain roughness, slowing flows and facilitating bank and floodplain development. Low willow species (e.g., wolf willow), bog birch and bog blueberry tare typically present in subalpine wetlands. Herbaceous species may be dominated by sedges, rushes, spikerushes cattails, and/or bulrushes. Bryophytes, including sphagnum, are often well represented in fens. Also see forestwide components for riparian management zones. Rare species, such as sundew, may also be present in peatlands. Typically, with the exception of conifers, species in riparian/wetland systems respond favorably to fire. The growing points of the vegetation are usually protected in the moist to saturated soil. Regrowth typically occurs within the same growing season. Microphytic crust is maintained as a key feature.

Forested R1 Broad Potential Vegetation Types[1]	
Alpine	Alpine ecosystems occupy harsh high elevation sites, resulting in short stature and relatively slow growth for both shrubs and herbaceous species. Wetland communities are present in snowloaded depressions, and support various willow species (e.g., planeleaf willow), along with wetland herbaceous species (e.g., tufted hairgrass, marsh marigold). Alpine ecosystems are mostly treeless, although some conifers (e.g., subalpine fir, whitebark pine) may be present with minor cover as krummholtz patches. Vegetation cover is typically low to moderate, depending on site characteristics. The plant communities are dominated by a number of shrubs, forbs and graminoids including: arctic willow (turf community), mountain avens, (cushion plant community), mountain heather and moss-heather (snow bed communities). Many of these areas experience only patchy fire due to the low amounts and patchiness of fuels. The fire return interval is typically very long (500 years or greater) in alpine ecosystems. Historically, stand-replacing fires occur infrequently in adjacent associated subalpine woodlands. Fire severity and spread is usually variable due to the short duration without snow cover. In addition limited fuel loading and rock scree fields preclude fires from spreading if lightning strikes do occur. Microphytic crust is maintained as a key feature.

02 Vegetation conditions provide habitat requirements to support populations of species of conservation concern, threatened or endangered species, and other native and desired non-native species based upon the inherent capability of lands. Refer also to the Species at Risk sections of the Vegetation, Wildlife, and Aquatic Ecosystems resource sections.

03 Vegetation patterns provide connectivity and allow genetic interchange to occur to support ecosystem functions, including potential range shifts of species that may occur in response to climate change.

04 Vegetation conditions in permitted special use areas, developed or designated recreation areas, administrative sites, infrastructure, utility corridors, mine repositories and reclamation sites, and specific designated or special areas meet the unique desired conditions for those sites. Refer to plan components found in those sections.

Objectives (FW-VEGT-OBJ)

01 Vegetation management occurs on at least 130,000 acres per decade to maintain, restore, or move vegetation towards desired conditions. Treatments to achieve this objective may occur on forested or nonforested vegetation communities, and include but are not limited to the following activities. See appendix C. Control of invasive species and livestock grazing also may contribute to the achievement of desired conditions; these activities are addressed in the Invasive Plants and Livestock Grazing sections. Also see FW-FIRE-OBJ-01.

- Planned or unplanned fire ignitions
- Fuel reduction treatments such as thinning, piling, chipping, and mastication
- Removal of encroaching trees in nonforested ecosystems
- Timber harvest
- Tree planting and re-vegetation of native plants
- Noncommercial thinning of forests

Guidelines (FW-VEGT-GDL)

01 Removal of native vegetation during nonvegetation management activities (for example, road maintenance) should be limited to the extent needed to achieve the project purpose and need.

02 Livestock grazing practices should be modified as necessary to ensure that revegetation and/or reforestation is successful after management activities or natural disturbances, as defined in site-specific prescriptions.

03 In order to maintain the diversity of native tree species, when artificial reforestation is prescribed locally, adapted tree stock should be used unless nonlocal stock is deemed appropriate based on an assisted migration strategy.

04 To ensure the re-establishment of desirable vegetation and limit the spread of invasive plants following timber, road, or other management activities which disturb or expose soil, reseeding with native plants should occur promptly. Seeding should occur during optimal seeding windows for germination and survival and should utilize blue-tag certified seed and weed-free native seed. Seed mixes should be approved by a botanist. Genetically appropriate native plant materials should be given primary consideration during revegetation. Revegetation techniques which promote establishment of native species should be incorporated into revegetation planning. Nonnative plant species may only be used when consistent with national policy and direction.

Forested Vegetation (VEGF)

Introduction

This section includes components that apply to vegetation communities found on forested broad potential vegetation types, where trees have the potential to dominate climax condition. Refer to appendix D for descriptions of the vegetation attributes in this section; these are briefly described as follows.

Composition is described by cover types and the distribution of individual tree species. Cover types are broad groups of vegetation based on the dominant species. A cover type often contains multiple species. The presence of individual tree species is also addressed to thoroughly depict species diversity.

Structure is represented by size and density classes. Size classes are based on average tree size, and represent broad depictions of successional stages across the landscape. Density classes are defined by average canopy cover and further describe horizontal structure. The desired conditions of several additional components of structure are also included:

- The quantity and distribution of individual large live trees and very large live trees
- The distribution of large and very large live tree concentrations
- The abundance and distribution of old growth
- The quantity and distribution of snags
- The quantity, size, and distribution of coarse woody debris
- Early successional forest patch sizes
- The expected function of forest insects

The expected function of fire is also a crucial element, and is a primary driver of vegetation change on the landscape. Please refer to the Fire section for components related to the important functions of wildfire.

Desired Conditions (FW-VEGF-DC)

01 The plan area supports a distribution of cover types shown in Table 4. Nonforested cover types can occur on forested broad potential vegetation types and be perpetuated by natural disturbances or restoration activities. Also see FW-VEGT-DC-01, chapter 3, and appendix C.

Table 4. Forestwide desired and existing conditions for cover types (percent of area)

Cover Type[1]	Forestwide		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[3]	Desired[4]	Existing[3]	Desired[4]	Existing[3]	Desired[4]	Existing[3]	Desired[4]
Aspen/Hardwood	1 (0.4-2)	2-10	1 (0.3-2)	2-10	2 (0.2-3)	2-10	Trace	Trace
Ponderosa pine	8 (6-10)	19-25	16 (12-20)	47-63	2 (0.6-4)	1-3	Trace	Trace
Dry Douglas-fir	15 (13-18)	5-10	37 (31-42)	15-25	Trace	Trace	Trace	Trace
Mixed Mesic Conifer	14 (12-17)	5-10	15 (11-19)	9-14	23 (17-28)	6-10	5 (2-8)	1-5
Lodgepole pine	27 (24-30)	26-30	16 (12-21)	11-13	35 (29-42)	48-55	37 (29-44)	30-40
Spruce/Fir	12 (10-15)	5-12	Trace	Trace	19 (14-24)	10-25	27 (21-34)	20-30
Whitebark pine	4 (2-5)	5-15	Trace	Trace	2 (0.6-4)	5-15	12 (7-16)	25-50
Nonforested[2]	14 (11-16)	14-20	13 (10-17)	10-25	10 (6-14)	9-15	11 (7-16)	1-10

[1] Cover types reflect the most common species in a stand. See appendix D.
[2] Nonforested areas include grass and shrub cover types, which may support widely scattered trees in some cases.
[3] Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.
[4]Desired is derived from a modelling process called SIMPPLLE.

02 The plan area supports a distribution of individual tree species as described in Table 5. This distribution supports the natural species diversity across the landscape and allows for recruitment following disturbances. Also see FW-VEGT-DC-01, chapter 3, and appendix C.

Table 5. Forestwide desired and existing conditions for tree species presence (percent of area[1])

Tree Species	Forestwide[4]		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[2]	Desired[3]	Existing[2]	Desired[3]	Existing[2]	Desired[3]	Existing[2]	Desired[3]
limber pine	11 (9-13)	11-12	16 (12-20)	20-22	9 (6-13)	7-8	5 (2-9)	1-10
Rocky Mountain juniper	5 (4-7)	3-4	12 (9-15)	9-12	1 (1-2)	<5	0.2 (0.2-1)	<5
ponderosa pine	7 (5-9)	25-28	17 (13-21)	65-71	0.4 (0.4-1)	<5	Trace	Trace
Douglas-fir	46 (43-50)	38-42	70 (65-75)	70-75	43 (37-49)	22-32	15 (9-20)	1-4

Tree Species	Forestwide[4]		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[2]	Desired[3]	Existing[2]	Desired[3]	Existing[2]	Desired[3]	Existing[2]	Desired[3]
aspen	2 (1-3)	3-10	2 (1-4)	3-6	3 (1-5)	3-5	Trace	Trace
cottonwood	0.3 (0.04-.68)	0.5-5	0.3 (0.3-0.8)	0.5-2	0.5 (0.5-1.4)	0.5-2	Trace	Trace
Engelmann spruce	23 (20-26)	10-15	5 (3-7)	0.2-1	42 (36-49)	19-25	32 (25-39)	47-50
lodgepole pine	38 (35-42)	35-41	24 (19-29)	22-34	52 (46-58)	59-64	51 (43-59)	34-48
subalpine fir	27 (24-31)	11-18	Trace	Trace	46 (39-52)	22-36	54 (47-61)	48-58
whitebark pine	11 (9-14)	10-15	Trace	Trace	10 (6-14)	5-8	31 (24-38)	88-95

[1] Percent of area where at least one tree of the species is present.
[2] Total may be greater 100% because more than 1 species can be present on a site. Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.
[3]Desired condition is derived from a modelling process called SIMPPLLE.
[4] Forestwide distributions include trees that occur on nonforested potential vegetation type.

03 The plan area supports a natural diversity of forest size classes as shown in Table 6, which represents the diversity of successional stages across the landscape. The location and precise abundance of size classes fluctuate over time as forests develop, are influenced by disturbances, and may be limited by site productivity and species composition. Also see FW-VEGT-DC-01, chapter 3, and appendix C.

Table 6. Forestwide desired and existing conditions of size class (percent of area[2])

Forest Size Class[1]	Forestwide		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[3]	Desired[4]	Existing[3]	Desired[4]	Existing[3]	Desired[4]	Existing[3]	Desired[4]
Seedling/Sapling (0-4.9”)	13 (10-17)	3-18	11 (7-15)	2-9	12 (7-18)	4-32	22 (14-30)	2-21
Small (5-9.9”)	39 (36-42)	7-17	36 (31-41)	1-7	42 (36-48)	14-36	44 (37-51)	2-17
Medium (10-14.9”)	21 (19-24)	6-21	25 (21-29)	2-7	24 (20-29)	12-44	14 (9-18)	2-14
Large (15.0-19.9”)	5 (4-7)	21-26	9 (6-12)	36-45	4 (2-7)	10-17	1 (0.1-3)	39-53
Very Large (20”+)	2 (0.8-3)	6-10	4 (2-6)	11-16	0.2 (0.2-0.7)	5-10	0.2 (0.2-1)	0.1-1

[1] Size class = the average diameter class of live trees based on basal area weighted diameter, shown as ranges of diameter at breast height, or 4.5’ above ground level. A stand within a particular size class may contain trees of multiple diameters, smaller and/or larger than the average class range.
[2] Total may less than 100% because nonforested areas (grass, shrub, savanna) are excluded.
[3] Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.
[4]Desired is derived from a modelling process called SIMPPLLE.

04 The plan area supports a natural diversity of forest density classes as shown in Table 7. A wide range of densities and associated vertical structures (canopy layers) occur, contributing to resiliency, wildlife habitat, and timber productivity. Also see FW-VEGT-DC-01, chapter 3, and appendix C.

Table 7. Forestwide desired and existing conditions of density class (percent of area[2])

Forest Density Class[1]	Forestwide		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[3]	Desired[4]	Existing[3]	Desired[4]	Existing[3]	Desired[4]	Existing[3]	Desired[4]
Low/Med (10-39.9)	18 (14-21)	25-40	23 (17-29)	29-62	14 (9-19)	20-32	16 (9-24)	37-77
Med/High (40-59.9)	24 (21-27)	24-39	26 (22-30)	21-38	24 (20-30)	35-55	24 (18-30)	21-52
High (60+)	31 (28-34)	15-27	30 (25-35)	16-25	38 (32-44)	20-35	28 (22-34)	2-6

[1] Density class = the average canopy cover of live trees, shown as ranges of canopy cover percent.
[2]Total may less than 100% because nonforested areas (those with <10% canopy cover) are excluded.
[3] Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.
[4]Desired is derived from a modelling process called SIMPPLLE.

05 Forest conditions support quantities of large live trees (15 inches diameter and greater) and very large live trees (20 inches diameter and greater) as shown in Table 8 to provide structural diversity, long-term resilience and recovery after disturbance (seed sources), wildlife habitat, economic value, and recruitment of snags and woody debris. Distribution, density, and species are variable across space and time, although preferred species are ponderosa pine, Douglas-fir, western larch, and cottonwood. Also see FW-VEGT-DC-01 and appendix C.

Table 8. Forestwide desired and existing conditions of large and very large live trees, trees per acre

Analysis Group[1]	Large (>15" diameter at breast height)		Very Large (>20" diameter at breast height)	
	Existing[2]	Desired[3]	Existing[2]	Desired[3]
Lodgepole pine	2.4 (1.5-3.4)	2.2-4.6	0.5 (0.2-0.8)	0.1-0.7
Warm Dry	9.9 (7.9-12.2)	6.9-13.7	3.7 (2.6-4.9)	1.4-3.5
Cool Moist	11.1 (7.9-14.5)	9.8-17.1	1.7 (0.9-2.6)	1.7-4.0
Cold	5.1 (2.7-7.9)	2.1-10.1	0.5 (0.04-1.0)	0.2-1.7

[1]Analysis groups are snag groups from Bollenbacher (2008), because live trees relate to snags. Snag analysis groups are consistent with the R1 Broad Potential Vegetation Types except that areas dominated by lodgepole pine are separated. See appendix D.
[2] Existing condition shown is the mean trees per acre with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.
[3] Desired is derived from Bollenbacher (2008) supplemental data tables (2017), where the natural range is represented by the mean of live trees found in wilderness and roadless areas on the HLC NF measured on periodic FIA plots.

06 Forest conditions support an increasing trend in the distribution of large/very large live tree concentrations to provide structural diversity and potential future late seral forest conditions as shown in Table 9.

Table 9. Forestwide desired and existing conditions of large and very large live tree concentrations (percent of area)

	Forestwide		Warm Dry, Region 1 Broad Potential Vegetation Type		Cool Moist, Region 1 Broad Potential Vegetation Type		Cold, Region 1 Broad Potential Vegetation Type	
	Existing[2]	Desired[3]	Existing[2]	Desired[3]	Existing[2]	Desired[3]	Existing[2]	Desired[3]
Large Tree Concentration[1]	14% (12-16)	36-43	16% (13-19)	61-74	16% (12-20)	17-28	9% (6-13)	64-89
Very Large tree Concentration[1]	7% (6-9)	9-14	13% (9-16)	15-22	5% (3-7)	7-14	2% (0.5-3)	0.2-2

[1]Large and very large live tree concentrations are subclasses of size class. They depict where minimum numbers of these trees are found and can occur in any size class. The minimum tree criteria are described in appendix D.
[2] Existing condition shown is the mean percent of the area with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.
[3] Desired is derived from a modelling process called SIMPPLLE.

07 Forest conditions support an amount and patch size of old growth consistent with the natural range of variation. The location and condition of old growth is dynamic over time. All vegetation desired conditions help ensure that an appropriate array of conditions are present to provide old growth over time, and development of old growth stands is influenced by succession, natural disturbance regimes, and climate. The desired condition of old growth is described in Table 10.

Table 10. Forestwide desired and existing condition of old growth

Region 1 Broad Potential Vegetation Types	Existing Condition	Desired conditions
Forestwide	11% (9.06-13.19)	Old growth is distributed widely across the forest, and levels vary depending on available compositions and structures, disturbance levels, and management objectives. The amount of old growth is generally similar to or greater than that of the existing condition. Old growth distribution that complements habitat connectivity is desired. Old growth is resilient to impacts that might result in the loss of old growth characteristics, such as insect infestations, wildfire, and drought. Old growth contains components that contribute to high quality habitat, including large and/or very large live trees with rot or broken tops, snags, downed woody material, and a diversity of tree size classes and canopy layers. A variety of old growth types are present, representing the natural species diversity of the HLC NF.
Warm Dry	8% (5.71-10.80)	Old growth is dominated by ponderosa pine and/or Douglas-fir, often in large patches with an uneven-aged and irregular tree distribution. Stands are resilient to low severity disturbance. Other old growth types such as spruce/fir occur in riparian areas. Other species such as juniper and aspen are valuable habitat components.
Cool Moist	14% (10.36-18.56)	Old growth in this broad potential vegetation type may be subject to wider pulses of availability, due to the preponderance of lodgepole pine and high severity low frequency disturbance regimes. Old growth includes spruce/fir or Douglas-fir dominated stands, often with dense canopy layers, as well as even-aged lodgepole pine. Landscape-level resiliency is provided by promoting a mosaic of younger forests to replace old growth when it is killed by stand-replacing events.
Cold	15% (10.53-20.28)	Old growth in this broad potential vegetation type generally consists of whitebark pine, Engelmann spruce, and/or subalpine fir, with stand-level resiliency and open structures desired in whitebark pine types versus spruce/fir types which may be more dense and layered.

1 See glossary and appendix D for definitions of old growth.
2 Region 1 broad forested potential vegetation type. Also see appendix D.
3 Existing condition shown is the mean percent of old growth with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

08 Forest conditions support natural quantities and distributions of snags as shown in Table 11. Snags are unevenly distributed and dynamic over time, with highest densities occurring in burned areas and in those areas infested by insects. A range of decay classes is represented. Snags are distributed in a clumpy manner. The lowest densities of snags occur along roads and in developed sites or other areas where the concern for human safety is elevated. Individual stands may have no snags, or a higher quantity, depending upon site-specific conditions.

Table 11. Forestwide desired and existing conditions snags by size class and snag analysis group

Snag Analysis Group[1]	Medium (>10" d.b.h[4]) Snags/acre and % Distribution[5]		Large (>15" d.b.h.[4]) Snags/acre and % Distribution[5]		Very Large (>20" d.b.h.[4]) Snags/acre and % Distribution[5]	
	Existing[2]	Desired[3]	Existing[2]	Desired[3]	Existing[2]	Desired[3]
Lodgepole pine	11.9 (8.9-15.2) 22% (18-27)	8.1-18.3 10-20%	1.3 (0.7-2.0) 4% (2-7)	0.8-3.4 3-8%	0.09 (0-0.3) 0.4% (0.4-1)	0-0.6 0.2-3%
Warm Dry	6.9 (4.96-8.97) 17% (13-21)	2.0-7.0 4-11%	2.2 (1.3-3.3) 7% (4.7-9.8)	0.3-2.2 2-7%	0.8 (0.4-1.2) 4% (2-5)	0-0.4 0.3-3%
Cool Moist	14.6 (10.9-18.9) 31% (24-38)	8.3-16.8 15-25%	3.2 (1.7-4.9) 9% (5-14)	1.4-3.5 6-14%	0.8 (0.3-1.6) 3% (1-5)	0.1-0.8 1-5%
Cold	17.2 (11.6-23.5) 30% (22-38)	6.6-21.9 12-28%	3.8 (2.0-6.1) 11% (6-17)	1.1-3.7 5-15%	0.8 (0.2-1.6) 3% (1-7)	0.2-1.8 2-10%

[1] Snag analysis groups are from Bollenbacher (2008). Snag analysis groups are consistent with the R1 Broad Potential Vegetation Types except that areas dominated by lodgepole pine are separated. See appendix D.
[2] Existing condition shown is the mean snags per acre and percent distribution, with the 90% confidence intervals (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data, Hybrid 2011.
[3] Desired is derived from Bollenbacher (2008) supplemental data tables (2017), where the natural range is represented by the mean of snags found in wilderness and roadless areas on the HLC NF measured on periodic FIA plots.
[4] diameter at breast height (4.5' above the ground)
[5] Distribution percentages reflect the proportion of the snag analysis group across the Forest that contains one or more snags in the indicated size class.

09 Coarse woody debris (downed wood greater than or equal to 3 inches diameter) is present across forested vegetation communities in quantities consistent with the natural range of variation as shown in Table 12 to provide wildlife habitat, long-term nutrient cycling, and other ecosystem functions.

Table 12. Forestwide desired and existing tons/acre of coarse woody debris (3" diameter and greater)

Region 1 Broad Potential Vegetation Type	Existing[1]	Average Desired[2]	Appropriate Distribution
Warm Dry	3.38 (2.66-4.19)	3-20	Coarse woody debris is variable in amount, size, species and stages of decay across space and time. Individual stands may have little or no coarse woody debris, or a higher amount. It may be appropriate for 30 to 50 percent of a forested potential vegetation type to have little to no coarse woody debris at a given time. Amounts below the desired average are found on hot dry sites, in developed recreation areas, and where the concern for fire impacts to values at risk is elevated. Higher amounts may be found on moist sites and riparian areas, areas with low direct human influence, areas that have burned, and those with insect/disease infestations. Pulses of coarse woody debris occur following disturbances. Downed wood in pine-dominated forests is expected to increase during the two decades of the plan due to a mountain pine beetle outbreak.
Cool Moist	7.22 (5.81-8.76)	10-30	
Cold	7.04 (5.33-8.91)	10-30	

[1] Existing condition shown is the mean tons per acre with the 90% confidence interval (see glossary) shown in parenthesis. Source is R1 Summary Database, FIA data.

[2] Desired tons/acre is derived from Brown et al 2003 and the tons/acre found in wilderness and roadless areas on the HLC NF, R1 Summary Database, FIA data.

10 Early successional forest patches form a landscape pattern consistent with the natural range of variation, contributing to resilience and connectivity at multiple scales. Early successional forest patches provide distinctive conditions that contrast sharply with adjacent forests, creating functional openings and edge habitat. Early successional patches may result from management and/or natural processes. The desired condition is described in Table 13. Also see appendix C and FW-TIM-STD-08.

Table 13. Forestwide desired and existing conditions of early successional forest patches (acres)[1]

Scale/ Region 1 Broad Potential Vegetation Type[1]	Existing Arithmetic Average Size	Desired Range Arithmetic Average Size	Existing Maximum Size	Desired Maximum Patch Size
Forestwide	94	35-139	15,570	223-72,288
Warm Dry	55	21-57	2137	47-4,210
Cool Moist	94	37-164	9111	195-45,694
Cold	36	17-68	282	24-858

[1] Source: Modeling of the natural range of variation of seedling/sapling and nonforested cover types on forested potential vegetation types, derived from a modelling process called SIMPPLLE which uses forest inventory and analysis data. All land ownerships are included in the natural range of variation analysis.

11 Forest composition, structure, and pattern allows for native forest insect and diseases to occur across their native extent and affect vegetation at a scope and scale consistent with their natural role. Forests impacted by insects and disease provide structural features including snags, downed wood, and decaying live trees important for wildlife habitat.

12 Native forest insect and/or disease activity and associated tree mortality are at the lower end of the natural range of variation in areas where fire hazard or human safety is of concern.

13 Understory vegetation (grasses, forbs, shrubs, lichens, bryophytes, fungi) beneath the forest canopy occurs in distribution and densities consistent with the natural disturbance regime. This vegetation is resilient in response to disturbance such as fire and resistant to nonnative plant invasion.

Guidelines (FW-VEGF-GDL)

01 Vegetation management projects should be designed to retain at least the minimum number of large and very large live trees displayed in Table 14 to provide future seed, structural diversity, wildlife habitat, future snags and downed wood, and ensure project activities contribute to the forestwide desired condition. This guideline applies as an average across all treatment units in a project. Retained trees need not be present on every acre and may be clumped. This applies to all management that affects forested vegetation, including timber harvest and prescribed burning. See appendix C.

Table 14. Minimum number[1] of live trees to retain averaged across vegetation treatment units

Analysis Groups[2]	Large Live Trees (15-19.9” d.b.h)	Very Large Trees (20”+ d.b.h)
Lodgepole pine	0.1	leave all
Warm Dry	0.1	0.2
Cool Moist	1.0	0.1
Cold	0.3	Leave all

Analysis Groups[2]	Large Live Trees (15-19.9" d.b.h)	Very Large Trees (20"+ d.b.h)
Additional Guidance and Exceptions	If the minimum amount of large and very large live trees are not present, leave all that are available plus enough medium sized trees to achieve the standard. If insufficient medium sized trees are available, leave all that are available.	
	Trees preferred for retention are the longest lived, healthiest, windfirm, most fire adapted species available on the site.	
	Exceptions may occur when there are none (or fewer) desirable trees available due to insects, disease, lack of wind firmness, or unavoidable operational limitations (see appendix C).	
	If trees in excess of the minimums are available, site specific prescriptions may require either removal or retention based on project and stand objectives.	
	Retained large and very large live trees may also function as replacement snags, and/or be mixed in clumps with snags, to meet FW-VEGF-GDL-02.	
	Exceptions may occur where there are issues of human safety, especially in designated campgrounds and developed recreation sites, permitted ski areas, and utility lines. See FW-RSUP-DC-05, LB-SHOWSKI-DC-02, and RM-TETONSKI-DC-02.	

[1] Guideline is derived from best available local information (Bollenbacher 2008) with supplemental tables derived in 2017, based on mean quantities of large and very large live trees in wilderness and roadless areas on the HLC, by snag analysis group.
[2]Analysis groups are the snag analysis groups from Bollenbacher (2008), because the live tree desired conditions relates ultimately to desired snag conditions. Snag analysis groups are consistent with the R1 Broad Potential Vegetation Types except that areas dominated by lodgepole pine are separated. See appendix D.

02 Vegetation management projects should be designed to retain at least the minimum number of snags per acre and percent distribution displayed in Table 15, averaged across the project area, to provide well-distributed snag habitat at the project level in the short and long term and ensure project activities contribute to the forestwide desired condition. This applies to all management that affect forested vegetation, including timber harvest and prescribed burning. See appendix C.

Table 15. Minimum average snags per acre and percent distribution[1] to retain across vegetation management project areas[2]

Snag Analysis Group[4]	Medium+ (10"+ d.b.h)[3]	Large+ (15"+ d.b.h)[3]	Very Large (20"+ d.b.h)
Lodgepole pine	13/acre; 15%	2/acre; 5%	0.2/acre; 2%
Warm Dry	4/acre; 8%	1/acre; 4%	0.2/acre; 2%
Cool Moist	12/acre; 20%	2/acre; 10%	0.4/acre; 3%
Cold	13/acre; 20%	2/acre; 10%	0.9/acre; 5%
Additional Guidance and Exceptions	Snags per acre and percent distribution apply as averages across the project area. Snags need not be present on every acre or within treatment units. However, snag retention within treatment units should be considered when it is safe and operationally feasible to do so, especially if the most desirable snags are present in those areas, and/or if the treatment unit is greater than 40 acres in size.		
	Locate snags 300' or farther from a road that is open to firewood cutters, when possible.		
	Due to their rarity, very large snags should be retained in treatment units unless unavoidable operational or safety limitations are encountered. If these snags are felled, they should generally be left onsite as woody debris as long as the resulting condition is consistent with site-specific woody debris retention objectives.		
	If fewer than the minimum snags are present across the project area, live trees shall be retained (or snags shall be created) in treatment units to meet the quantities above if available, with a preference for the largest and most decadent trees. Trees with rot or wildlife use are preferred. Live trees retained in this instance may also be used to meet FW-VEGF-GDL-01.		

Snag Analysis Group[4]	Medium+ (10"+ d.b.h)[3]	Large+ (15"+ d.b.h)[3]	Very Large (20"+ d.b.h)
	Snag species preference in order from highest to lowest is: ponderosa pine, western larch, whitebark pine, limber pine, Douglas-fir, hardwoods (aspen or cottonwood), Engelmann spruce, subalpine fir, lodgepole pine.		
	Exceptions may occur where there are issues of human safety, especially in designated campgrounds and developed recreation sites, permitted ski areas, utility lines, prescribed burnor timber sale activity areas, areas adjacent to infrastructure or private ownerships. Also see FW-RSUP-DC-05, LB-SHOWSKI-DC-02, and RM-TETONSKI-DC-02.		
	Additional snag retention requirements above these minimum levels may be specified and applied in project-level NEPA analyses to meet project-level objectives.		

[1] Distribution reflects the percentage of treatment units by snag analysis group with one or more snags of the indicated size class.
[2] Standard is derived from best available local information (Bollenbacher 2008, updated queries 2017), based on the mean snags present in wilderness and roadless areas on the HLC NF as measured by period FIA plot data prior to the beetle outbreak.
[3] Numbers includes snags of larger size classes.
[4] Snag analysis groups are from Bollenbacher (2008). Snag analysis groups are consistent with the R1 Broad Potential Vegetation Types except that areas dominated by lodgepole pine are separated. See appendix D.

03 Vegetation management activities in tree improvement areas (such as seed orchards, test plantations, and seed production areas) should be conducted according to regional office assignments, and so as not to impair tree improvement activities.

04 In old growth stands, vegetation management should not modify stand characteristics to the extent that the stand no longer meets the definition of old growth. Old growth should be identified at the project scale based on the best available science regarding its characteristics and patch size. Identification and mapping of old growth should be dynamic through time. Vegetation management that occurs within old growth should be designed to achieve one or more of the following purposes:

- Maintain or restore old growth habitat characteristics and ecosystem processes.
- Increase old growth forest resistance and resilience to disturbances or stressors that may have negative impacts on old growth characteristics (such as drought, wildfire, and bark beetles).
- Reduce fuel hazards adjacent to exceptional values at risk.
- Address human safety.

Exceptions to this guideline are allowed under the following circumstances. In these cases, old growth stands may be modified to the extent that they no longer meet the definition of old growth. These exceptions should be applied to the minimum extent necessary.

- Removal of old growth characteristics is necessary to provide for public safety in campgrounds and other designated recreation sites, administrative sites, utility corridors, permitted ski areas, and areas surrounding or immediately adjacent to infrastructure or privately owned improvements.
- The old growth stand is expected to experience stand-replacing mortality in the short term (5-10 years) as indicated by progressing tree mortality (such as an ongoing insect infestation), and altering or removing the stand is crucial to meeting other project-level objectives and timeframes.

05 Vegetation management projects should consider opportunities to promote the long-term development of future old growth that can replace old growth that is lost to fire or other natural disturbances. Such opportunities may include treatment of younger stands to promote resilience, hasten the development of old growth characteristics, and/or increase the size and distribution of potential future old growth patches. Vegetation management projects should also consider opportunities to protect current old growth stands from damaging agents such as fire, insects, disease, and windthrow by incorporating design features in treatment units that reduces potential impacts from these agents in nearby old growth. See appendix C.

06 Vegetation management projects should retain at least the minimum amount of coarse woody debris (greater than or equal to 3" in diameter), averaged for each treatment unit on forested sites as displayed in Table 16, to provide for well-distributed coarse woody debris at the project level, which contributes to nutrient cycling, structural diversity, and habitat. The requirement should be met immediately following completion of all project activities. Also see FW-SOIL-GDL-04 and appendix C.

Table 16. Minimum tons per acre of coarse woody debris to retain in vegetation treatment units[1]

	Warm Dry R1 Broad Potential Vegetation Type 5 tons per acre	**Cool Moist Broad Potential Vegetation Type** 10 tons per acre	**Cold Broad Potential Vegetation Type** 10 tons per acre
Discussion and Exceptions	The guideline applies to any vegetation treatment in forested communities, including timber harvest and prescribed fire. This guideline does not apply in nonforested vegetation communities or in open forest savannas that may occur in the warm dry potential vegetation type.		
	The guideline applies as an average across each vegetation treatment unit; the downed wood may be irregularly distributed and not every acre in the unit needs to have the desired average.		
	Downed wood should consist of intact pieces of a variety of species, sizes and stages of decay, depending on site conditions. Prescriptions should emphasize retaining larger debris (pieces 10" diameter and 10' in length or greater) where possible, which are higher value to wildlife.		
	If the minimum quantity cannot be met, live trees or excess snags should be felled, or dead wood added to the site if available.		
	Exceptions to the guideline may occur where there is elevated concern with fire risk (recreation sites, areas adjacent to infrastructure or private ownerships, Wildland Urban Interface areas, utility lines, etc.), or where sufficient live trees or snags are not available.		
	An upper threshold of desired wood may be specified in project-level NEPA analysis, considering all project objectives such as fuel loading, wildlife habitat, and riparian area considerations.		

1 Guideline is derived from Graham et al (1994).

Nonforested Vegetation (VEGNF)

Introduction

This section includes components that apply to the suite of nonforested potential vegetation types. Refer to the GRAZ components for additional guidance for nonforested plant communities that are utilized for livestock grazing.

Desired Conditions (FW-VEGNF-DC)

01 Native plant communities support diverse age classes of shrubs and a vigorous, diverse, self-sustaining understory of grasses and forbs relative to site potential (based on ecological site descriptions or equivalent method) and consistent with the natural range of variation.

02 Native plant species dominate and invasive plant species are at low abundance or non-existent. Naturalized nonnative species which are not invasive (such as Kentucky bluegrass and timothy) may be present but do not increase in extent.

03 The collective abundance of all desired nonforested cover types represents at least 14-20 % of the HLC NF landbase, as indicated by the natural range of variation. These communities occur primarily on the nonforested potential vegetation types described in FW-VEGT-DC-01. See chapter 3 for the desired abundance of nonforested cover types by GA.

04 Nonforested vegetation dominates those sites on forested potential vegetation types that were historically maintained without trees by frequent fire. This includes fire-maintained grass and

shrublands where tree cover is 0-5% canopy cover as well as savannas characterized by a dominance of grass or shrub understories with widely spaced fire-resilient trees at 5-10% canopy cover.

05 Bryophytes, algae, lichen, and fungi are present in their natural extent and abundance.

Guidelines (FW-VEGNF-GDL)

01 Treatments to restore savannas, grasslands, or shrublands on sites in the warm dry forest broad potential vegetation group should focus on sites with living or dead remnants of mountain big sagebrush or other key indicators that the community was historically dominated by nonforested vegetation.

Plant Species at Risk (PRISK)

Introduction

This section addresses plant species that are recognized as at-risk species by the Endangered Species Act or by the Regional Forester of the Forest Service. This designation includes species recognized as threatened, endangered, proposed, or candidate species under the Endangered Species Act by the USFWS. At the time of the preparation of this forest plan, only whitebark pine (*Pinus albicaulis)* falls under the Endangered Species Act, as a candidate species. If additional plants become listed in the future, the plan components in this section would apply and additional species-specific components may be needed.

At-risk plant species designation also includes species of conservation concern, which are species other than federally recognized species that are known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (36 Code of Federal Regulations 219.9; FSH 1909.12.52). Plant species of conservation concern for the HLC NF are being identified at the regional level. The draft list can be reviewed at www.fs.usda.gov/goto/R1/SCC. Botanical surveys focus on increasing known information about species of conservation concern and additional plant species that may qualify as species of conservation concern in the future, but for which information is currently lacking to make needed changes to the species of conservation concern list by the Regional Forester (FSH 1909.21.22b).

Desired Conditions (FW-PRISK-DC)

01 Habitat conditions support the recovery and persistence of plant species that are recognized as at-risk species. Ecological conditions and processes that sustain the habitats currently or potentially occupied by at-risk plant species are maintained or restored.

02 Key whitebark pine areas such as cone collection sites, resistant seed-bearing trees, and seed orchards are maintained on the landscape.

Goals (FW-PRISK-GO)

01 Recovery and long-term persistence of plants that are recognized as at-risk species is supported by cooperation with other agencies and landowners to expand inventories, identify potential habitat for these species, and promote protection and/or restoration of associated habitats.

Objectives (FW-PRISK-OBJ)

01 Treat 1,500 to 10,000 acres over the life of the plan for the purpose of sustaining or restoring whitebark pine and contribute to achieving desired conditions as described in the forested vegetation

section. Achieving this would also contribute to FW-VEGT-DC-01. Refer to appendix C for information on possible restoration strategies and activities.

Pollinators (POLL)

Introduction

This section addresses invertebrate pollinator species that occur on the HLC NF and their respective habitat requirements. At the time of the preparation of this forest plan, no pollinator species known on the forest have any additional designation under the Endangered Species Act or Region 1 species of conservation concern designation.

Desired Conditions (FW-POLL-DC)

01 Plant communities composed of an abundant and diverse mix of native grass, forb, shrub, and tree species are present across the landscape to provide foraging habitat for native pollinators. Pollinator nesting and hiding cover are also provided through graminoid and herbaceous structural diversity in nonforested habitats as well as snags and large downed woody material in forested habitats.

Goals (FW-POLL-GO)

01 Collection of data about pollinators and improvement of the best available information on local species' diversity, ecological requirements, and threats is supported by cooperation with other agencies and partners.

Guidelines (FW-POLL-GDL)

01 When issuing special use permits for beehives in the plan area, the placement of hives should not displace native pollinators with a limited habitat distribution.

Invasive Plants (INV)

Introduction

A species is considered to be invasive if it meets two criteria: (1) it is nonnative to the ecosystem under consideration, and (2) its introduction causes, or is likely to cause economic, or environmental harm or harm to human health (Executive Order 13112, 1999). This section covers only invasive plant species; refer to the Aquatic Ecosystems section for components related to invasive aquatic species.

A noxious weed is defined by Montana Code Annotated (MCA 7-22-2101) as, "any exotic plant species established or that may be introduced in the state that may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses or that may harm native plant communities". Invasive plants are capable of successfully expanding their populations into new ecosystems beyond their natural range and can create lasting impacts to native plant communities. Impacts from invasive plants can be exacerbated by fire, native pests, weather events, human actions, and environmental change.

The intent of the invasive species components in this plan are to ensure that all FS management activities are designed to minimize or eliminate establishment or spread of invasive species on NFS lands, or to adjacent areas. The following desired conditions are complimentary to other sections that provide for healthy resilient and resistant plant communities. Management actions intended to prevent and respond to invasive plants will be dynamic and designed in a manner that allows for an adaptive management approach. The desired conditions describe conditions associated with invasive species and articulate the platform on which future management actions should be designed to address them. These conditions will

be addressed within the bounds of resource constraints. Future actions will be balanced by considering cost as well as potential gains to biodiversity, native species, and native soil biota.

Desired Conditions (FW-INV-DC)

01 Intact native plant communities dominate the landscape, while nonnative invasive species are in low abundance and do not disrupt ecological function and resilience. Non-infested rangeland and forested areas remain free of invasive plant species.

02 No new nonnative invasive plant species become established in terrestrial or aquatic plant communities on the Forest.

03 Terrestrial communities at risk of negative impacts from nonnative invasive plants are able to retain or regain function, process, and structure after disturbance.

Goals (FW-INV-GO)

01 A coordinated invasive species management, awareness, and education approach is used internally and externally so that invasive species awareness is maintained and/or improved.

02 Opportunities for cooperators, organizations, partners, and members of the public to contribute to invasive species management are provided. This could include survey, inventory, monitoring, and/or treatment.

03 Landscape scale weed treatments are coordinated with weed treatments occurring on adjacent lands.

Objectives (FW-INV-OBJ)

01 Prevent invasive species establishment and reduce existing infestations through annual invasive species management actions on at least 3,000 inventoried acres.

Standards (FW-INV-STD)

01 For all proposed projects or activities, the risk of noxious weed introduction or spread shall be determined and appropriate mitigation measures shall be implemented. Activities shall be designed to minimize the risk of spreading invasive species and meet multiple use and ecological objectives.

02 Domestic sheep or goat grazing used as part of an integrated pest management weed control program shall maintain effective separation of bighorn sheep from domestic sheep or goats. Current agency or interagency recommendations shall be used to define effective separation and to establish the means to achieve it.

Guidelines (FW-INV-GDL)

01 To prevent the spread of and/or decrease existing infestations of State of Montana listed noxious weeds and other priority invasive species, an integrated pest management approach should be implemented across resource programs in a strategic and adaptive manner, considering potential effects to native pollinators and mitigation measures if necessary. Also see Vegetation, Pollinators (POLL).

02 Treatments that are most effective in the long-term and compatible with other resources should be emphasized when feasible.

03 When conducting invasive plant treatments in areas with at-risk plant populations, integrated treatment methods that are not detrimental to those species should be used.

04 Native plant species with natural abilities to compete with or persist amongst invasive species should be used in restoration efforts when feasible. Also see FW-VEGT-GDL-04.

Wildlife (WL)

Introduction

This section provides direction designed to maintain the diversity of animal communities and "support the persistence of native wildlife species within the plan area, subject to the extent of FS authority and the inherent capability of the plan area" (FS Handbook 1909.12, Chapter 20, Section 23.1). The 2012 Planning Rule adopts a coarse-filter/fine-filter approach to management of NFS lands. Coarse-filter plan components are designed to maintain the integrity and resilience of ecosystems, and are therefore expected to maintain the species that are dependent on those ecosystems. Fine-filter plan components are included where specific needs are not met by coarse-filter components.

Wildlife habitats depend largely on terrestrial vegetation; therefore the plan components for terrestrial vegetation represent most of the coarse-filter components that will support the persistence of native species within the plan area. General references to wildlife habitats are included where appropriate in the description of desired conditions for terrestrial vegetation in order to help clarify that relationship. Plan components for wildlife are described below where needs exist separately from vegetation-related components, and where a specific, fine-filter approach is needed. Additional plan components, both coarse and fine filter, that address wildlife needs or management concerns may also be found in sections that address other resources.

The HLC NF supports a diversity of plant communities across a wide range of physical environments. This diversity of communities and ecosystems supports a great diversity of wildlife species, many of which occur only in portions of the plan area. Therefore, plan components are provided only in the appropriate GAs for species whose distribution encompasses only one or a few GAs, or for species whose presence may be desired in only one or a few GAs. As an example, flammulated owls have been documented only in the Big Belts, Divide, Elkhorns, and Upper Blackfoot GAs, which corresponds to their known distribution in Montana. Therefore, fine-filter plan components for flammulated owl are found only in the sections for those GAs. Similarly, species such as bighorn sheep or bison that are currently absent from some GAs but may be desired in those specific areas may have plan components only in the relevant GAs.

Some plan components in this section are relatively broad statements describing desired conditions and goals for wildlife habitats and species in general, and therefore apply to all wildlife species or habitats in the plan area. Some plan components are specific to individual species or groups of species for whom fine-filter plan components may be necessary in order to address specific risks presented by management or other activities. Some plan components are specific to species listed as threatened, endangered, proposed, or candidate species under the Endangered Species Act at the time the plan was written, or to those identified by the Regional Forester as Species of Conservation Concern.

Threatened, endangered, proposed, and candidate species are identified by the USFWS, which maintains up-to-date information regarding which of those species may be found on the HLC NF. At the time of preparation of this forest plan, three species found on the HLC NF fall into categories identified under the Endangered Species Act (U.S. Fish and Wildlife Service list dated 03/27/2017):

- Grizzly bear (*Ursus arctos*) – threatened; resident /transient west of Interstate Highway 15, and east of Interstate Highway 15 may be present in Elkhorn Mountains, Big Belt Mountains, Little Belt Mountains, and Highwood Mountains.
- Canada lynx (*Lynx Canadensis*) – threatened; resident(core habitat)/transient (secondary/peripheral habitat) west of Interstate Highway 15; transient (secondary/peripheral habitat) east of Interstate Highway 15
- Wolverine (*Gulo gulo*) – proposed; documented in all GAs except the Highwoods, Snowies, Castles, and possibly Crazies.

The status of these and other species may change during the life of the forest plan. If species are removed from listing or consideration under the Endangered Species Act, or if recovery plans or conservation strategies for listed, candidate, or proposed species change, plan components for those species could be changed through amendment(s) to this plan.

Canada Lynx and Grizzly Bear Direction

This plan includes by reference the direction for managing Canada lynx habitat from the March 2007 Record of Decision for the Northern Rockies Lynx Management Direction (see appendix H). Note that the Northern Rockies Lynx Management Direction includes plan components that direct management of a variety of resources, including vegetation management, grazing, recreation, and others. If habitat management requirements are changed through changes in the status of Canada lynx, through changes made to the Northern Rockies Lynx Management Direction, development of a recovery plan, or other guidance, plan components for lynx could change through amendment(s) to this plan.

This draft plan also includes the intent to incorporate the relevant direction from the Northern Continental Divide Ecosystem Draft Grizzly Bear Conservation Strategy to support a recovered grizzly bear population. That management direction is being developed through a separate analysis concurrent with the Flathead National Forest plan revision. It includes plan components to amend the current Helena and Lewis and Clark National Forest Plans (1986) and provides direction for a variety of resources including vegetation management, grazing, recreation, minerals, etc. Public review for the draft direction and draft environmental analysis occurred between June 3 and October 3, 2016 and the record of decision is expected in 2017. Please see the Flathead National Forest website for additional information on that planning effort.

Species of Conservation Concern

Species of conservation concern are defined in the 2012 Planning Rule as, “Any species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species’ capability to persist over the long-term in the plan area.” (36 Code of Federal Regulations 219.9). Wildlife species of conservation concern for the HLC NF are being identified at the regional level. The draft list can be reviewed at www.fs.usda.gov/goto/R1/SCC.

Most habitat and other life history requirements for species of conservation concern are addressed by the coarse-filter plan components that address vegetation characteristics, and/or by plan components regarding management of other resources or activities. The 2012 Planning Rule states that where coarse-filter plan components are insufficient to provide the necessary ecological conditions for Species of Conservation Concern, “then additional, species-specific plan components, including standards or guidelines, must be included in the plan to provide such ecological conditions in the plan area.” (36 Code of Federal Regulations 219.9). Where fine-filter components are needed they may be addressed in the appropriate GA section for species whose distribution is not forestwide, but that is limited to one or

several GAs. The Regional Forester's list of species of conservation concern for the HLC NF is dynamic and may be periodically updated. If species are added to or removed from the species of conservation concern list, plan components for those species could be changed through amendment(s) to this plan.

Desired Conditions (FW-WL-DC)

01 Habitats for native wildlife species are available throughout those species' potential natural ranges on NFS lands. Habitats for desired nonnative wildlife species are available on NFS lands where they can be supported by healthy, functioning ecosystems.

02 Vegetation composition, structure, and distribution provide the life/natural history requirements (for example, breeding, nesting, feeding, seasonal movements, migration, dispersal, hiding cover) of native and desired nonnative wildlife species, for the portion of those species' life cycles that occur on NFS lands. Also see Vegetation section.

03 Vegetation composition, structure, and distribution, as well as forest management, allow wildlife to move within and between NFS parcels in response to seasonal habitat needs, dispersal needs, disturbances (such as, fire, insect infestations), and long-term changes (such as climate change). Also see Vegetation section.

04 Conflicts between humans and wildlife are rare.

05 Winter range for ungulates and other wildlife species that are sensitive to human disturbance is relatively free of human disturbance during the period in which those species are active in these areas.

06 Areas of nonforested vegetation at lower elevations provide forage species for wintering big game and are intermixed with areas of forest that provide hiding and thermal cover for wintering big game.

07 Nest and den sites and other birthing and rearing areas for terrestrial wildlife species (including avian species) are relatively free of human disturbance during the period they are active in those sites/areas.

08 Caves, mines, and other underground habitats and known above-ground roost sites, particularly those used as hibernacula or maternity roosts that may be used by native bat species, are relatively free of human disturbance during the period bats are active in those sites (Also see FW-WTR-DC-14).

Goals (FW-WL-GO)

01 Coordination with Montana Fish, Wildlife, and Parks and other agencies occurs during project planning, in order to allow consideration of the goals and objectives of these agencies regarding wildlife and wildlife habitats.

02 The FS works with community leaders, youth and schools, homeowners, businesses, private organizations, and other agencies to develop and disseminate information about how to live, work, and recreate where wildlife species are present. Also see Public Information, Interpretation and Education section (CONNECT).

03 Linkage areas identified through interagency coordination facilitate the movement of wildlife between NFS parcels separated by other ownerships.

04 Through cooperation with other agencies, collaboration on conservation strategies and recovery plans, and management of habitat, federally listed wildlife species occurring on NFS lands achieve recovery.

05 Through cooperation with other agencies, collaboration on conservation strategies and other management plans, and management of habitat, the need for listing of additional wildlife species under the Endangered Species Act is prevented.

Standards (FW-WL-STD)

01 Herbicides, fertilizers, and spray-application type pesticides shall not be applied to vegetation or substrates within 100 meters of known western toad breeding sites.

Guidelines (FW-WL-GDL)

01 When managing livestock use, forage should be retained in the quantity, quality, and location to support wildlife needs. Also see FW-GRAZ-DC-02.

02 Risks of wildlife, particularly black bears or grizzly bears, becoming habituated to humans or becoming food-conditioned should be minimized during management activities.

03 New and revised livestock management plans should protect known western toad breeding sites from trampling by livestock. Emergent vegetation should be retained at these sites to provide habitat for breeding activities and cover for tadpoles.

04 Management actions (e.g., decontamination measures, public education) should be used to help prevent the spread of pathogens to and among known and potential western toad breeding sites.

05 Management and other human activities should avoid disturbance to native ungulates on winter range and on fawning and calving areas during the period when ungulates use those habitats. An exception is routes that are identified on a motor vehicle use map, after appropriate analysis in a travel planning process, as open to motor vehicle use during those periods. Management or other activities that occur on winter range or on fawning or calving areas during those periods of use should concentrate activities in time and/or space to reduce impacts to native ungulates. Timing restrictions should be based on the best available information, as well as on site-specific factors (for example, topography, available habitat, and others).

06 Vegetation management activities on identified big game winter range should maintain or improve forage quantity and quality, and should retain intermixed areas of forest, where possible, to provide hiding and thermal cover.

07 New fencing installation or reconstruction should be sited and designed to minimize hazards to wildlife and barriers to wildlife movements.

08 New or reconstructed water developments or impoundments should be designed to prevent animal entrapment and to facilitate animal escape.

09 Management actions should avoid disturbance at known active raptor nests and fledging areas. Timing restrictions, distance buffers, or other means of avoiding disturbance should be based on the best available information, as well as on site-specific factors (for example, topography, available habitat, and others). Birds that are known to have established nests near pre-existing human activities are assumed to be tolerant of the level of activity present when the nest was established.

10 Management actions should avoid disturbance to roosting, hibernating, or breeding/pup-rearing bats in caves, mines and other underground habitats or in trees or other structures or landscape features known to be used by bats. Buildings should be inspected prior to removal to identify bat use. If bats

are present, the structure should be retained unless human safety is at risk. Removal should not occur until bats are no longer using the structure.

11 Management actions (such as decontamination procedures, avoidance of human entry into winter roosts during winter, placement of signs, education of cavers) should be used at caves or mines known to be used by bats, to prevent the spread of white-nose syndrome or other diseases.

12 To minimize risk of disturbance to bat roosting, hibernating, or breeding/pup-rearing sites, road or trail designs should not visually open new views of a cave entrance.

13 Avoid establishing pull-outs or parking areas near a cave, or encouraging increased use of an existing trail that may lead to a cave if the cave is not being managed for public access.

14 Areas to be treated with piscicides for the removal of unwanted fish species should first be surveyed for the presence of amphibians. Use of piscicides should be avoided during times of the season when amphibian larvae are present, to prevent mortality. Measures should be taken to avoid exposure of adult amphibians to piscicides.

15 Management of habitat for native ungulates (elk, deer, moose, bighorn sheep, and mountain goat) should be consistent with management of similar habitat on adjoining state or federal land where the adjoining habitat is managed to maintain wildlife values. The scale for application of this guideline is dependent on the extent of identified seasonal habitat on NFS land that directly adjoins state or other federal lands with similar identified habitat.

Recreation Opportunities, Settings, Special Uses, Access, and Scenery

Recreation Settings (ROS)

Introduction

Recreation settings are the social, managerial, and physical attributes of a place that, when combined, provide a distinct set of recreation opportunities and access options. These settings provide the framework where specific recreation opportunities, activities, and expected experiences are integrated to ensure compatibility with the landscape's natural, social, and cultural resource values. By identifying recreation settings, the Forest can ensure a sustainable set of recreation opportunities for future generations and visitors can select where they recreate based on what they want to do, what equipment they want to bring, and the type of experience they want.

The FS uses the recreation opportunity spectrum to define recreation settings. The recreation opportunity spectrum is categorized into six distinct classes: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban (36 CFR 219.19). See the glossary for detailed definitions of each recreation opportunity class.

Desired Conditions (FW-ROS-DC), Objectives (FW-ROS-OBJ), Standards (FW-ROS-STD), Guidelines (FW-ROS-GDL), and Suitability (FW-ROS-SUIT)

01 Outdoor recreation opportunities and experiences are provided year-round in a range of settings as described by the desired recreation opportunity spectrum. These settings reflect the integration of other resource values with the desired recreation opportunities, access, facilities, and infrastructure provided within those settings. The desired distribution of forestwide recreation opportunity settings

are described in Table 17. Specific locations and distribution of desired recreation opportunity spectrum settings are mapped for each geographic area and are located in appendix B.

Table 17. Desired recreation opportunity spectrum classes

Desired Recreation Opportunity Spectrum Classification	Summer		Winter	
	Acres	Percent of Total Forest[1]	Acres	Percent of Total Forest[1]
Alternative B				
Primitive	846,121	29	846,121	29
Semi-primitive nonmotorized	955,767	33	1,076,056	37
Semi-primitive motorized	367,377	13	765,796	27
Roaded Natural	686,186	24	167,925	6
Rural	28,139	1	27,717	1
Urban	29	<1	29	<1
Alternative C				
Primitive	846,175	29	846,175	29
Semi-primitive nonmotorized	956,076	33	1,095,868	38
Semi-primitive motorized	367,323	13	745,984	26
Roaded Natural	685,877	24	167,925	6
Rural	28,139	1	27,717	1
Urban	29	<1	29	<1
Alternative D				
Primitive	1,231,795	43	1,220,681	42
Semi-primitive nonmotorized	617,244	21	754,246	26
Semi-primitive motorized	341,327	12	715,347	25
Roaded Natural	666,817	23	167,371	6
Rural	26,409	1	25,971	1
Urban	29	<1	29	<1
Alternative E				
Primitive	723,944	25	710,422	25
Semi-primitive nonmotorized	1,058,230	37	1,181,189	41
Semi-primitive motorized	244,040	8	302,100	10
Roaded Natural	830,397	29	662,234	23
Rural	26,979	1	27,670	1
Urban	29	<1	29	<1

[1] Percentage of the total NFS lands, rounded to the nearest whole number.

Table 18 describes desired conditions, objectives, standards, guidelines, and suitability for each of the recreation opportunity spectrum classes.

Table 18. Recreation Opportunity Spectrum Plan Components

Desired Conditions	Associated Plan Components to Achieve Desired Recreation Opportunity Spectrum Settings	
(FW-ROS-DC-02) Primitive ROS settings (Summer) encompass large, wild, remote, and predominately unmodified landscapes. These settings often coincide with designated Wilderness. Additional primitive ROS settings are scattered across the forest, often surrounded by SPNM settings. Primitive ROS settings contain no motorized recreation and little probability of seeing other people. They provide quiet solitude away from roads and people, are generally free of human development, and facilitate self-reliance and discovery. Historic structures such as log ranger stations and fire lookouts are occasionally present. Signing, and other infrastructure is minimal and constructed of rustic, native materials. **(FW-ROS-DC-03) Primitive ROS settings (Winter)** are large, remote, wild, and predominately unmodified. Winter Primitive ROS settings provide quiet solitude away from roads, and people. There is no motorized activity and little probability of seeing other people. Constructed trails that are evident in the summer months are covered by snow, making these settings appear even more natural and untouched by human management.	**Objective**	**(FW-ROS-OBJ-01)** Eliminate motorized incursions into Primitive settings within 10 years.
	Standards	**(FW-ROS-STD-01)** Motorized routes (road, trails, and waterways) and motorized play areas shall not be constructed or authorized in desired Primitive settings. Exceptions may be granted for administrative access needs. **(FW-ROS-STD-02)** Airstrips shall not be constructed in desired Primitive settings.
	Guidelines	**(FW-ROS-GDL-01)** To maintain the unmodified character of the area, permanent structures should not be constructed in desired Primitive ROS settings. Exceptions may be granted for administrative uses, including those needed for safety of employees and the public. **(FW-ROS-GDL-02)** To maintain the scenic quality of these wild and remote landscapes, scenery should be managed for Very High scenic integrity objectives. Also see FW-SCENERY-GDL-01. **(FW-ROS-GDL-03)** Vegetation management practices should maintain the natural vegetation, ecosystem processes, and functions of these areas.
	Summer Suitability	**(FW-ROS-SUIT-01)** Nonmotorized trails and cross-country non-motorized travel are suitable in desired Primitive settings. **(FW-ROS-SUIT-02)** Mechanized recreation transport is suitable on designated trails in desired Primitive settings that are outside of Wilderness and Recommended Wilderness Areas. **(FW-ROS-SUIT-03)** Motorized recreation travel is not suitable in desired Primitive settings. **(FW-ROS-SUIT-04)** Airstrips are not suitable in Primitive ROS settings.
	Winter Suitability	**(FW-ROS-SUIT-05)** Motorized over snow vehicle travel is not suitable in desired Primitive settings.
(FW-ROS-DC-04) Semi-Primitive Non-Motorized settings (Summer) provide opportunities for exploration, challenge, and self-reliance. Rustic structures such as signs and foot bridges are occasionally present to direct use and/or protect the setting's natural and cultural resources. These rustic constructed features are built from native materials or those that mimic native materials. Closed roads may be present but do not dominate the landscape or detract from the SPNM experience of visitors.	**Objective**	**(FW-ROS-OBJ-02)** Eliminate motorized incursions into Semi-primitive non-motorized settings within 10 years.
	Standards	**(FW-ROS-STD-03)** Motorized routes (road, trails, and waterways) and motorized play areas shall not be constructed or authorized in desired Semi-primitive non-motorized settings. Temporary roads may be allowed if fully rehabilitated after use. **(FW-ROS-STD-04)** Airstrips shall not be constructed in desired Semi-primitive non-motorized settings.
	Guidelines	**(FW-ROS-GDL-04)** To maintain the scenic quality of these wild and semi-remote landscapes, scenery should be managed for High scenic integrity

Desired Conditions	Associated Plan Components to Achieve Desired Recreation Opportunity Spectrum Settings	
These settings are free of motorized recreation travel but mechanized travel may be present. **(FW-ROS-DC-05) Semi-Primitive Non-Motorized settings (Winter)** provide backcountry skiing, snowboarding, and snowshoeing opportunities. Trails are un-groomed and often not marked. Rustic facilities, such as historic cabins, yurts may exist but are rare.		objectives in Semi-primitive non-motorized settings. Also see FW-SCENERY-GDL-01. **(FW-ROS-GDL-05)** To maintain the natural vegetation in these semi-primitive areas, vegetation management should be designed to promote forest health.
	Summer Suitability	**(FW-ROS-SUIT-06)** Non-motorized trails and cross-country non-motorized travel are suitable in desired Semi-primitive non-motorized settings. **(FW-ROS-SUIT-07)** Mechanized recreation transport is suitable on designated routes and areas in desired Semi-primitive non-motorized settings. **(FW-ROS-SUIT-08)** Motorized recreation travel is not suitable in desired Semi-primitive non-motorized settings. **(FW-ROS-SUIT-09)** Airstrips are not suitable in Semi-primitive ROS settings.
	Winter Suitability	**(FW-ROS-SUIT-10)** In winter, motorized recreation travel is not suitable in desired Semi-primitive non-motorized settings.
(FW-ROS-DC-06) Semi-Primitive Motorized ROS settings (Summer) provide motorized recreation opportunities in backcountry settings. Routes are designed for Off Highway Vehicles (OHVs) and high clearance vehicles that connect to local communities, access key destinations and vantage points, provide short day trips on scenic loops or facilitate longer and even overnight, expeditions. Visitors challenge themselves as they explore vast, rugged landscapes. Mountain bikes and other mechanized equipment may also be present. Facilities are rustic and are used for the purpose of protecting the setting's natural and cultural resources. Bridges are sometimes present to accommodate foot, horse and ATV traffic but are built from native or natural appearing materials that blend with the surrounding landscape and maintain the semi-primitive character of the setting. There may also be nodes that function as portals for visitors to park their ATVs and explore adjacent Semi-Primitive Non-Motorized and Primitive settings on foot. **(FW-ROS-DC-07) Semi-Primitive Motorized settings (Winter)** provide backcountry skiing and snowmobiling opportunities. Snowmobile trails are groomed but trails for backcountry skiing opportunities are	**Objective**	NA
	Standard	**(FW-ROS-STD--05)** Permanent roads shall not be constructed in desired Semi-primitive motorized settings. Temporary roads may be allowed if fully rehabilitated after use.
	Guideline	**(FW-ROS-GDL-06)** To maintain the scenic quality of these wild and semi-remote landscapes, scenery should be managed for High to Moderate scenic integrity objectives in Semi-primitive motorized settings. Also see FW-GDL-SCENERY-01. **(FW-ROS-GDL-07)** To maintain the natural vegetation in these areas, vegetation management should create limited, widely dispersed treatment areas that are consistent with natural vegetation patterns.
	Summer Suitability	**(FW-ROS-SUIT-11)** Motorized use is suitable on designated roads, trails, and areas in desired Semi-primitive motorized settings. **(FW-ROS-SUIT-12)** Airstrips are suitable in desired Semi-primitive motorized settings. **(FW-ROS-SUIT-13)** Non-motorized trails and cross-country non-motorized travel are suitable in desired Semi-primitive motorized settings. **(FW-ROS-SUIT-14)** Mechanized recreation transport is suitable on designated routes and areas in desired Semi-primitive motorized settings.
	Winter Suitability	**(FW-ROS-SUIT-15)** Groomed snowmobile routes and motorized snow play areas are suitable in desired Semi-primitive motorized settings. **(FW-ROS-SUIT-16)** In winter, motorized vehicles, other than those designed for over-snow use, are not suitable in desired Semi-primitive motorized settings.

Desired Conditions	Associated Plan Components to Achieve Desired Recreation Opportunity Spectrum Settings	
ungroomed. Trails are often signed and marked. There are vast areas to travel cross-country, offering visitors an opportunity for exploration and challenge. Occasionally, historic cabins or warming huts are available for short breaks or overnight use.		
(FW-ROS-DC-08) Roaded Natural ROS settings (Summer) are often referred to as front country recreation areas. This setting is managed as natural appearing with nodes and corridors of development that support higher concentrations of use, user comfort, and social interaction. The road system is well defined and can typically accommodate sedan travel. Sanitation, potable water, interpretive signing, and other amenities are strategically placed to serve as destination points and/or portals to adjacent backcountry settings. Signing, facilities, bridges and other infrastructure are constructed of native materials or natural appearing materials that blend with and complement the surrounding natural setting. **(FW-ROS-DC-09) Roaded Natural ROS settings (Winter)** support higher concentrations of use, user comfort, and social interaction. The road system is plowed and accommodates sedan travel. Winter trails are routinely groomed and may have ancillary facilities such as warming huts and restrooms. System roads and trails often provide staging to adjacent backcountry settings (primitive, SPNM and SPM). Guided snowmobiling, dog sledding, skiing, and snowshoeing may also be present.	**Objective**	NA
	Standard	NA
	Guideline	**(FW-ROS-GDL-08)** To maintain natural vegetation characteristics, vegetation management may be evident but should be in harmony with the scenic character of the area. **(FW-ROS-GDL-09)** To maintain the scenic quality of natural appearing landscapes, scenery should be managed for High, Moderate and Low scenic integrity objectives. Also see FW-SCENERY-GDL-01.
	Summer Suitability	**(FW-ROS-SUIT-17)** Motorized use is suitable on designated roads, trails, and areas in desired Roaded Natural ROS settings. **(FW-ROS-SUIT-18)** Mechanized recreation transport is suitable on designated routes and areas in desired Roaded Natural settings. **(FW-ROS-SUIT-19)** Airstrips are suitable in desired Roaded Natural settings.
	Winter Suitability	**(FW-ROS-SUIT-20)** In winter, motorized vehicles, other than those designed for over-snow use, are not suitable in desired Roaded Natural ROS settings.
(FW-ROS-DC-10) Rural ROS settings (Summer) Often serve as a recreation destination and sometimes provide access to adjacent roaded natural and semi-primitive settings and opportunities. These areas are accessed from paved roads and are generally close to communities. Developed recreation facilities are designed for large groups and provide opportunities to socialize in both day-use and overnight sites.	**Objective**	NA
	Standard	NA
	Guideline	**(FW-ROS-GDL-10)** To maintain natural vegetation characteristics, vegetation management may be evident but should be in harmony with the scenic character of the area. **(FW-ROS-GDL-11)** To maintain the scenic quality of natural appearing landscapes, scenery should be managed for High, Moderate and Low scenic integrity objectives. Also see FW-SCENERY-GDL-01.
	Summer Suitability	**(FW-ROS-SUIT-21)** Motorized use is suitable on designated roads, trails, and areas in desired Rural ROS settings.

Desired Conditions	Associated Plan Components to Achieve Desired Recreation Opportunity Spectrum Settings	
(FW-ROS-DC-11) Rural ROS settings (Winter) provide staging to adjacent winter settings and opportunities. These areas are accessed from paved and plowed roads and are generally close to population centers. Warming huts or other shelters, sanitation, and I&E (information and education) are commonly present. Parking areas are large and plowed. Entry points and routes are signed and lead snowmobiles to adjacent RN and SPM settings. Non-motorized trails are also typically groomed for skate skiing, and x-country skiing. Rural winter settings provide quick and convenient access for communities and families to celebrate holidays, conduct racing events, walk the dog, or simply get some exercise.		**(FW-ROS-SUIT-22)** Mechanized recreation transport is suitable on designated routes and areas in desired Rural settings. **(FW-ROS-SUIT-23)** Airstrips are suitable in desired Rural ROS settings.
	Winter Suitability	**(FW-ROS-SUIT-24)** In winter, motorized vehicles, other than those designed for over-snow use, are not suitable in desired Rural ROS settings.
(FW-ROS-DC-12) Urban ROS settings (Summer) These highly developed areas are accessed from paved roads and highways. They are typically close to communities. Developed recreation facilities are designed for large groups and provide opportunities to gather and socialize. Recreation sites are often destinations for day use. Visitor centers and interpretive exhibits are often present. Resorts may be present and offer overnight accommodations. **(FW-ROS-DC-13) Urban ROS settings (Winter)** These areas are accessed from plowed roads and are generally close to population centers. Warming huts or other shelters, restrooms, and I&E (information and education) are commonly present. Parking areas are large and plowed. Entry points and routes are signed and lead snowmobiles to adjacent RN and SPM settings. Non-motorized trails are also typically groomed for skate skiing, and x-country skiing. Winter Urban settings may also contain ski resorts with groomed down-hill skiing and snowboarding opportunities.	**Objective**	NA
	Standard	NA
	Guideline	**(FW-ROS-GDL-12)** To maintain urban characteristics, vegetation management should be used to manicure and maintain desired vegetation. **(FW-ROS-GDL-13)** To maintain the scenic quality of these wild and semi-remote landscapes, scenery should be managed for High, Moderate and Low scenic integrity objectives in Urban settings. Also see FW-SCENERY-GDL-01.
	Summer Suitability	**(FW-ROS-SUIT-25)** Highly developed recreation sites and highly structured interpretation, education, and recreation activities are suitable in Urban ROS settings. **(FW-ROS-SUIT-26)** Motorized use is suitable on designated roads, trails, and areas in desired Urban ROS settings. **(FW-ROS-SUIT-27)** Mechanized recreation transport is suitable on designated routes and areas in desired Urban settings. **(FW-ROS-SUIT-28)** Airstrips are suitable in desired Urban ROS settings.
	Winter Suitability	**(FS-ROS-SUIT-29)** Developed recreation sites, including visitor centers, ski areas, and other resorts are open and suitable in desired winter Urban settings. **(FW-ROS-SUIT-30)** In winter, motorized vehicles, other than those designed for over-snow use, are not suitable in desired Urban ROS settings. **(FW-ROS-SUIT-31)** Plowed roads and groomed trails are suitable in desired winter Urban ROS settings. **(FW-ROS-SUIT-32)** Groomed backcountry ski trails are suitable in desired Urban ROS settings.

Recreation Opportunities (REC)

Introduction

Recreation is recognized as a critical resource due to: (1) its contributions to economic and social sustainability, (2) its influence in connecting people to the land, (3) its impact on public understanding of natural and cultural resources, and (4) its role as a catalyst for public stewardship. To address both the challenges and opportunities in recreation management, the FS strives to provide a set of recreation settings, opportunities, and benefits that are sustainable over time. Sustainable recreation, then, is defined as the set of recreation settings and opportunities on the NF that are ecologically, economically, and socially sustainable for present and future generations.

Recreation sites are generally managed on a continuum based on development scale ranging from 1 to 5. Recreation sites with minimum to low or few site modifications are lower on the development scale (1-2) and are considered "dispersed" recreation sites. Recreation sites with higher site modification and infrastructure on the development scales (3-5) are considered "developed" recreation sites. Table 19 explains the development scale and provides a definition of each.

Table 19. Recreation site development scales

Development Scale	Definition	Developed or Dispersed	ROS Setting(s)
1	***Recreation sites with minimum site modification.*** Rustic or rudimentary improvements designed for protection of the site rather than comfort of the users. Use of synthetic materials excluded. Minimum controls are subtle. No obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access not provided or permitted.	Dispersed	Primitive
2	***Recreation sites with little site modification.*** Rustic or rudimentary improvements designed primarily for protection of the site rather than the comfort of the users. Use of synthetic materials avoided. Minimum controls are subtle. Little obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access provided or permitted. Primary access over primitive roads. Interpretive services informal.	Dispersed	Semi-primitive nonmotorized and Semi-primitive motorized
3	***Recreation sites with moderate modification.*** Facilities about equal for protection of natural site and comfort of users. Contemporary/rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls usually provided. Roads may be hard surfaced and trails formalized. Development density about three family units per acre. Primary access may be over high standard roads. Interpretive services informal, but generally direct.	Developed	Roaded Natural
4	***Recreation sites that are heavily modified***. Some facilities designed strictly for comfort and convenience of users. Luxury facilities not provided. Facility design may incorporate synthetic materials. Extensive use of artificial surfacing of roads and trails. Vehicular traffic control usually obvious. Primary access usually over paved roads. Development density about three to five family units per acre. Plant materials usually native. Interpretive services often formal or structured.	Developed	Rural
5	***Recreation sites with a high degree of site modification.*** Facilities mostly designed for comfort and convenience of users and usually include flush toilets; may include showers,	Developed	Urban

Development Scale	Definition	Developed or Dispersed	ROS Setting(s)
	bathhouses, laundry facilities, and electrical hookups. Synthetic materials commonly used. Formal walks or surfaced trails. Regimentation of users is obvious. Access usually by high-speed highways. Development density about five or more family units per acre. Plant materials may be foreign to the environment. Formal interpretive services usually available. Designs formalized and architecture may be contemporary. Mowed lawns and clipped shrubs not unusual.		

Desired Conditions (FW-REC-DC)

01 Recreation opportunities enable visitors to connect with the unique natural environments and historic and cultural occurrences that have taken place throughout the area and instill a culture of stewardship and appreciation.

02 Activities associated with recreational opportunities contribute to jobs and income in the local economy, community stability or growth, and the quality of lifestyles.

03 Developed recreation sites and facilities exist at key locations to accommodate concentrations of recreation use and enhance visitor experiences.

04 Recreation facilities, including trails and dispersed sites, and their use have minimal impacts on resources including at risk species, heritage and cultural sites, water quality, and aquatic species.

05 Recreation rental cabins and rental lookouts provide unique, safe, overnight facilities.

06 Vegetation within developed recreation sites is healthy and resilient and provides for the health and safety of the public. Also see FW-VEGT-DC-04.

07 Dispersed recreation camping sites (development scale 1-2) provide undeveloped camping opportunities while considering cultural and natural resource concerns, activity and recreation user conflicts, and over-use.

Goals (FW-REC-GO)

01 The operation, maintenance, and delivery of recreation facilities and programs, and information, education, and visitor services is supported by partnerships and volunteer programs.

Objectives (FW-REC-OBJ)

01 Rehabilitate 5-10 dispersed recreation sites which have erosion or sanitation issues.

02 Remove or relocate 5-10 existing recreation facilities, including dispersed sites, outside of riparian management zones or undertake other means practicable if they are degrading aquatic or riparian resources.

03 Improve accessibility of facilities or programs at 5-10 developed recreation sites, such as campgrounds, trailheads, cabin rentals, or the Lewis and Clark National Historic Trail Interpretive Center.

Guidelines (FW-REC-GDL)

01 Management of developed recreation facilities should be responsive to environmental changes such as but not limited to changes in water flows, snow levels, snow elevation, fish and wildlife habitats, vegetative conditions, and seasonal recreation use.

02 Vegetation management activities within and adjacent to developed recreation sites should be consistent with the scenic integrity objectives of moderate to high.

03 To maintain quality and quantity of water flows to, within, or between groundwater dependent ecosystems, groundwater use facilities at recreation and administrative sites should not: a) be developed in riparian management zones (unless no alternatives exist); b) measurably lower river flows, lake levels, or flows to wetlands or springs (for example change springs from perennial to intermittent, or eliminate springs altogether); and/or c) discharge pollutants directly to groundwater.

04 Avoid placing new facilities or infrastructure within expected long-term channel migration zone to reduce potential impacts to fishery resources. Where new activities inherently must occur in riparian management zones (for example road stream crossings, boat ramps, docks, and interpretive trails), locate them to minimize impacts on riparian associated resource conditions.

05 Where existing recreation facilities are located within riparian management zones and degrading aquatic or riparian resources, consider removing or relocating such facilities outside of riparian management zones or use other means practicable to reduce effects. Developed recreation facilities that are removed should be rehabilitated to a natural state.

06 To protect resources, new and reconstructed solid and sanitary waste facilities should not be located within inner RMZs.

07 To minimize impacts to wildlife, plantings and seed mixes near roads and developed recreation facilities should not contain plant species that may attract mammals.

08 The development scale of recreation facilities should be consistent with the desired recreation opportunity spectrum settings and with recreation area, river corridor, and/or trail management plans.

09 Dispersed recreation activities should be compatible with desired recreation opportunity spectrum settings.

10 In order to minimize impacts to environmental and cultural resources at dispersed recreation sites (development scale 0-2), infrastructure such as trails, barriers, and minimal signage may be installed.

Suitability (FW-REC-SUIT)

01 Developed recreation sites are not suitable for timber production. However, timber harvest or other vegetation management may occur to address safety concerns or other resource objectives.

02 Developed recreation sites are not suitable for saleable mineral activities, unless the material is used onsite for administrative purposes.

03 Developed recreation sites are not suitable for livestock grazing, with the general exception of recreational pack animals use such as horses, goats, or llamas.

Recreation Special Uses (RSUP)

Introduction

Recreation special use permits provide for occupancy and use of national forests through issuance of permits. Permitted recreation uses provide specific recreational opportunities to the public and deliver economic benefits to rural economics. There are both commercial and noncommercial recreation special use permits. Commercial special use permits include opportunities such as ski resorts, outfitter and guiding services, lodging resorts, and organizational camps. Noncommercial special use permits are used by individuals and single families, such as permits issued for recreation residences.

Desired Conditions (FW-RSUP-DC)

01 Recreation special uses provide unique opportunities, services, and experiences for the recreating public and/or attend to a demonstrated demand for a specific recreation opportunity.

02 Services provided by recreation special uses enhance the recreation experiences of forest visitors, while ensuring public health and safety and protecting natural and cultural resources. Also see FW-CR-DC-03.

03 Recreation special uses contribute to jobs and income in the local economy, community stability or growth, and the quality of lifestyles throughout the forest while remaining compatible with ecological and social capacity thresholds.

04 Historic buildings associated with recreation special use permits reflect identified historic values while providing for functional use by permit holders. Also see FW-CR-DC-02.

05 The vegetation within and nearby recreation special use facilities is healthy and resilient and provides for the health and safety of the public. Also see FW-VEGT-DC-04.

Guidelines (FW-RSUP-GDL)

01 Recreation operations, under (or being considered for) special use authorizations, should mitigate conflicts with other uses and resources. This should include permit measures that address potential conflicts such as, but not limited to: location of the event, timing of the event, party size, and education on the reduction of human-wildlife conflict.

Recreation Access (ACCESS)

Introduction

Recreation access to and through the Forest is facilitated in a number of ways. Most often, main access is provided via state highways, county roads, and through easements with private land holders. Once on forest, direction for recreation access is provided through travel management plans. Roads, motorized trails, nonmotorized trails, rivers, and airstrips provide access for visitors to walk, bike, ride, drive, boat, or fly to their destinations. Recreation through roads and access to the Forest through airstrips generally occurs in motorized recreation opportunity spectrum settings. Trails occur across all recreation opportunity spectrum settings, depending upon the mode of transport utilized for the trail use and whether an area is designated for motorized or nonmotorized uses. Also see Infrastructure, Roads and Trails.

Desired Conditions (FW-ACCESS-DC)

01 Forest system roads and trails provide a variety of motorized, nonmotorized, and mechanized recreation transport access to the Forest, during summer and winter seasons. Routes provide access to key destinations on the forest. Unauthorized recreation routes are not present on the landscape.

02 Airstrips provide opportunities for motorized recreation aviation access.

03 Forest visitors use the designated system of roads, trails, and airstrips to access recreation activities appropriate within identified recreation opportunity setting locations.

04 The facilities associated with forest system roads, trails, trailheads and airstrips enhance the recreation experiences of forest visitors, attend to public health and safety, and protect natural and cultural resources.

Goals (FW-ACCESS-GO)

01 The Forest Service works in cooperation with landowners, other agencies, and partners to provide legal access to public lands.

Guidelines (FW-ACCESS-GDL)

01 To protect natural and cultural resources and enhance the experiences of recreation users, unauthorized recreation routes should be rehabilitated and the landscape restored to natural conditions.

02 Trailheads, for both motorized and nonmotorized recreation uses, and airstrips should be strategically located to provide safe and convenient staging for recreation opportunities.

Scenic Character (SCENERY)

Introduction

Scenic character is defined as a combination of the physical, biological, and cultural images that give an area its scenic identity and sense of place. Scenic character descriptions are described within the Distinctive Roles and Contributions of each GA as well as in appendix J. The Forest's scenery serves as the backdrop to adjacent communities. Historic cabins and fire lookouts and remnants of historic mining districts contribute to the unique scenic character of the GAs of the Forest. Natural disturbance processes such as wildfire, insects, and diseases are dynamic and part of the natural appearing landscape and the described landscape character. Human impacts on the scenic character such as timber removal, prescribed fire, grazing, and special uses such as utility corridors, may or may not create impacts to the natural appearance of the landscape.

Desired scenic integrity objectives are mapped and described for each GA and are located in appendix B. Desired scenic integrity objectives are a measure of the degree to which a landscape is visually perceived to be complete when compared to the inherent scenic character of that area. There are five distinct scenic integrity objectives: 1) very high, 2) high, 3) moderate, 4) low, and 5) very low. The desired scenic integrity objective is the minimum level of integrity to be achieved. Table 20 provides definitions for each of the five scenic integrity objectives.

Table 20. Scenic integrity objectives and definitions

Scenic Integrity Objective	Definition
Very High	Landscapes where the valued landscape character "is" intact with minute if any deviations.
High	Landscapes in which the valued landscape character "appear intact."
Moderate	Landscapes in which the valued landscape character "appears slightly altered".
Low	Landscapes in which the valued landscape character "appears altered."
Very Low	Landscape where the valued landscape character "appears heavily altered."

The locations of the desired scenic integrity objectives have been mapped for each GA and are located by GA in appendix B. The overall scenic integrity objective distribution for the HLC NF is identified in Table 21.

Table 21. Desired scenic integrity objective percentages for the HLC NF

Scenic integrity Objective	Alternative B	Alternative C	Alternative D	Alternative E
Very High	30	30	44	26
High	54	49	41	58
Moderate	8	13	8	8
Low	8	8	8	8
Very Low	0	0	0	0

Desired Conditions (FW-SCENERY-DC)

01 The natural and cultural attributes of the Forest's scenery are described in the scenic character descriptions, see appendix J.

02 Scenery integrity objectives contribute to and establish the sense of place of communities.

03 Scenic integrity objectives are in harmony with and contribute to desired recreation settings and experiences. See FW-ROS-Table 18.

Guidelines (FW-SCENERY-GDL)

01 To achieve or maintain the identified scenic integrity objectives on the forest:

- Vegetative management activities should reflect natural disturbance regimes and processes.
- Desired scenic integrity objectives should be met during management activities to ensure scenery continues to contribute to the sense of place of the Forests' landscapes.
- The construction or reconstruction of FS facilities should harmonize with or complement the character of the landscape settings. Also see FW-ROS-DC-01.

Designated Areas

Introduction

A designated area is defined as an area or feature identified and managed to maintain its unique special character or purpose. Some categories of designated areas may be designated congressionally and some

may be established administratively. Examples of congressionally designated areas include, but are not limited to, designated wilderness areas, wild and scenic rivers, national scenic trails, and wilderness study act areas. Though not yet congressionally designated, recommended wilderness areas and eligible wild and scenic rivers are also included in this section. Examples of administratively designated areas include, but are not limited to, research natural areas, scenic byways, experimental forests, recreation areas, and cultural areas. Typically, these areas are not suitable for timber production, but in some cases timber harvest may be appropriate to achieve desired conditions that address recreational values, public safety, or ecological restoration.

Designated Wilderness (WILD)

Introduction

The Wilderness Act of 1964 set up a system of wilderness areas across the United States in order to assure that an increasing population, accompanied by expanding settlement and growing mechanization, did not occupy and modify all areas within the United States and its possessions. These areas are to be administered for the use and enjoyment of the American people and for the preservation of their wilderness character. In addition to the Wilderness Act, the Forest Service provides direction for the management of wilderness through Forest Service Manual 2320, as well as through wilderness management plans which provide wilderness-specific management direction and guidance.

Three designated wilderness areas are located within the Forest either in part or in whole. These wilderness areas are portions of the Bob Marshall and the Scapegoat wilderness' and the entire Gates of the Mountains wilderness. These designated wilderness areas comprise roughly 565,158 acres, which is approximately 20% of the entire forest. Table 22 displays each of these wilderness areas, the GAs each is located within, and the approximate number of acres of each wilderness within the HLC NF.

Table 22. Designated wilderness areas

Wilderness	Geographic Area	Total Wilderness Acres within the Plan area[1]
Gates of the Mountains	Big Belts	28,440
Bob Marshall	Rocky Mountain Range	352,437
Scapegoat	Upper Blackfoot and Rocky Mountain Range	184,281
Total Acres of Wilderness in the Plan Area		565,158

1Acres include new additional acres from the National Defense Authorization Act of 2015.

Desired Conditions (FW-WILD-DC)

01 The key qualities of wilderness character for the Bob Marshall, Scapegoat, and Gates of the Mountains wilderness areas include: untrammeled and undeveloped landscapes, natural processes, opportunities for solitude or primitive and unconfined recreation, and any other features of value to the wilderness. These key qualities of wilderness character contribute to the public purposes for which the wilderness areas were designated.

02 Natural ecological processes (e.g., plant succession) and disturbances (e.g., fire, insects, and disease) are the primary forces affecting the composition, structure, and pattern of vegetation. Fire plays an increased role as a natural disturbance agent within designated wilderness areas.

03 The large remote areas within the Bob Marshall, Scapegoat, and Gates of the Mountains wilderness areas contribute habitats for species with large home ranges such as wide-ranging carnivores (e.g.,

grizzly bear) and species found primarily in these habitats, such as mountain goat. Habitat conditions in designated wilderness contribute to wildlife movement within and across the Forest.

04 Water bodies and riparian areas provide undisturbed quality habitat for fish, amphibians, and other aquatic-associated species.

05 Summer and winter recreation opportunities and experiences are consistent with the ROS classification of primitive.

06 Facilities, trails, and signage is minimal and constructed of rustic, native, or natural-appearing materials.

07 Designated wilderness areas provide non-motorized and non-mechanized opportunities for exploration, solitude, risk, challenge, and primitive recreation.

08 Opportunities for solitude and primitive recreation experiences are moderate to high on the existing trail system with few human encounters expected. Opportunities for solitude and primitive recreation experiences are very high when traveling cross-country with almost no human encounters expected.

09 Outfitter and guide opportunities provide services that respond to relevant public need.

Goals (FW-WILD-GO)

01 The Forest Service works with Montana Fish, Wildlife, and Parks and USFWS to manage wildlife resources within designated wilderness to protect the wilderness character.

02 The HLC NF work in collaboration with adjacent National Forests to manage the Bob Marshall Wilderness Complex, which includes the Great Bear, Bob Marshall, and Scapegoat wilderness areas.

Guidelines (FW-WILD-GDL)

01 To protect water quality and aquatic habitats, tethering and grazing of recreational livestock should be 100 feet from water sources.

02 Known caves and new cave discoveries should not be signed, disclosed on maps, mentioned in brochures, or have permanent reference marking except when necessary for resource protection.

Suitability (FW-WILD-SUIT)

01 Designated wilderness areas are suitable for existing livestock grazing allotments, but they are not suitable for new or expanded livestock grazing allotments.

02 Designated wilderness areas are not suitable for motorized uses or mechanized means of transport (including bicycles) except as allowed by enabling legislation.

03 Wilderness areas are not suitable for timber production or timber harvest.

04 Wilderness areas are not suitable for commercial use of non-timber forest products (e.g., firewood, mushrooms, huckleberries), but are suitable for personal and agency use.

Recommended Wilderness Areas (RECWILD)

Introduction

In developing a proposed new plan or proposed plan revision, the responsible official is required to "identify and evaluate lands that may be suitable for inclusion in the National Wilderness Preservation System and determine whether to recommend to the Chief of the Forest Service any such lands for wilderness designation" (36 CFR Part 219 and Forest Service Land Management Planning Handbook 1909.12).

The process by which lands are recommended for inclusion in the National Wilderness Preservation System is intended to be transparent and consistent across the NFS. To accomplish this, the process is designed to occur in the following four primary steps (2012 Forest Service Planning Rule and Chapter 70 of the Forest Service Land Management Planning Handbook 1909.12.):

1. The Responsible Official (the Forest Supervisor) shall identify and create an inventory of all lands that may be suitable for inclusion in the National Wilderness Preservation System.
2. The Responsible Official shall evaluate the wilderness characteristics of lands identified in the inventory using a set of criteria based on the Wilderness Act of 1964 and informed by the Eastern Wilderness Act of 1975.
3. The Responsible Official shall consider the areas evaluated and determine which areas to further analyze for recommendation as part of one or more alternatives identified in a National Environmental Policy Act document.
4. The Responsible Official shall decide, based upon the analysis and input from Tribal, State, and local governments and the public, which areas, if any, to recommend for inclusion in the National Wilderness Preservation System.

As required by the broader planning process, each step requires public participation and collaboration, intergovernmental coordination with state and local governments, and tribal consultation. Wilderness recommendations are only preliminary administrative recommendations; Congress has reserved the authority to make final decisions on wilderness designation. Until such time that Congress makes a decision, the plan components below will apply to these areas.

The HLC NF has completed the first two steps: 1) inventory of all lands and 2) evaluation of wilderness characteristics. After the completion of the evaluation, the HLC NF identified 9 parcels as recommended wilderness for the proposed action. Table 23 identifies those parcels, the GAs that they are located within, and the acreage associate with each. For detailed information about the inventory and evaluation steps of this process, including maps and documentation, please see appendix F.

Table 23. Recommended wilderness acres[1] by alternative

Recommended Wilderness Area	Geographic Area	Alt A	Alt B, C	Alt D	Alt E
Big Log	Big Belts	9,150	7,086	7,086	- -
Camas Creek	Big Belts	- -	- -	22,350	- -
Mount Baldy	Big Belts	8,420	8,314	8,314	- -
Wapiti Peak	Castles	- -	- -	30,606	- -
Loco Mountain	Crazies	- -	- -	24,977	- -
Blackfoot Meadows (Electric Peak)	Divide	16,657	18,296	26,900	- -
Colorado Mountain	Divide	- -	- -	14,189	- -

Recommended Wilderness Area	Geographic Area	Alt A	Alt B, C	Alt D	Alt E
Deep Creek	Little Belts	- -	14,490	14,490	- -
Tenderfoot Creek	Little Belts	- -	- -	45,870	- -
Big Horn Thunder	Little Belts	- -	- -	47,107	- -
Middle Fork Judith	Little Belts	- -	- -	62,452	- -
Big Snowies	Snowies	- -	95,299	95,299	- -
Dearborn Silverking	Upper Blackfoot	- -	20,088	20,088	- -
Red Mountain	Upper Blackfoot	- -	1,901	1,901	- -
Arrastra Creek	Upper Blackfoot	- -	8,257	8,257	- -
Nevada Mountain	Upper Blackfoot	- -	39,345	44,702	- -
		34,227	**213,076**	**474,589**	- -

[1]Acres are approximate

Desired Conditions (FW-RECWILD-DC)

01 Recommended wilderness areas preserve opportunities for inclusion in the National Wilderness Preservation System. The ecological and social characteristics that provided the basis for each area's suitability for wilderness recommendation are protected and maintained.

02 Recommended wilderness areas are characterized by a natural environment where ecological processes such as natural succession, wildfire, avalanches, insects and disease function as the primary forces affecting the environment.

03 Recommended wilderness areas provide outstanding opportunities for solitude or primitive and unconfined recreation.

Suitability (FW-RECWILD-SUIT)

01 *Alternatives B and D:* Motorized and mechanized means of transport are not suitable in recommended wilderness areas. Exceptions may be made for authorized permitted uses, valid existing uses, or in emergencies involving public health and safety that are determined on a case by case basis.
Alternatives A and C: Motorized and mechanized means of transport are suitable in recommended wilderness areas where designated by travel plans.

02 Recommended wilderness areas are suitable for restoration activities (such as management ignited fires, active weed management) to protect and/or enhance the wilderness characteristics of these areas.

03 *Alternatives B and D:* Motorized and mechanized equipment (such as chain saws to clear trails) is not suitable for accomplishing restoration activities and/or administrative work.
Alternatives A and C: Motorized and mechanized equipment (such as chain saws to clear trails) is suitable for accomplishing restoration activities and/or administrative work.

04 Recommended wilderness areas are not suitable for timber production or timber harvest.

05 Recommended wilderness areas are not suitable for new commercial communication sites and new utility corridors.

06 Recommended wilderness areas are not suitable for road construction or reconstruction.

07 Recommended wilderness areas are not suitable for new developed recreation sites and/or facilities.

08 Recommended wilderness areas are suitable for existing livestock grazing allotments, but they are not suitable for new or expanded livestock grazing allotments.

Wilderness Study Areas (WSA)

Introduction

On November 1, 1977, Congress passed the Montana Wilderness Study Act. This Act required the Secretary of Agriculture to study and make recommendations to Congress on the "suitability for preservation as wilderness" of nine separate areas within the National Forests in Montana. The Middle Fork Judith and the Big Snowies are two of the areas identified in this legislation that lie within the HLC NF. Wilderness study areas are to be administered by the Secretary of Agriculture "so as to maintain their presently existing wilderness character and potential for inclusion in the National Wilderness Preservation System".

Until such time as Congress makes a final decision on wilderness or nonwilderness designation, these areas will be managed per the plan direction identified for Wilderness Study Areas in this section. If Congress acts to designate one or both areas as wilderness, the Wilderness Study Area direction would no longer apply and Designated Wilderness plan direction would apply. If Congress acts to release one or both areas from the Act, the Wilderness Study Area direction will no longer apply and management of the released areas would continue under forestwide, and applicable geographic area and designated area plan direction. See Table 24 for a description of the primary management direction for these areas should Congress act to release these areas without designating as wilderness.

Table 24. Montana wilderness study areas

Wilderness Study Area	GA	Acres[1]	Primary Management Direction* if Congress releases WSAs		
			Alternatives B and C	Alternative D	Alternative E
Middle Fork Judith	Little Belts	82,127	IRA	RWA	IRA
Big Snowies	Snowies	87,968	RWA	RWA	IRA
Total Acres		**170,095**			

1Acres are approximate

*additional forestwide and geographic area direction would apply

Desired Conditions (FW-WSA-DC)

01 Wilderness study areas are characterized by a natural environment where ecological processes such as natural succession, wildfire, avalanches, insects and disease function as the primary forces affecting the environment.

02 Wilderness study areas primarily offer opportunities for primitive recreation, although uses established and allowed prior to the enabling legislation are retained if they maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977.

Suitability (FW-WSA-SUIT)

01 Wilderness study areas are not suitable for timber production nor timber harvest.

02 Wilderness study areas are not suitable for new commercial communication sites or new utility corridors.

03 Wilderness study areas are suitable for restoration activities (such as management ignited fires, active weed management) to protect and/or enhance the wilderness characteristics of these areas.

04 Motorized and mechanized equipment (such as chain saws to clear trails) is suitable for accomplishing restoration activities and/or administrative work.

05 New road construction or reconstruction is not suitable in wilderness study areas. However, reconstruction or rerouting existing roads to eliminate impacts to natural or cultural resources is suitable provided abandoned routes are fully rehabilitated.

06 Wilderness study areas are not suitable for new developed recreation facilities.

07 Wilderness study areas are suitable for existing livestock grazing allotments, but they are not suitable for new or expanded livestock grazing allotments.

Inventoried Roadless Areas (IRA)

Introduction

The 2001 Roadless Area Conservation Rule (Roadless Rule) established prohibitions and permissions on road construction, road reconstruction, and timber harvesting on 58.5 million acres of NFS lands across the United States. This includes approximately 1.5 million acres of inventoried roadless areas on the HLC NF. The intent of the Roadless Rule is to provide lasting protection for inventoried roadless areas within the NFS in the context of multiple-use management. Specifically, the Roadless Rule prohibits activities that have the greatest likelihood of altering and fragmenting landscapes, resulting in immediate, long-term loss of roadless area values and characteristics, eliminates permanent road construction and reconstruction, thereby reducing fiscal demands and responsibilities, and reduces controversy over management of roadless areas. The unique contribution of inventoried roadless areas is important in maintaining habitats, natural processes, and remote recreation opportunities in the regional and national network of protected lands. Management activities shall follow direction found in the 2001 Roadless Rule (36 CFR 294 Subpart B, published at 66 Fed Reg. 3244-3273).

Inventoried roadless areas are identified in a set of inventoried roadless area maps, contained in the Forest Service Roadless Area Conservation Rule, Volume 2, dated November 2000, or any subsequent update or revisions of those maps (36 CFR 294 Subpart B, published at 66 Fed Reg. 3244-3273). They are held at the national headquarters office of the Forest Service.

Currently, there are approximately 1,499,181 acres of lands within inventoried roadless areas on the HLC NF. Maps of the inventoried roadless areas can be found in appendix B. These inventoried roadless areas constitute approximately 50 percent of the entire land administered by the Forest. Table 25 identifies each inventoried roadless area, its location within the planning area, and the number of acres of the inventoried roadless area.

Table 25. Inventoried roadless areas within the plan area

Inventoried Roadless Area	GA	Acres[1]
Big Log	Big Belts	8,948
Camas Creek	Big Belts	29,168
Cayuse Mountain	Big Belts	20,131
Devils Tower	Big Belts	7,139
Ellis Canyon	Big Belts	5,574

Inventoried Roadless Area	GA	Acres[1]
Grassy Mountain	Big Belts	6,734
Hellgate Gulch	Big Belts	16,809
Holter	Big Belts	1,964
Irish Gulch	Big Belts	7,315
Middleman Mtn./Hedges Mtn.	Big Belts	32,282
Mount Baldy	Big Belts	16,349
Total Acres in the Big Belts GA		**152,413**
Castle Mountains	Castles	29,386
Total Acres in the Castles GA		**29,386**
Box Canyon	Crazies	12,574
Crazy Mountains	Crazies	24,924
Total Acres in the Crazies GA		**37,498**
Electric Peak[3]	Divide	27,858
Jericho Mountain	Divide	8,440
Lazyman Gulch	Divide	11,608
Nevada Mountain[2]	Divide	16,085
Total Acres in the Divide GA		**63,991**
Elkhorn Wilderness Study Area Plus Additions	Elkhorns	75,415
Total Acres in the Elkhorns GA		**75,415**
Highwood Baldy	Highwoods	15,293
Highwoods	Highwoods	24,360
Total Acres in the Highwoods GA		**39,653**
Big Baldy	Little Belts	43,102
Bluff Mountain	Little Belts	38,033
Calf Creek	Little Belts	10,100
Eagle Park	Little Belts	5,908
Granite Mountain	Little Belts	10,330
Middle Fork Judith	Little Belts	9,707
Middle Fork Judith WSA	Little Belts	81,069
Mount High	Little Belts	33,461
North Fork Smith	Little Belts	8,438
Paine Gulch	Little Belts	7,869
Pilgrim Creek	Little Belts	44,572
Sawmill Creek	Little Belts	11,578
Spring Creek	Little Belts	17,827
Tenderfoot-Deep Creek	Little Belts	85,546
Tollgate-Sheep	Little Belts	24,026
TW Mountain	Little Belts	8,381

Inventoried Roadless Area	GA	Acres[1]
Total Acres in the Little Belts GA		**439,947**
Bear-Marshall-Scapegoat-Swan[2]	Rocky Mountain Range	395,248
Sawtooth	Rocky Mountain Range	15,687
Total Acres in the Rocky Mountain Range GA		**359,596**
Big Snowies	Snowies	9,254
Big Snowy Mountains WSA	Snowies	87,965
Total Acres in the Snowies GA		**97,219**
Anaconda Hill	Upper Blackfoot	18,536
Bear-Marshall-Scapegoat-Swan[2]	Upper Blackfoot	51,339
Crater Mountain	Upper Blackfoot	9,261
Lincoln Gulch	Upper Blackfoot	8,247
Nevada Mountain[2]	Upper Blackfoot	34,027
Ogden Mountain	Upper Blackfoot	12,144
Silver King-Falls Creek	Upper Blackfoot	6,808
Specimen Creek	Upper Blackfoot	12,362
Total Acres in the Upper Blackfoot GA		**152,724**
Total IRA Acres in the HLC NF Planning Area		**1,499,181**

[1]All acreages are approximate
[2]Located in more than one geographic area; acres reflected are what are in that particular geographic area.

Desired Conditions (FW-IRA-DC)

01 Inventoried roadless areas provide large, undisturbed and unfragmented areas of land. These large land areas sustain high quality or undisturbed soil, water, and air and a diversity of plant and animal communities. They also provide for secure habitats for a variety of fish and wildlife species that are dependent upon large undisturbed, unfragmented areas of land.

02 Within inventoried roadless areas, natural, ecological processes and disturbances (such as wildfire, insects, and disease) are the primary forces affecting the composition, structure, and pattern of vegetation. Inventoried roadless areas contribute to reference landscapes for future study and understanding of natural ecological processes.

03 Landscapes in inventoried roadless areas are naturally appearing with high scenic quality.

04 Inventoried roadless areas provide remote primitive and semi-primitive recreation opportunities in a natural settings.

05 Inventoried roadless areas protect sources of public drinking water, traditional cultural properties and sacred sites, and locally identified unique characteristics, where they exist.

Guidelines (FW-IRA-GDL)

01 To protect and enhance the scenic quality of inventoried roadless areas, management activities should be consistent with the scenic integrity objective of high.

Suitability (FW-IRA-SUIT)

01 IRAs are unsuitable for timber production, however, timber harvest is suitable outside of wilderness study areas and recommended wilderness areas for other resource benefits consistent with the 2001 Roadless Area Conservation Rule. Also see appendix C.

Eligible Wild and Scenic Rivers (WSR)

Introduction

Congress passed the Wild and Scenic Rivers Act in 1968 for the purpose of preserving rivers with outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values in a free-flowing condition for the enjoyment of present and future generations. This act is recognized for safeguarding the special character of these rivers while also allowing for their appropriate use and development. Eligible wild, scenic, or recreational rivers retain their free-flowing status, their preliminary classification, and the outstanding remarkable values for which they have been identified. Eligible river segments are classified as wild, scenic, or recreational.

In 2015, under the direction of the 2012 Planning Rule (36 CFR Part 219), a wild and scenic rivers eligibility study was conducted for the HLC NF. The 2015 eligibility study reviewed all named and free flowing streams/rivers on a 7.5 minute quad within the HLC NF and determined whether these streams/rivers had any outstandingly remarkable values. After the completion of the study, the HLC NF identified 45 rivers as eligible for consideration as wild, scenic, or recreational rivers under the Wild and Scenic Rivers Act. Table 26 identifies those rivers, the GA they are located within, and the mileage associate with each river. For detailed information about the wild and scenic rivers eligibility study, including maps and documentation, please see appendix G.

The designation of eligible wild and scenic rivers pertains only to federally owned lands. Rivers and segments of rivers that pass through private lands were not considered in the eligibility study. Wild and Scenic River eligibility is only a preliminary administrative recommendation; Congress has reserved the authority to make final decisions on wild and scenic river designation. Until such time that Congress makes a decision, the plan components below will apply to these areas. FSH 1909.12 Chapter 80 provides guidance on the interim protection of eligible WSR.

Table 26. Potential eligible wild and scenic rivers by geographic area

Potential River Name	Segment Description	Miles	Potential Classification	Outstanding Remarkable Values	Past Eligibility Notes
Big Belts Geographic Area					
Beaver Creek	Segment 1: From mouth to Bridge Creek, west of Nelson Segment 2: From Sheep Gulch to Pike Creek	5.5 3.7	Recreational Recreational	Recreation Geology Fish Cultural	Eligible in 1989 for Fish.
Whites Gulch	From FS boundary west to private boundary.	3.0	Recreational	Fish	
Missouri River	Hauser Dam to Cochran Gulch	2.2	Recreational	Recreation (Fishing) Geology Wildlife	Eligible in 1989 for Rec, Geology, Fish, Wildlife, and Natural.

Potential River Name	Segment Description	Miles	Potential Classification	Outstanding Remarkable Values	Past Eligibility Notes
Ray Creek	From FS boundary to headwaters.	3.4	Scenic	Fish	
Divide Geographic Area					
Little Blackfoot River	Segment 1: From mouth to private land boundary near Charter Oaks. Segment 2: From private land boundary south of Sawmill Creek to private land boundary north of Conner's Gulch. Segment 3: From private land boundary north of Kading Campground to the headwaters.	0.8 5.0 9.0	Recreational Recreational Wild	Fish Cultural	Eligible in 1989 for Fish.
High Ore Creek	From FS boundary to headwaters	1.1	Scenic	Fish	
Kady Gulch	From FS boundary to mining claim boundary	1.1	Recreational	Fish	
South Fork Quartz	From mouth to mining claim boundary	2.2	Recreational	Fish	
Skelly Gulch	From FS boundary to headwaters	2.5	Recreational	Fish	
Elkhorns Geographic Area					
Staubach Creek	From FS boundary to headwaters	2.4	Scenic	Fish	
Highwoods Geographic Area					
North Fork Highwood Creek	From fish barrier to headwaters	3.4	Scenic	Fish	
Big Coulee Creek	From natural cascade fish barrier to upper tributary fork	2.1	Wild	Fish	
Cottonwood Creek	From FS boundary to headwaters	2.5	Scenic	Fish	
North Fork Little Belt Creek	From FS boundary to headwaters	2.1	Wild	Fish	
Little Belts Geographic Area					
Pilgrim Creek	From cascade fish barrier to headwaters	10.7	Wild	Fish	
Middle Fork Judith River	From FS boundary to Big Arch Coulee	4.8	Recreational	Cultural	Eligible in 1989 for Cultural.
South Fork Judith River	Segment 1: From Bower Creek to Dry Pole Creek Segment 2: From Bluff Creek to Cabin Creek Segment 3: From Cabin Creek to headwaters	3.6 1.3 10.0	Recreational Scenic Wild	Fish Cultural	

Potential River Name	Segment Description	Miles	Potential Classification	Outstanding Remarkable Values	Past Eligibility Notes
Smith River *(FS lands only)*	The Smith River is comprised of 14 small segments of Forest Service lands interspersed with private lands. Only Forest Service lands are considered for eligibility. To view individual segments, see detail maps located in the summary.	17.3	Scenic	Scenic Recreation Geology Wildlife Cultural	Eligible in 1989 for Rec, Scenery, Geology, Fish, Wildlife and Cultural.
Tenderfoot Creek	From FS boundary to Iron Mines Creek	21.5	Scenic	Recreation Fish	Eligible in 1989 for Fish.
Rocky Mountain Range Geographic Area					
South Fork Two Medicine River	Segment 1: From FS boundary to Box Creek Segment 2: From private land boundary to headwaters	3.4 9.5	Wild Wild	Scenery Cultural	
Badger Creek	From FS boundary to confluence with North and South Badger Creeks	7.2	Wild	Cultural Scenery	
North Badger Creek	From confluence with main Badger and South Badger Creeks to headwaters	10.4	Wild	Fish Cultural	Eligible in 1989 for Fish.
South Badger Creek	From confluence with main Badger and North Badger Creek to headwaters	10.9	Wild	Cultural	
Lee Creek	From mouth to headwaters	4.6	Wild	Fish	
Badger Cabin Creek	From mouth to headwaters	3.2	Wild	Fish	
Red Poacher Creek	From confluence with North Badger Creek to headwaters	3.1	Wild	Fish	
North Fork Birch Creek	From FS boundary to headwaters	7.8	Wild	Cultural Scenery	Eligible in 1989 for Scenery and Geology.
Middle Fork Birch Creek	From confluence to the headwaters	5.2	Wild	Scenery Cultural	
South Fork Birch Creek	From FS boundary to headwaters	9.8	Wild	Scenery Recreation Fish Wildlife Cultural	
North Fork Deep Creek	From FS boundary to headwaters	5.3	Wild	Scenery	

Potential River Name	Segment Description	Miles	Potential Classification	Outstanding Remarkable Values	Past Eligibility Notes
North Fork Teton River	Segment 1: From FS Boundary to road crossing above Elko Campground (bottom of the box canyon) Segment 2: from road crossing to West Fork Campground (through the box canyon) Segment 3: from West Fork Campground to headwaters	5.5 4.1 7.6	Recreation Wild Scenic	Recreation Scenery Fish	
Middle Fork North Fork Teton River	From the confluence with North Fork Teton River to headwaters.	6.8	Scenic	Fish	
Waldron Creek	From the confluence with North Fork Teton River to headwaters	4.3	Recreational	Fish	
North Fork Sun River	From wilderness boundary to the headwaters	26.2	Wild	Scenery Recreation	
South Fork Sun River	From wilderness boundary to headwaters	25.4	Wild	Recreation Wildlife	
West Fork South Fork Sun River	From mouth to junction with Ahorn Creek	8.5	Wild	Recreation Wildlife	
Green Fork Straight Creek	From mouth to headwaters	5.9	Wild	Scenery Geology	Eligible in 1989 for Scenery and Geology.
Wood Creek	From below the dam on Wood Lake to the confluence with Straight Creek	7.1	Recreational	Wildlife	
Dearborn River	From FS boundary to Whitetail Creek	6.5	Wild	Scenery	Eligible in 1989 for Scenery.
Snowies Geographic Area					
Swimming Woman Creek	From FS boundary to headwaters	3.9	Scenic	Scenery Geology	
East Fork Big Spring Creek	From south end of Section 33 to headwaters	5.3	Wild	Fish	
Upper Blackfoot Geographic Area					
Alice Creek	From FS boundary to headwaters	7.0	Recreational	Cultural	
Copper Creek	From FS boundary to headwaters	14.0	Recreational	Fish	Eligible in 1989 for Fish.
Landers Fork	From FS boundary to headwaters	18.8	Wild	Fish	
Snowbank Creek	From confluence with Copper Creek to headwaters	4.4	Scenic	Fish	
Total Miles of eligible sections of wild and scenic rivers					**363.4 miles**

Guidelines (FW-WSR-GDL)

01 To protect the eligibility of potential wild and scenic rivers, interim protection measures should be implemented within ¼ mile of either side of eligible river segments. These interim protective measures apply to the future use and management along the eligible river until they are changed through an act of Congress or unless a river is determined not suitable for designation through a suitability study. Interim protective measures generally extend one-quarter mile on both sides of the river to protect river-related values.

Table 27 describes interim protection measures applied to management of eligible wild, scenic, or recreational rivers.

Table 27. Interim protection measures for eligible wild, scenic, or recreational rivers

Project/Activity	Interim Protective Measures		
	WILD	**SCENIC**	**RECREATIONAL**
Water Resource Projects: Dams Diversions Flood control Activities that affect free-flow	Wild, Scenic, and Recreational: Water resource projects on eligible rivers should be analyzed as to their effect on a rivers free-flow, water quality, and identified outstanding remarkable values, with adverse effects to be prevented to the extent of the existing agency authority (such as special use authority).		
Hydroelectric Power Facilities	Wild, Scenic, and Recreational: FS-identified eligible rivers should be protected pending a suitability determination.		
Minerals: Locatable	Wild, Scenic, and Recreational: Subject to valid existing rights, existing or new mining activity on an identified eligible river are subject to regulations in 36 Code of Federal Regulations Part 228, subpart A and should be conducted in a manner that minimizes surface disturbance, sedimentation, pollution, and visual impairment.		
Leasable	Leases, licenses, and permits under mineral leasing laws should include conditions necessary to protect the values of the river corridor that make it eligible for inclusion in the National System.		
Minerals Saleable	Wild Rivers Disposal of saleable mineral material is prohibited.	Scenic and Recreational Disposal of saleable mineral material is allowed if the values of the river corridor that make it eligible for inclusion in the National System are protected.	
Transportation System	Roads and railroads are generally not compatible. Prevent actions related to the road system that would preclude protection of the river as wild. Do not plan roads outside of the corridor that would adversely affect the wild classification. New trail construction should generally be designed for nonmotorized users.	Roads and railroads may parallel the river for short segments or bridge the river if such construction protects the river values, including the free flowing character. Bridge crossings and access points are allowed. New trail construction and airfield development should be compatible and fully protect river outstanding remarkable values.	Roads and railroads are permitted to parallel the river if such construction fully protects river outstanding remarkable values, including the free flowing character. Bridge crossings and access points are allowed. New trail construction and airfield development should be compatible and fully protect river outstanding remarkable values.

Project/Activity	Interim Protective Measures		
	WILD	**SCENIC**	**RECREATIONAL**
	New airfields may not be developed.		
Utility Proposals	Wild, Scenic, and Recreational: New transmission lines such as gas lines, water lines, and similar linear features are not compatible with eligible wild and scenic rivers and are discouraged. Any portion of a utility proposal that has the potential to affect the river's free-flowing character must be evaluated as a water resources project.		
Recreation Developments	Major public use areas such as large campgrounds, interpretive centers, or administrative headquarters must be located outside of the river corridor (typically 1/4 mile either side of river). Minimum facilities such as toiles and refuse containers may be provided to protect and enhance water quality and other river values. Facilities must be located and designed to harmonize with the primitive character, must protect river values, and must be screened from view to the extent possible.	Public facilities, such as moderate sized campgrounds, simple sanitation and convenience facilities, public information centers, administration sites, and river access developments are allowed. Facilities must be located and designed to harmonize with the natural and cultural settings, must protect river values, including water quality, and must be screened from view to the extent possible.	Recreation, administration, and river access facilities may be located in close proximity to the river. However, recreational classification does not require recreation development. Facilities must be located and designed to harmonize with the natural and cultural settings, must protect river values, including water quality, and must be screened from view to the extent possible.
Motorized Travel	Wild Motorized travel on land or water may be permitted but is generally not compatible. Where motorized travel is deemed necessary, uses should be carefully defined and impacts mitigated.	Scenic and Recreational: Motorized travel on land or water may be permitted, prohibited, or restricted to protect river outstanding remarkable values.	
Wildlife and Fish Projects	Construction of minor structures and vegetation management to protect and enhance wildlife and fish habitat should harmonize with the area's primitive character and protect river outstanding remarkable values. Proposed wildlife or fisheries restoration or enhancement projects that have potential to	Construction of structures and vegetation management designed to protect and enhance wildlife and fish habitat should harmonize with the area's largely undeveloped character and protect river outstanding remarkable values. Any portion of a wildlife or fisheries restoration or enhancement projects that	Construction of structures and vegetation management designed to protect and enhance wildlife and fish habitat should fully protect river outstanding remarkable values. Any portion of a wildlife or fisheries restoration or enhancement projects that have potential to affect the rivers free-flowing character must be

Project/Activity	Interim Protective Measures		
	WILD	**SCENIC**	**RECREATIONAL**
	affect the rivers free-flowing character must be evaluated as a water resources project.	have potential to affect the rivers free-flowing character must be evaluated as a water resources project.	evaluated as a water resources project.
Vegetation Management	Wild Cutting of trees and other vegetation is not permitted except when needed in association with a primitive recreation experience, to protect users, or to protect identified outstanding remarkable values.	Scenic and Recreational: A range of vegetation management and timber harvest practices are allowed, if these practices are designed to protect users, or protect, restore, or enhance the river environment, including the long-term scenic character.	
Domestic Livestock Grazing	Domestic livestock grazing should be managed to protect outstanding remarkable values. Existing structures may be maintained. New facilities may be developed so long as they maintain the outstanding remarkable values and the area's primitive character.	Domestic livestock grazing should be managed to protect outstanding remarkable values. Existing structures may be maintained. New facilities may be developed so long as they maintain the outstanding remarkable values and the area's largely undeveloped character.	Domestic livestock grazing should be managed to protect outstanding remarkable values. Existing structures may be maintained. New facilities may be developed so long as they maintain the outstanding remarkable values for which the river was found eligible.

National Recreation Trails (NRT)

Introduction

National recreation trails are a network of scenic, historic, and recreational trails created by the National Trails System Act (Public Law 90-543) which was signed into law by President Lyndon B. Johnson on October 2, 1968. The purpose of the act was "to promote the preservation of, public access to, travel within, and enjoyment and appreciation of the open-air, outdoor areas and historic resources of the Nation." This act authorized three types of trails: 1) National Scenic Trails, 2) National Recreation Trails, and 3) connecting-and-side trails. In 1978 National Historic Trails were also added to the national trail system.

While national scenic trails and national historic trails may only be designated by Congress, national recreation trails may be designated by the Secretary of Interior or the Secretary of Agriculture to recognize exemplary trails of local and regional significance in response to an application from the trails managing agency or organization. Through designation, these trails are recognized as part of America's National Trail System. These trails provide for outdoor recreation needs; promote enjoyment, appreciation, and preservation of open-air, outdoor areas and historic resources; and encourage public access and citizen involvement.

The national recreation trails on the HLC NF are generally single track, linear features that pass through a great variety of physical features ranging from natural-appearing settings to locations where developments are noticeable. Table 28 displays the national recreation trails on the HLC NF.

Table 28. National recreation trails

Geographic Area	Trail Name	Trail Number	Miles[1]
Big Belts	Hanging Valley	247	6
Divide	Mt. Helena	373	6
Little Belts	North Fork Deep Creek	303	6
	Ming Coulee	307	3
	South Fork Deep Creek	316	5
	Blankenbaker	320	4
	Deep Creek Ridge	338	6
	Monument Ridge	339	2
Snowies	Crystal Lake	404	2

[1]Miles are approximate and rounded to the nearest mile

Desired Conditions (FW-NRT-DC)

01 National recreation trails enhance and/or protect the nature and purposes for which the trails were established. National recreation trails outside of wilderness are clearly marked and identified with the national recreation or scenic trail symbol, especially at trail termini and junctions with side trails.

02 Access to national recreation trails allows for public uses, such as interpretation and education, in a manner that does not impair the feature(s) or values for which the individual trail was established.

Guidelines (FW-NRT-GDL)

01 Management activities along national recreation trails should maintain or enhance the valued attributes for which the trails were established.

Continental Divide National Scenic Trail (CDNST)

The Continental Divide National Scenic Trail was designated by Congress in 1978. This 3,100 mile long trail follows the Continental Divide and traverses nationally significant scenic terrain and areas rich in the heritage and life of the Rocky Mountain west. In entirety, the trail passes through portions of Montana, Idaho, Wyoming, Colorado, and New Mexico and is administered by the FS in cooperation with the National Park Service, Bureau of Land Management, and Tribal, State and local governments, and numerous partner groups. Management for the Continental Divide National Scenic Trail is outlined in the latest Continental Divide National Scenic Trail Comprehensive Management Plan.

Approximately 273 miles of the Continental Divide National Scenic Trail are located on the HLC NF. Approximately 65 miles of the trail is located in the Upper Blackfoot GA, approximately 68 miles is located within the Divide GA, and approximately 140 miles is located within the Rocky Mountain Range GA. See Table 29 for more information.

Table 29. Continental Divide National Scenic Trail

Geographic Area	Trail Name	Trail #	Miles[1]
Divide	Continental Divide	337	68
Rocky Mountain Range	Two-Med-Heart Butte	101	4

Geographic Area	Trail Name	Trail #	Miles[1]
	North Fork Badger	103	1
	North Fork Sun	110	4
	Rock Creek	111	12
	Open Fork	116	6
	North Fork Red Shale	130	7
	Summit Campground Cutoff	133	2
	Elk Calf Mountain	137	10
	Lee Creek-Sidney Creek	141	5
	Kip Creek	142	3
	Elbow Creek	145	4
	Muskrat Creek	147	7
	North Wall	174	11
	Wall Trail	175	6
	My Lake	194	4
	South Fork Sun	202	13
	West Fork Sun	203	16
	Dearborn River	206	9
	Blacktail-Landers Fork	207	3
	Straight Creek	212	10
	Elbow Pass	248	3
Upper Blackfoot	Continental Divide National Scenic Trail	440	65

[1]Miles are approximate and rounded to the nearest tenth

Desired Conditions (FW-CDNST-DC)

01 The Continental Divide National Scenic Trail is a well-defined trail that provides for high-quality, primitive and/or semi-primitive hiking and horseback riding opportunities, and other compatible nonmotorized trail activities, in a highly scenic setting along the Continental Divide. The significant scenic, natural, historic, and cultural resources along the trail's corridor are conserved. Where possible, the trail provides visitors with expansive views of the natural landscapes along the Continental Divide.

02 View sheds from the Continental Divide National Scenic Trail have high scenic values. The foreground of the trail (up to 0.5 mile on either side) is naturally-appearing, and generally appears unaltered by human activities. The potential to view wildlife is high and evidence of ecological processes such as fire, insects, and diseases exist. In planning activities outside the foreground, managers consider the mid ground and background and the effects on scenic integrity and trail experience given the seen area from the trail segments.

03 The Continental Divide National Scenic Trail corridor's setting is consistent with or complements a primitive or semi-primitive nonmotorized setting. The trail may intermittently pass through more developed settings in order to provide for a continuous route.

04 The Continental Divide National Scenic Trail is accessible from access points that provide various opportunities to select the type of terrain, scenery, and trail length (ranging from long-distance to day use) that best provide for the compatible outdoor recreation experiences being sought. Wild, remote, backcountry segments of the route provide opportunities for solitude, immersion in natural

landscapes, and primitive outdoor recreation. Front-country and more easily accessible trail segments complement local community interests and needs and help contribute to their sense of place.

05 Use conflicts among Continental Divide National Scenic Trail users are infrequent.

06 The Continental Divide National Scenic Trail is well maintained, signed, and passable. Alternate routes provide access to the trail in the case of temporary closures resulting from natural events, such as fire or flood, or land management activities.

07 Trailside interpretation at key locations and visitor information enhance visitor appreciation of the outdoors and increase awareness of the cultural and historical importance of the lands along the Continental Divide.

Goals (FW-CDNST-GO)

01 Active partnerships and cooperative relationships are emphasized to engage a wide range of people, partner organizations, communities, federal, tribal, and state land and wildlife managers in the conservation of valuable natural, wild land, scenic, historic, and cultural resources along the Continental Divide.

Objectives (FW-CDNST-OBJ)

01 Within the life of the plan, maintain the entire length of the Continental Divide National Scenic Trail on the HLC NF and reroute selected portions to: improve scenic viewing opportunities, reconstruct trail to standard, and/or provide for a nonmotorized experience.

Standards (FW-CDNST-STD)

01 No surface occupancy for oil and gas or geothermal energy leasing activities shall occur within the Continental Divide National Scenic Trail corridor.

02 No common variety mineral extraction shall occur within the Continental Divide National Scenic Trail corridor.

03 New motorized events shall not be permitted on the Continental Divide National Scenic Trail. Exceptions may be allowed along sections of the trail where motorized travel is currently allowed.

Guidelines (FW-CDNST-GDL)

01 To retain or promote the character for which the trail was designated, new or relocated trail segments should be located primarily within settings consistent with or complementing primitive or semi-primitive nonmotorized recreation opportunity spectrum classes. Road and motorized trail crossings and other signs of modern development should be avoided to the extent practicable.

02 To protect or enhance the scenic qualities of the Continental Divide National Scenic Trail, management activities should be consistent with, or make progress toward achieving scenic integrity objectives of high or very high within the foreground of the trail (up to 0.5 mile either side).

03 If forest health projects result in short-term impacts to the scenic integrity of the trail, mitigation measures should be included, such as screening, feathering, and other scenery management techniques to minimize visual impacts within and adjacent to the trail corridor (within visible foreground of the Continental Divide National Scenic Trail at a minimum).

04 In order to promote a nonmotorized setting, the Continental Divide National Scenic Trail should not be permanently relocated onto routes open to motor vehicle use.

05 The minimum trail facilities necessary to accommodate the amount and types of use anticipated on any given segment should be provided in order to protect resource values and for health and safety, not for the purpose of promoting user comfort. The purpose is to preserve or promote a naturally appearing setting.

06 To protect the Continental Divide National Scenic Trail's scenic values, special use authorizations for new communication sites, utility corridors, and renewable energy sites should not be allowed within the seen area of the visible foreground (up to 0.5 mile) and middle ground (up to four miles) view sheds. Exceptions may be allowed where needed for safety of the public or employees associated with maintenance, management, or use of those sites.

07 Linear utilities and rights-of-way should be limited to a single crossing of the trail unless additional crossings are documented as the only prudent and feasible alternative.

08 New temporary and/or permanent road or motorized trail construction across or adjacent to the Continental Divide National Scenic Trail should be avoided unless needed for resource protection, access to private lands, or to protect public health and safety. The purpose is to provide for a naturally appearing setting and to avoid visual, aural, and resource impacts from motorized use.

09 Using the Continental Divide National Scenic Trail for landings or as a temporary road for any purpose should not be allowed unless no other safe route is available for the implementation of the project. Hauling or skidding along the Continental Divide National Scenic Trail itself should be allowed only: 1) where the Continental Divide National Scenic Trail is currently located on an open road or to address hazard tree removal, and 2) no other haul route or skid trail options are available. Design criteria should be used to minimize impacts to the trail infrastructure, and any necessary post-activity trail restoration should be a priority for the project's rehabilitation plan. The purpose is to provide for a naturally appearing setting and to avoid visual, aural, and resource impacts.

10 Unplanned fires in the foreground (up to 0.5 mile) of the Continental Divide National Scenic Trail should be managed using minimum impact suppression tactics or other tactics appropriate for the protection of Continental Divide National Scenic Trail values, if they can safely be implemented at the discretion of the incident commander. Heavy equipment line construction within the Continental Divide National Scenic Trail corridor should not be allowed unless necessary for protection of life and property.

Lewis and Clark National Historic Trail (LCNHT)

In 1968, the Lewis and Clark Trail was made a National Historic Trail through the National Trails System Act. This act specified that "national historic trails shall have as their purpose the identification and protection of the historic route and its historic remnants and artifacts for public use and enjoyment" (National Trails System Act, 1978). The purpose of the Lewis and Clark National Historic Trail is to commemorate the 1804 to 1806 Lewis and Clark Expedition through the identification; protection; interpretation; public use and enjoyment; and preservation of historic, cultural, and natural resources associated with the expedition and its place in United States and tribal history.

The entire route is 3,700 miles long and extends from Wood River, Illinois, to the mouth of the Columbia River in Oregon. The overall trail is administered by the National Park Service, but individual sites along the trail are managed by different federal, state, local, tribal, and private organizations and agencies. This historic trail is not a traditional hiking-only trail and can also be traveled by car, boat, and/or horseback.

Many interpretive centers, signs, and recreation facilities are located along the entire length of the trail. Within the planning area, the Lewis and Clark National Historic Trail Interpretive Center, located in Great Falls, Montana, and numerous interpretive signs and sites interpret the overall journey and many site specific events along the trail. Recreation sites on the HLC NF that specifically tie to the Lewis and Clark National Historic Trail include the interpretive center in Great Falls, Lewis and Clark Pass in the Alice Creek area in the Upper Blackfoot GA, and the Meriwether Day Use Site within the Big Belts GA. The Lewis and Clark National Historic Trail is located on the Designated Areas maps in appendix B.

Desired Conditions (FW-LCNHT-DC)

01 The Lewis and Clark National Historic Trail provides visitors the opportunity to learn about the 1806 Lewis and Clark Expedition and to experience and appreciate the natural environment that the Corps of Discovery experienced in their travels.

02 The Lewis and Clark National Historic Trail is clearly marked and identified, especially at trail termini and junctions with side trails.

03 Trailside interpretation and related visitor information services enhance visitor appreciation of the outdoors and the natural resources, history, and scenic values along the Lewis and Clark National Historic Trail. Interpretation provides multiple perspectives and accurate information.

Goals (FW-LCNHT-GO)

01 The operation, maintenance, and delivery of interpretation along the Lewis and Clark National Historic Trail is supported by partnerships and volunteer programs. Partners and volunteers also assist the FS in providing accurate historic and natural resources education and interpretation about the Lewis and Clark National Historic Trail.

Standards (FW-LCNHT-STD)

01 New sites and cultural landscapes along the Lewis and Clark National Historic Trail shall be documented and evaluated for nomination and inclusion in the National Register of Historic Places. Also see FW-CR-DC-01.

Guidelines (FW-LCNHT-GDL)

01 To protect the historically relevant natural and cultural resources along the trail, effects to the trail (including user capacity issues) should be identified and considered in project level planning.

02 To protect and enhance the scenic quality along the Lewis and Clark National Historic Trail, management activities should be consistent with the scenic integrity objectives of high to very high.

Suitability (FW-LCNHT-SUIT)

01 Areas within ¼ mile either side of the Lewis and Clark National Historic Trail are unsuitable for timber production. Harvest is suitable for the purposes of providing for public safety and enhancing the recreational or aesthetic values of the trail.

Lewis and Clark National Historic Trail Interpretive Center (LCIC)

Introduction

On October 28, 1988 Congress passed Public Law 100-552, establishing the Lewis and Clark National Historic Trail Interpretive Center, which opened its doors to the public on May 5, 1998. The building is

approximately 25,000 square feet and includes a 158 seat theater, a 6,000 square foot exhibit hall, and a 1,500 square foot resource center that are used for educational programs, trainings, and receptions. The facility is open year round and serves about 45,000 visitors and 4,000 students annually. Approximately 20 percent of the visitors to the center come from foreign countries, primarily Canada.

Desired Conditions (FW-LCIC-DC)

01 Interpretation and education programming at the Lewis and Clark National Historic Trail Interpretive Center enhances visitor understanding and appreciation for the history surrounding the journey of Lewis and Clark through central Montana landscapes during the years of 1805-1806.

02 Interpretive and education themes at the Lewis and Clark National Historic Trail Interpretive Center focus on early exploration (Lewis and Clark), Native American history, mining, trapping, agricultural settlement, and the natural resources found throughout the area. Interpretation and education themes include natural resources management and history within the surrounding national forest.

Goals (FW-LCIC-GO)

01 The Lewis and Clark National Historic Trail Interpretive Center is located on the Lewis and Clark National Historic Trail and has active partnerships both nationally and within the local community. Volunteerism is a valued resource and provides strong connections to the local community while providing a service to the FS in the management of the interpretive center.

02 The Lewis and Clark National Historic Trail Interpretive Center contributes to the economic sustainability of the local community as well as to the State of Montana.

Research Natural Areas (RNA)

Introduction

The HLC NF has 12 existing and one proposed research natural areas, which total approximately 17,000 acres, plus one candidate research natural area in alternative D that is approximately 4,500 acres. See Table 30 and Table 31. These research natural areas are part of a national network of ecological areas designated in perpetuity for research, education, and/or to maintain biological diversity of NFS lands. They serve as baseline areas for nonmanipulative research, observation, and study. Research natural areas are cooperatively managed with the Rocky Mountain Research Station.

The proposed research natural area under all alternatives is Granite Butte; and the candidate research natural area under alternative D is Poe-Manley. If approved, these areas would be additions to the national network. Other additions to the network may be identified in the future.

Table 30. Currently designated and proposed research natural areas, all alternatives

Research Natural Area	Geographic Area	Purpose for Establishment	Designated	Proposed	Acres[1]
Cabin Gulch	Big Belts	Douglas-fir with bunchgrass understory.	X		2408
Bartleson Peak	Little Belts	Spruce/cleft leaf groundsel and cinquefoil/Idaho fescue habitat types	X		1600
O'Brien Creek	Little Belts	A variety of riparian vegetation types, an un-entrenched, moderate to gentle gradient stream.	X		692

Research Natural Area	Geographic Area	Purpose for Establishment	Designated	Proposed	Acres[1]
Onion Park	Little Belts	Tufted hairgrass-sedge, subalpine fir/grouse whortleberry and subalpine fir/bluejoint reedgrass; mesic meadow	X		1208
Paine Gulch	Little Belts	Long-lived seral Douglas-fir on subalpine fir series sites, seral ponderosa pine and limber pine communities on Douglas-fir series sites.	X		2403
Wagner Basin	Rocky Mountain Range	Unique wetland complexes containing large populations of Giant helleborine and yellow lady's-slipper.	X		939
Walling Reef	Rocky Mountain Range	High-elevation forest, shrubland, grassland, wetland, and alpine ecosystems.	X		834
Greathouse Peak	Snowies	Alpine tundra plant communities on an alpine plateau composed of calcareous (limestone) substrate	X		1280
Big Snowy – Old Baldy	Snowies	Alpine tundra plant communities on an alpine plateau composed of calcareous (limestone) substrate	X		1866
Minerva Creek	Snowies	Ponderosa pine/snowberry interspersed with meadows	X		336
Granite Butte	Upper Blackfoot	Subalpine fir and white bark pine habitat types, high alpine non forest habitat types and wet meadows. (see text for potential change regarding this proposed RNA)		X	394
Indian Meadows	Upper Blackfoot	Douglas fir/blue huckleberry, Douglas fir/pine grass, Douglas fir/elk sedge, Subalpine fir/beargrass, Subalpine fir/bluejoint, Subalpine fir/menziesia and wet meadows.	X		949
Red Mountain	Upper Blackfoot	Subalpine fir and whitebark pine habitat types, high alpine non forest habitat types, scree and type I and II streams	X		1901
Total RNA Acres					16,955

[1]All acreages are approximate.

Table 31. Candidate research natural area, alternative D

Research Natural Area	Geographic Area	Purpose for Establishment	Acres[1]
Poe-Manley	Elkhorns	Montane grassland dominated by rough fescue	4500

[1]All acreages are approximate.

Desired Conditions (FW-RNA-DC)

01 Ecological processes such as plant succession, fire, and native insect and disease activity function in research natural areas with limited human influences.

Guideline (FW-RNA-GDL)

01 Management activities should be consistent with establishment records.

Suitability (FW-RNA-SUIT)

01 Research natural areas are unsuitable for timber production. Timber harvest and other vegetation management (such as prescribed fire) is suitable when in accordance with establishment records or management plans for individual research natural areas.

02 Research natural areas are suitable for nonmotorized travel consistent with desired recreation opportunity spectrum settings as mapped to meet administrative, research, and educational objectives. Motorized travel, in both summer and winter, is not suitable within research natural areas except on designated routes.

03 Livestock grazing is suitable where needed to establish or maintain desired conditions for vegetative communities and in accordance with establishment records or management plans for individual research natural areas.

Cultural, Historic, and Tribal Resources

Introduction

The term “cultural resource” refers to an object or definite location of human activity, occupation, or use identifiable through field survey, historical documentation, or oral evidence (FS Manual 2360). Cultural resources are prehistoric, historic, archaeological, or architectural sites, structures, places, or objects and traditional cultural properties (FS Manual 2360). Cultural resources include the entire spectrum of resources for which the Heritage Program is responsible for from artifacts to cultural landscapes without regard to eligibility for listing in the National Register of Historic Places (FS Manual 2360).

Cultural resources provide educational opportunities that connect people, past and present, to the land and its history. Interpretation of the human history of the plan area promotes greater public understanding of the communities that have depended on this landscape for their livelihood, recreation, and spiritual wellbeing. Through positive heritage experiences provided by interpretive sites, historic standing structures, and other materials the public has an appreciation for the region’s history and develops an awareness of preservation efforts.

In the centuries preceding Lewis and Clark and the Corps of Discovery’s journey, central Montana was home to several indigenous American Indian cultures. Most prominent among these groups found in the plan area were those historically known as the Blackfeet, Gros Ventre, Salish, Shoshone, Kootenai and Metis. Today these groups retain an active culture with an unbroken tie to the greater plan area.

Cultural and Historic Resources (CR)

Introduction

Numerous laws, regulations, and policies govern the use and administration of cultural resources on NFS lands. Some are more commonly used regulations, such as the Archaeological Resource Protection Act and the National Historic Preservation Act. National laws and regulations are also interpreted in FS Manuals, FS Handbooks, and Regional Guides.

Approximately 1,851 cultural resource sites reflecting the broad spectrum of prehistory and history are currently identified in the plan area. According to criteria outlined in 36 Code of Federal Regulations 60.4, some sites (344) have been determined to be historically insignificant. A total of 1,507 sites are not yet evaluated and therefore are considered to be significant and eligible to be listed on the National Register and require management consideration by the Forest.

Eight historic properties are listed on the National Register of Historic Places, including 1 historic district with eight contributing properties and features, one historic landscape, and one historic landmark with two contributing properties. In addition to the National Register of Historic Places sites, the plan area has one traditional cultural property. An additional 944 heritage properties have been determined eligible for listing in the National Register of Historic Places, but have not been fully researched and submitted for listing.

Desired Conditions (FW-CR-DC)

01 Cultural resource based recreation opportunities (visits to cultural sites, historic tourism) are connected, where practical, with other recreation opportunities.

02 Historic administrative buildings and historic buildings associated with special use permits reflect local and FS history and identity, and provide for functional use. See also FW-RSUP-DC-04.

03 Cultural resource programs, interpretive presentations, and publications provide the public with opportunities to learn about, understand, and experience the Forest's past.

04 Opportunities exist for volunteers to participate in cultural resource conservation activities such as research, site stabilization, conservation, and interpretation.

Goals (FW-CR-GO)

01 Cooperative agreements with other agencies and partners support the development of cultural resource inventories, the exchange of information on local and regional interests, and the study of research trends.

02 Consultation with Native American tribes, traditional cultural practitioners, consulting parties, and project designers aid the FS in protecting and enhancing traditional cultural properties, cultural landscapes, sacred sites, and other culturally significant areas that provide tangible links to historically rooted beliefs, customs, and practices.

Guidelines (FW-CR-GDL)

01 Conservation and preservation efforts should be included when maintaining significant sites.

Areas of Tribal Importance (TRIBAL)

Introduction

The HLC NF recognizes that Native Americans are indigenous to this landscape and have accumulated spiritual and ecological knowledge over thousands of years. Sacred sites and traditional cultural properties have religious and/or traditional importance to individuals or cultural groups. Both may be difficult to identify using standard field survey methods and both require consultation with cultural groups. The difference is not in their importance, but rather under which authority they are managed and how they are identified. Traditional cultural properties are managed under the authority of the National Historic Preservation Act. They are, by definition, eligible for listing on the National Register and must be a tangible property, that is, a district, site, building, structure, or object as defined in 36 Code of Federal Regulations 64.4.

Sacred sites important to Native Americans are managed under the authority of Executive Order 13007-Indian Sacred Sites. It is the responsibility of a Native American tribe or Native American individual to identify sacred sites. Executive Order 13007 defines a Native American/Indian sacred site as "any

specific, discrete, narrowly delineated location on Federal land that is…determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the Indian tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site."

Desired Conditions (FW-TRIBAL-DC)

01 Healthy, sustainable, and harvestable populations of culturally significant flora and fauna are available to ensure the rights reserved by Native Americans. See FW-OFP-DC-01.

02 Tribal members' access to the Forest for the exercise of treaty rights is recognized and accommodated. Opportunities exist to practice traditional, cultural, and religious activities, such as plant gathering and ceremonial activities, which are essential to sustaining their way of life, cultural integrity, social cohesion, and economic well-being.

Goals (FW-TRIBAL-GO)

01 Opportunities exist to help develop community capacity for participation in various management activities through projects that enhance landscape scale conservation efforts, increase environmental literacy and strengthen collaborative relationships among Native American populations.

02 Acquire knowledge about native and ecological resources through consultation with tribal members.

Land Status and Ownership, and Land Uses

Introduction

Management of NFS lands on the HLC NF is important to protect the public's estate interest in its national forest. Land status is the zoning for private lands and formal management status of public lands. Land ownership is the basic pattern of public and private ownership. Land ownership is defined as the condition of title of land or interest in land under the jurisdiction of the Forest Service. The following conditions are also included under this definition: the manner in which these lands came into federal ownership; encumberances and restrictions that affect the administration of the land; interest owned by the government in private lands; and the interest in government lands held by others.

Surveying and posting the national forest boundary, maintaining posted property lines, and defending public lands from trespass or encroachment are activities that maintain the integrity of the NFS.

The HLC NF has many instances of inholdings or near inholdings found within the confines of the forest boundaries. These private properties, vestiges of the gold rush era in the form of patented mining claims, railroad reservations, and the Homestead Act provide management challenges unique to the area.

Public lands are generally retained in Federal ownership in order to provide long-term values. The vision for the planning area is to retain in public ownership all lands currently under its administration that meet the long-term needs of maintaining the integrity of contiguous natural ecosystems, river frontage, riparian areas and wetland ecosystems, recreation and open space, scenery, clean air and water, and habitat for plant and animal populations. Through the methods available to the agency, the FS would acquire lands and/or mineral estates that enhance this vision. Lands and/or mineral estates that do not meet these needs would be disposed of. In all such cases, the primary guiding principle would be the greater public benefit.

Some uses of NFS lands are covered by special use authorizations, including permits, leases, and easements that allow occupancy, use, rights, or privileges within the plan area. Special use authorizations

are legal instruments whose terms and conditions are fully enforceable when reasonable and consistent with law, regulations, and policy. The mission of the Forest Service Special Use Program is to manage the use and occupancy of NFS lands in a manner that protects natural resources, promotes public health and safety, and is consistent with forest land and resource management plans. Special use permits authorize the occupancy and use of NFS lands by private individuals or companies for a wide variety of uses such as roads, utility corridors, communications sites, and other private or commercial uses that cannot be accommodated on private lands.

All authorized uses on public lands are required, by law, to meet all applicable environmental protection measures. For all proposed activities that have the potential for disturbance to lands and resources, a project design is required and is subject to full public environmental analysis, review, and monitoring.

Land Status and Ownership (LAND)

Desired Conditions (FW-LAND-DC)

01 Surface and mineral ownership land patterns facilitate land management.

02 Road and trail easements provide administrative and public access to NFS lands.

03 Land adjustments enhance or protect recreation, open space, scenery, clean air and water, riparian habitat, wetland ecosystems, and habitat for wildlife species.

04 Conservation easements protect and enhance the resource values for which they were acquired.

Objectives (FW-LAND-OBJ)

01 Every decade, acquire between 1 and 5 new roads or trail rights-of-way that are needed as high-priority access or would fill a gap in existing access to public lands. Also see FW-ACCESS-GO-01.

02 Survey and clearly mark 150 miles of previously unmarked FS land ownership boundaries.

Guidelines (FW-LAND-GDL)

01 To provide public and/or administrative access to NFS lands, land adjustment proposals should consider reciprocal right-of-way acquisitions, when feasible.

02 Reissued permits for existing support facilities that are located in riparian management zones should include requirements that reduce impacts on aquatic and riparian resources (for example, move support facilities outside of riparian management zones).

Land Uses (LAND USE)

Desired Conditions (FW-LAND USE-DC)

01 Energy corridors throughout the planning area improve the delivery of electricity, oil, and gas and enhance the western electric transmission grid by improving reliability, reducing congestion, and contributing to the national electrical grid.

02 Utility corridors and communication sites provide for their intended uses. Obsolete or unused facilities are not present on the landscape.

Goals (FW-LAND USE-GO)

01 Encourage road user associations in areas where multiple land owners' access is prevalent.

02 Work with local county road authorities to provide access to lands that serve predominantly non-NFS purposes.

Guidelines (FW-LAND USE-GDL)

01 Land use access proposals should consider reciprocal right-of-way acquisitions when feasible.

02 Vegetation treatment within corridors and along linear transmission facilities should meet facility safety requirements, provide for control of invasive species, and provide for revegetation in accordance with vegetation management standards identified operating plans, in order to reduce visual impacts. Also see FW-VEGT-DC-04.

03 When authorizing new lands special uses or reauthorizing existing uses, include conditions to avoid or minimize adverse effects to fish, water, and riparian resources. If adverse effects to inland native fish, species of conservation concern, impaired water bodies, or stream habitat conditions are unavoidable, authorizations should require actions that result in re-establishment, restoration, mitigation, or improvement of conditions and processes to ensure that projects that degrade conditions also include measures to incrementally improve conditions. At the time of reauthorization, adjust existing authorizations to mitigate adverse effects to fish, water, and riparian resources as practicable.

04 Locate new hydropower support facilities outside of RMZs to reduce effects to fish, water, and riparian resources. Support facilities include any facilities or improvements (e.g., workshops, housing, switchyards, staging areas, transmission lines) not directly integral to its operation or necessary for the implementation of prescribed protection, mitigation, or enhancement measures.

05 If existing hydropower support facilities are located within the RMZs, at time of permit reissuance, reduce impacts on aquatic and riparian resources, e.g. moving support facilities outside of RMZs or further from water bodies where feasible.

06 When working with utility corridors, consolidation should be emphasized.

07 During project activities, local distribution lines and smaller pipelines should occur within existing road systems or other previously disturbed areas, where feasible.

Infrastructure – Roads and Trails, Bridges, and Facilities

Roads and Trails (RT)

Introduction

There are approximately 3,600 miles of NFS roads under FS jurisdiction within the plan area. Some roads are kept on the system for the purpose of future resource management but remain closed until they are needed. Other roads are open seasonally or year round. Approximately 1,100 miles of the total 3,600 miles are closed to motorized use, some of which have been identified in the 2015 Travel Analysis Plan as opportunities for change that include decommissioning, placing into intermittent stored service, or converting to other uses.

There are approximately 2,600 miles of existing NFS motorized and nonmotorized trails within the ten GAs in the plan area. There are approximately 2,000 miles of trails located outside of wilderness areas and approximately 600 miles within designated wilderness.

There are three air strips within the plan area: 1) one in the Little Belts GA, 2) one in the Rocky Mountain Range GA, and 3) one air strip under special use permit (Lincoln Air Strip) located within the Upper Blackfoot GA.

Desired Conditions (FW-RT-DC)

01 A safe and cost effective transportation system provides public and administrative access to FS lands while protecting natural and cultural resources.

02 Roads that are not needed to serve administrative and public needs are not present.

03 Forest system trails provide a variety of low maintenance and sustainable motorized and nonmotorized summer and winter public access opportunities that connect people to NFS lands.

04 The transportation system and its use have minimal impacts on resources including threatened and endangered species, species of conservation concern, heritage and cultural sites, water quality, and aquatic species.

Goals (FW-RT-GO)

01 Partnerships are developed with various interest and user groups for the evaluation, planning, and maintenance programs for roads, trails, and airstrips.

02 Pursue grants, cost-sharing, and partnerships to contribute to maintenance and improvement work. (SES)

03 The HLC NF cooperates with highway managers and other landowners to implement wildlife crossings that contribute to wildlife and public safety where needed.

Objectives (FW-RT-OBJ)

01 Decommission or place into intermittent stored service 30 to 60 miles of roads. Priorities shall include roads causing resource damage in priority watersheds and/or where roads chronically fail

02 Complete 100 to 300 miles of reconstruction or road improvement projects. Priorities shall include reducing effects on: desired aquatic and riparian conditions from chronic sediment delivery or potential future road prism failures, and conservation watershed networks that have westslope cutthroat or bull trout habitats.

03 Maintain at least 100 miles of system road annually.

04 Maintain at least 100 miles of NFS trails annually.

05 Reconstruct or improve 5 to 50 miles of trail every five years.

06 Reduce deferred trail maintenance backlog by 10-25 percent.

Standards (FW-RT-STD)

01 During dust abatement applications on roads, chemicals shall not be applied directly to watercourses, water bodies (for example, ponds and lakes), nor wetlands.

02 To maintain free-flowing streams, new, replacement, and reconstructed stream crossing sites (culverts, bridges and other stream crossings) shall accommodate at least the 100-year flow, including associated bedload and debris.

03 For new road construction and reconstruction of existing road segments within or adjacent to riparian management zones, fill material shall not be side-cast.

04 When installing new crossing structure on streams that have no fish, the structure shall accommodate a 1 percent probability (100-year) or higher flow, including associated bedload and debris. If site-specific conditions preclude that design, size the structure to the largest size the location will accommodate and provides for bankfull width.

Guidelines (FW-RT-GDL)

01 Roads, temporary roads, skid trails, and trails should be hydrologically disconnected from delivering water, sediment, and pollutants to water bodies (except at designated stream crossings) to maintain the hydrologic integrity of watersheds.

02 When placing physical barriers such as berms on travel routes such as roads, skid trails, temporary roads, and trails, drainage features should be sufficient to avoid future risks to aquatic resources (for example, remove culverts from stream crossings).

03 To maintain channel stability and reduce sediment delivery to watercourses, trails, fords, and other stream crossings should be hardened to protect stream beds, banks, and approaches during construction or reconstruction.

04 To reduce the risk to aquatic resources when decommissioning roads, making roads impassable, or putting roads into intermittent stored service, i.e. storing roads for longer than 1 year, roads should be left in a hydrologically stable condition (for example, drainage off roads should route away from water resources and landslide prone areas and towards stable areas of the forest floor to provide filtering and infiltration).

05 To maintain and/or improve watershed ecosystem integrity, and reduce road-related mass wasting and sediment delivery to watercourses, new and relocated roads, trails (including skid trails and temporary roads), and other linear features should not be constructed on lands with high mass wasting potential.

06 For maintenance activities such as road blading and snow plowing on existing roads, sidecasting should be minimized, particularly into or adjacent to water bodies. Care should be taken when plowing snow so as not to include road soil. Breaks should be designed in the snow berms to direct water off of the road.

07 Wetlands and unstable areas should be avoided when reconstructing existing roads or constructing new roads and landings. Impacts should be minimized where avoidance is not practical.

08 When constructing, reconstructing, or maintaining roads, sediment delivery to streams should be minimized. Road drainage should be routed away from potentially unstable channels, fills, and hillslopes.

09 Transportation infrastructure should be designed to maintain natural hydrologic flow paths to the extent practical (for example, streams should have crossing structures and not be routed down ditches).

10 In fish bearing streams, construction, reconstruction, or replacement of stream crossings should provide and maintain passage for all life stages of native aquatic organisms unless barriers should be

created or maintained to prevent spread or invasion of nonnative species in alignment with fish management agencies. These crossings should also allow for passage for other riparian dependent species through the establishment of banks inside/beneath the crossing structure.

11 To maintain free-flowing streams, new, replacement, and reconstructed stream crossing sites (culverts, bridges and other stream crossings) should be constructed to prevent diversion of stream flow out of the channels in the event the crossing is plugged or has a flow greater than the crossing was designed.

12 Roads not needed in the long term should be decommissioned when doing so would benefit fish and wildlife habitat (prioritizing native fish habitat), enhance the desired recreation opportunity spectrum settings and opportunities, and/or create a more cost efficient transportation system.

13 In fish bearing streams, construction, reconstruction, or replacement of stream crossings should provide and maintain passage for all life stages of native aquatic organisms unless barriers should be created or maintained to prevent spread or invasion of non-native species in alignment with fish management agencies. These crossings should also allow for passage for other riparian dependent species through the establishment of banks inside/beneath the crossing structure.

Bridges (BRDG)

Introduction

There are approximately 140 road bridges under the jurisdiction of the FS within the HLC NF plan area. The majority of these structures meet or exceed the minimum criteria for bridge condition. At the time of this plan, a few of these bridges (approximately 11) are at an intolerable or minimum tolerable limit for condition. Road bridges must be repaired and replaced with road maintenance funding, with a small number of structures being replaced through the capital investment program.

A trail bridge is a trail structure, including supports, erected over a depression or obstruction such as water, roadway, trail or railway that provides a continuous pathway and has a deck for carrying traffic or other loads. Trail bridges are divided into three classifications for inspection purposes:

- Complex trail bridges: all trusses, suspension, multiple-span, and non-timber/log trail bridges with a span greater than 20 feet and a vertical distance greater than 5 feet.
- Major trail bridges: all single-span timber/log trail bridges with a span greater than 20 feet and a vertical distance greater than 5 feet.
- Minor trail bridges: all trail bridges that do not meet the definition of a complex or major trail bridge, and have a span less than 20 feet or a vertical distance less than 5 feet.

Desired Conditions (FW-BRDG-DC)

01 Bridges and culverts are maintained to provide safe public and administrative access to FS lands while protecting natural and cultural resources.

02 Culverts and bridges provide for aquatic and terrestrial habitat and organism passage.

Guidelines (FW-BRDG-GDL)

01 Bridge removal or reconstruction should be timed to minimize impact to native wildlife nesting or roosting on structures.

Facilities (FAC)

Introduction

Administrative facilities are typically buildings and their appurtenances necessary to support the employees, equipment, and activities needed for the management of national forests. Administrative facilities are separate from recreation facilities. Administrative facilities include fire stations, offices, warehouses, and shops as well as living quarters such as barracks and individual residences.

There are approximately 245 FS owned fire, administrative, and other buildings. Under facilities, the focus is the rehabilitation or replacement of existing facilities that do not meet current operational standards, and the disposal of those facilities that are considered surplus to the forest fire, administrative, and other operational needs.

Recreation facilities are buildings, cabins, airstrips, water systems, and wastewater systems that are operated and maintained specifically to support public recreational use. These recreation facilities are often located at developed recreation sites, such as campgrounds, day use areas, and interpretive sites where recreation use requires a management investment in order to operate and/or maintain the site to health and safety standards.

Desired Conditions (FW-FAC-DC)

01 Facilities are maintained to provide safe public and administrative use while protecting natural and cultural resources.

02 NFS facilities meet current operational standards to provide the necessary support to employees, equipment, and activities.

Goals (FW-FAC-GO)

01 Pursue partnerships to assist in completing necessary work on structures.

Benefits to People: Multiple Uses and Ecosystem Services

Introduction

Social, cultural, and economic resources in the plan area contribute to the social and economic sustainability of local communities and the public. The 2012 Planning Rule calls those resources “ecosystem services” or, put more simply, the benefits people obtain from the forest. Healthy forest ecosystems are life-supporting systems that provide a full suite of goods and services that are vital to human health, financial sustainability, and wellbeing. These “ecosystem services” or benefits include all the multiple uses that people traditionally have relied on, such as recreation and mineral extraction, as well as less obvious or apparent benefits, such as clean air and carbon sequestration. Multiple use is defined by the Multiple-Use Sustained-Yield Act of 1960 (16 U.S.C. 528–531). Economic sustainability refers to the capability of society to produce and consume or otherwise benefit from goods and services including contributions to jobs and markets and nonmarket benefits.

The 2012 Planning Rule also requires that forests take an all-lands approach to ensure that ecological sustainability and contributions to social and economic sustainability are considered in the context of the larger landscape. This involves managing the plan area in partnership with both public and private land owners and stakeholders to ensure management efforts are coordinated whenever possible. Included in this section are desired conditions related to partnership and coordination.

In addition to the plan components in the following sections, many of the plan components within the previous sections above contribute to social and economic sustainability.

Public Information, Interpretation, and Education (CONNECT)

Introduction

Connecting people to their environment and to the natural and cultural history of the area is one of the primary goals for the HLC NF. Relevant and timely public information, creative interpretation, and stimulating education help the FS communicate with the public and enable visitors to be involved in the activities, actions, and expectations for activities on NFS lands. These connections provide opportunities for the development of strong stewardship ethics and appreciation for the natural and cultural history across these landscapes. Also see Lewis and Clark National Historic Trail and Interpretive Center section.

Desired Conditions (FW-CONNECT-DC)

01 Interpretation and education programming enhance visitor understanding and appreciation for the rich natural, cultural, and historic resources of the Forest.

02 Education programming promotes conservation, stewardship, and understanding of natural resources and ecological processes (such as watershed, fisheries, native plants, fire ecology, and wildlife) as well as cultural resources on public lands. Conservation education efforts are experiential, contemporary, and culturally and generationally-relevant.

03 Opportunities to connect people to nature and open space, including underserved populations, promote the use of the Forest for the improvement of physical and mental well-being of the public.

Goals (FW-CONNECT-GO)

01 The presentation and delivery of public information, natural and historic interpretation, and conservation education is supported by strong partnerships and volunteer programs.

02 The operation, maintenance, and delivery of conservation education programs, historic and natural interpretation, and stewardship services are supported by strong partnerships and volunteer programs.

03 Partnerships with federal and nonfederal entities helps achieve desired conditions and improve overall resources management. Partnerships and/or collaborative processes within the local communities fosters relationships that help accomplish projects in the communities' and Forest's shared interest.

04 Federal, state, county, and tribal agencies, universities, nongovernmental organizations, and private landowners have the opportunity to participate in development, implementation, maintenance, and/or monitoring efforts.

05 New, nontraditional partners help the unit employ new technologies and contemporary approaches to reach youth where they are and in ways that are relevant to their lives.

06 The Forest's employees and partners have the skills and resources needed to build and manage effective, sustainable partnerships to engage youth.

07 Formal and non-formal educators in local communities understand natural resource issues and partner with the forest to deliver place-based outdoor learning opportunities.

08 Outfitter and guides, recreation events, and other special uses permittees assist the Forest in delivering interpretation and education messages that instill an appreciation for the natural and cultural resources of the Forest, and promote conservation and stewardship.

09 Youth have lifelong opportunities to learn, and a continuum of experiences that spans from discovery, to awareness and connection, to knowledge, to action are provided. The youth of local communities have a personal connection with the natural and cultural resources of the forest and a personal conservation ethic through their recreation experiences.

Objectives (FW-CONNECT-OBJ)

01 Within 5 years, expand communications about recreation and educational opportunities through social media, websites, print and web-based materials, webinars, and video technology, to promote and increase tourism on the unit and to provide support for state, private, and community-based partners.

02 Provide at least one hands-on outdoor learning opportunity for local communities and schools to: engage underserved populations, support local educators, connect youth with their natural and cultural heritage, promote the health benefits of outdoor recreation, and encourage the responsible use of natural resources.

03 Work with local partners to host at least one recreation event per year to engage community youth and their families with the rich natural and cultural resources of the forest.

Guidelines (FW-CONNECT-GDL)

01 When providing education opportunities, the HLC NF should emphasize minimum impact principles (for example, Leave No Trace, Tread Lightly, Pack it in/Take it Home) to educate communities and visitors, while instilling a sense of pride and stewardship for the rich cultural and natural resources of their forest.

Livestock Grazing (GRAZ)

Introduction

Livestock grazing on FS lands is an important contribution to the social and economic sustainability of some rural communities. Forest grazing allotments are managed to be responsive to current federal and state environmental laws and regulations. Allotment management plans describe the kind and amount of livestock, season of use, structural improvement maintenance, resource management objectives, and standards and guidelines to maintain or improve natural resources.

Livestock grazing is an important source of income along with other diverse agricultural enterprises in the plan area. During the past several decades, livestock numbers have been declining across the western United States. There are over 6,000 farms and ranches in the area with over 2,000 classified as beef cattle ranches and farms. Forest grazing allotments occupy over 1.3 million acres with 240 active allotments with 234 permittees.

Adaptive management practices used in allotment management plans include deferment and rest from grazing, cultural and mechanical vegetation treatments, infrastructure to control livestock, and conservation measures to protect federally listed plants and animal species and species of conservation concern.

Other agencies, local conservation districts, conservation and civic organizations, livestock industry, and rural communities participate in rangeland management planning. Forest Service policy direction for permitted livestock use are found in agency manuals and handbooks.

Desired Conditions (FW-GRAZ-DC)

01 Sustainable grazing opportunities are available for domestic livestock from lands suitable for forage production.

02 Within grazing allotments, rangelands are comprised of stable soils supporting a diverse species composition of grasses, forbs, and shrubs that create a healthy and resilient native plant community. Native plant communities provide for wildlife habitat and forage needs in addition to providing forage for domestic livestock.

03 Within grazing allotments, soil stability, and hydrologic and biotic integrity are maintained and are functioning in a manner that provide for resilience relative to site potential as described in ecological site descriptions or other classification.

04 Within grazing allotments, plant communities in wetlands, spring/seep ecosystems, and groundwater dependent ecosystems retain desired species composition, structure, and condition.

Standards (FW-GRAZ-STD)

01 New or revised allotment management plans shall provide site-specific management prescriptions to meet or move toward applicable desired conditions.

02 Annual livestock use indicators within inner riparian management zones shall be set during the allotment management planning process at levels that maintain or move towards desired rangeland vegetation, riparian function, and wildlife habitat specific to the ecological site (or equivalent classification). Indicator values shall be adapted over time based on long-term monitoring and evaluation of conditions and trends.

Guidelines (FW-GRAZ-GDL)

01 The purpose of this guideline is to maintain or improve riparian aquatic and achieve riparian desired conditions over time through adaptive management. New grazing authorizations and reauthorizations that contain low gradient, alluvial channels should require that end of season stubble height be 10 to 15 cm (4 to 6 inches) along the greenline. However, application of the stubble height numeric value range should only be applied where it is appropriate to reflect existing and natural conditions for the specific geo-climactic, hydrologic, and vegetative conditions where it is being applied. Alternative use and disturbance indicators and values, including those in current ESA consultation documents, may be used if they are based on current science and monitoring data and meet the purpose of this guideline. Long-term monitoring and evaluation should be used to adapt this numeric range and/or the use of other indicators.

02 To ensure grazing is sustainable and contributes to other resource desired conditions, forage use by livestock should maintain or enhance the desired structure and diversity of plant communities on grasslands, shrub lands, and forests and should maintain or restore healthy riparian conditions as defined in the allotment management plan.

03 Coordination with Montana Fish, Wildlife, and Parks wildlife biologists should occur during the allotment planning/permit process to ensure that wildlife habitat/forage needs are being addressed in conjunction with domestic livestock grazing.

04 New or revised allotment management plans should design grazing practices (such as stocking rate, duration, timing), and/or physical structures to reduce effects to riparian areas or riparian dependent at risk species.

05 Adaptive management should be incorporated into allotment management plans to allow for range improvement and resource protection, and consider both the needs and impacts of domestic livestock and wildlife.

06 When updating or managing existing facilities that are located within riparian management zones, facilities should be minimized or relocated to other areas. Livestock management activities (trailing, bedding, watering, salting, loading, and other handling or management efforts) should be avoided in riparian management zones to reduce effects to riparian resources and aquatic biota. Also see FW-RMZ section for additional information.

07 New annual operating instructions to grazing permit holders should include instructions that livestock trailing, loading, and other handling activities should be avoided in riparian management zones.

08 Livestock watering facilities should be constructed or maintained to provide for forage use that will maintain or enhance structure and diversity of plant communities on suitable rangelands, but avoid impacts to soil and water resources.

09 To attract livestock out of riparian areas, salt and/or supplements should be placed at least one-quarter (1/4) mile away.

Timber (TIM)

Introduction

Timber harvest is a multiple use provided by HLC NF and it is an important contributor to the economy of the State. It is one tool that may be used to achieve the desired vegetation conditions in addition to providing human benefits. The 2012 Planning Rule requires identification of lands that are suited and not suited for timber production. The quantity of timber that may be sold must be less than or equal to the potential sustained yield limit. To clearly display the intended timber program, the plan also identifies the projected wood sale quantity and the projected timber sale quantity.

The planning rule requires identification of lands that are suited and not suited for timber production, based on factors that include legal withdrawal (for example, timber production prohibited due to statute and executive order), technical factors (nonforested lands, geology or soil conditions), and compatibility with desired conditions and objectives stated in the plan (plan components). In lands suitable for timber production, regularly scheduled timber harvest is expected to occur. These areas are located where other resource considerations and site limitations may restrict management, or limit the rate and amount of harvest over time, somewhat but not to a great degree. 0 displays the timber production suitability classification for the draft plan. The methodology for determining suitability is disclosed in the draft environmental impact statement. See chapter 3 for descriptions and appendix B for maps of timber suitability for each GA.

Unless prohibited by other plan components, timber harvest may occur on lands unsuitable for timber production to meet other resource objectives.

Table 32. Timber production suitability classification – acres

Land Classification Category	Alternative B	Alternative C	Alternative D	Alternative E
A. Total NFS lands in the plan area	2,883,339	2,883,339	2,883,339	2,883,339
B. Lands not suited for timber production due to legal or technical reasons	2,216,220	2,216,220	2,216,220	2,216,220
C. Lands that may be suited for timber production (A−B)	667,119	667,119	667,119	667,119
D. Total lands suited for timber production because timber production is compatible with the desired conditions and objectives established by the plan	442,601	442,601	434,730	474,184
E. Lands not suited for timber production because timber production is not compatible with the desired conditions and objectives established by the plan (C – D)	224,518	224,518	232,389	192,935
F. Total lands not suited for timber production (B+E)	2,440,738	2,440,738	2,448,609	2,409,155

[1]All acreages are approximate.

Per the National Forest Management Act and planning rule regulations, the quantity of timber that may be sold must be less than or equal to the potential sustained yield limit. The sustained yield limit is the amount of timber meeting applicable utilization standards, "which can be removed from [a] forest annually in perpetuity on a sustained-yield basis" (National Forest Management Act at section 11, 16 United States Code 1611; 36 Code of Federal Regulations 219.11(d)(6))). It is the volume that can be produced in perpetuity on lands that may be suitable for timber production. Calculation of the limit includes volume from lands that may be deemed not suitable for timber production after further analysis during the planning process. The calculation of the sustained yield limit is not limited by land management plan desired condition, other plan components, or the planning unit's fiscal capability and organizational capacity.

To clearly display the intended timber program, the plan identifies the projected wood sale quantity and projected timber sale quantity. The projected wood sale quantity is the estimated output of timber and all other wood products (such as fuelwood, firewood, or biomass) expected to be sold during the plan period for any purpose (except salvage harvest or sanitation harvest) on all lands in the plan area. The projected timber sale quantity is the portion of the projected wood sale quantity that meets applicable utilization standards. Both the projected wood sale quantity and the projected timber sale quantity are based on the fiscal capability and organizational capacity to achieve the desired conditions and objectives in the plan for the plan period.

Unless prohibited by other plan components, timber harvest may occur on lands unsuitable for timber production to meet other resource objectives.

Desired Conditions (FW-TIM-DC)

01 Lands suitable for timber production contribute to sustainable levels of timber harvest and wood fiber products.

02 Although disturbances (for example, wildfire, insects, and disease) occur on lands suitable for timber production, these lands are resilient and/or resistant to the disturbance and economic loss of the timber resource to disturbances is minimized.

03 Production of timber and timber harvest contribute to economic sustainability, providing jobs and income to local economies.

04 A variety of harvest and contract methods are offered in response to marked demand and local needs. See appendix C.

Goals (FW-TIM-GO)

01 Timber harvest from the HLC NF, along with timber harvested from other lands, contributes toward maintaining regional timber harvesting and milling infrastructure.

Objectives (FW-TIM-OBJ)

01 *Alternative B, C, and D:* Offer timber meeting product utilization standards for sale at an annual projected timber sale quantity of 3-7 MMCF (15-35 MMBF), averaged on a 10 year basis. See appendix C for definition of timber utilization standards.

Alternative E: Offer timber meeting product utilization standards for sale at an annual projected timber sale quantity of 5-8 MMCF (25-40 MMBF), averaged on a 10 year basis. See appendix C for definition of timber utilization standards.

02 *Alternative B, C, and D*: Offer an annual projected wood sale quantity consisting of both timber that meets utilization standards (FW-TIM-OBJ-01) plus other wood products (fuelwood, biomass, and other volumes that do not meet timber product utilization standards) for sale of 5-9 MMCF, averaged on a 10 year basis.

Alternative E: Offer an annual projected wood sale quantity consisting of both timber that meets utilization standards (FW-TIM-OBJ-01) plus other wood products (fuelwood, biomass, and other volumes that do not meet timber product utilization standards) for sale of 8-10 MMCF, averaged on a 10 year basis.

Standards (FW-TIM-STD)

01 On lands both suitable and unsuitable for timber production, timber harvest will not occur where soil, slope, or other watershed conditions may be irreversibly damaged, as identified in project specific findings. Also see Aquatic Ecosystems and Soil sections.

02 On forested lands (both suitable and unsuitable for timber production), timber harvest shall only be used when there is reasonable assurance of restocking within 5 years after final regeneration harvest. Restocking levels are prescribed in a site-specific silvicultural prescription for a treatment unit and are determined to be adequate depending on the objectives and desired conditions for the plan area. In some instances, such as when stands are treated to reduce fuel loadings, to create openings for scenic vistas, or to prevent encroaching trees to meet desired vegetation or wildlife habitat conditions, it is acceptable not to restock or restock at low tree densities. Restocking considerations do not apply in nonforested plant communities.

03 On lands both suitable and unsuitable for timber production, silvicultural treatments shall not be selected based solely on their ability to provide the greatest dollar return or output of timber; other considerations such as the project purpose and need would inform the selection of silvicultural treatment.

04 On lands both suitable and unsuitable for timber production, clearcutting shall be used as a harvest method only where it has been determined to be the method most appropriate to meet the purpose and

need of the project outcome. Other types of even-aged harvest shall be used only where determined to be appropriate. Determinations shall be based on an interdisciplinary review of site specific conditions and the desired conditions for vegetation, wildlife habitat, scenery, and other resources.

05 On lands both suitable and unsuitable for timber production, harvest units shall be shaped and blended to the extent practicable with the natural terrain. Also see the guidelines for Scenery.

06 Even-aged stands shall reach a minimum of 95 percent of culmination of mean annual increment, as measured by cubic volume, prior to regeneration harvest, unless at least one of the following conditions have been identified during project development:

a. When such harvesting would modify fire behavior to protect identified resource, social or economic values
b. When harvesting of stands will trend landscapes toward vegetation desired conditions
c. When harvest uses uneven-aged silvicultural systems, thinning, or other intermediate stand treatments that do not regenerate even-aged or two-aged stands
d. When harvest is for sanitation or salvage of timber stands that have been substantially damaged by fire, windthrow, or other catastrophe or which are in imminent danger from insect or disease attack
e. When harvest is on lands not suited for timber production and the type and frequency of harvest is due to the need to protect or restore multiple use values other than timber production

07 The quantity of timber that may be sold per decade from lands both suitable and not suitable for timber production shall not exceed the sustained yield limit of 5.03 mmcf (26.68 mmbf) per year on the proclaimed Helena National Forest; and 4.02 mmcf (21.30 mmbf) per year on the proclaimed Lewis and Clark National Forest. The sustained yield limits for both proclaimed forests total 9.05 mmcf (47.97 mmbf) across the administratively combined HLC NF, with the exception of salvage or sanitation cutting of trees damaged by fire, windthrow, or other disturbance or to manage insect infestation or disease spread. Salvage harvest of such trees may be harvested above the sustained yield limit, where it is not feasible to substitute such timber for timber that would otherwise be sold under the plan and where such harvest is consistent with desired conditions for terrestrial and aquatic ecosystems.

08 The maximum opening size created by clearcutting, seedtree cutting, shelterwood seed cutting, or other cuts designed to regenerate an even-aged stand of timber in a single harvest operation shall be 40 acres. This standard applies to new harvest proposals on NFS lands only and need not consider existing openings on NFS lands, adjacent private or other agency lands.

An exception to the 40 acre size applies because it has been determined to be necessary to achieve desired ecological conditions for the plan area, including those associated with forest patterns, patch sizes and forest resilience both in the short and long term (FW-VEGT-DC-01 and FW-VEGF-DC-10); and the guidelines that help achieve these desired conditions. Based on the natural range of variation, the maximum opening size exception applies as shown in Table 33. Also see appendix C.

Table 33. Maximum opening sizes for regenerating an even-aged stand of timber in a single harvest operation

Broad potential vegetation type	Maximum opening size[1]
Warm dry	40
Cool moist	125

Broad potential vegetation type	Maximum opening size[1]
Cold	40

[1] The maximum opening sizes are consistent with the natural range of variation for the average patch size of early successional forests, based on an analysis conducted with SIMPPLLE.

09 Harvest openings created as a result of a single harvest operation that exceed the maximum opening sizes established in FW-TIM-STD-08 and Table 33 shall require 60-day public review and Regional Forester approval.

10 FW-TIM-STD-08 and FW-TIM-STD-09 shall not apply to the size of harvest openings created as a result of catastrophic (stand replacing) disturbances, such as fire, windstorms, or insect and disease infestations.

Guidelines (FW-TIM-GDL)

01 To contribute to ecological sustainability and ecosystem health, production of timber, timber harvest, and maintenance activities (such as precommercial thinning) should be conducted and designed to move the Forest toward achievement of vegetation desired conditions (such as species composition, size class, forest density, and landscape pattern) as well as other resource desired conditions.

02 To help achieve the desired conditions for vegetation on lands suitable for timber production, timber harvest should be a primary management tool.

03 To help achieve desired conditions on lands unsuitable for timber production, but where timber harvest could occur, the use of timber harvest should be limited to the following purposes:

- Salvage dead or dying trees.
- Improve production of forage for livestock and wildlife.
- Reduce hazardous fuels and/or fire risk.
- Manage powerline right-of-ways.
- Mitigate forest insect or diseases.
- Move conditions toward desired stand or landscape vegetation composition, structure, and patterns, including restoration of ecosystem functions and improving resiliency.
- Maintain or enhance wildlife habitat.
- Perform research or administrative studies.
- Address issues of public safety and health.
- Improve recreation, infrastructure and/or scenic resource conditions, including creation of scenic vistas.

04 When salvaging timber in areas burned by high severity wildfire, clusters of burned trees of a variety of sizes should be retained where it is safe to do so, to provide habitat for wildlife species associated with burned habitats.

Other Forest Products and Wood for Fuel (OFP)

Desired Conditions (FW-OFP-DC)

01 Vegetation conditions support sustainable levels of other forest products, including but not limited to mushrooms, firewood, biofuels, posts and poles, Christmas trees, medicinal plants, tepee poles, and berries.

02 A variety of special forest products are available for commercial, tribal, personal, educational, and scientific uses to meet local demand.

Guidelines (FW-OFP-GDL)

01 To provide products for current and future generations, when permits are issued special forest and botanical products should be collected in a sustainable manner. Refer to appendix C.

02 When offering sales of forest products, targeted sales of small products should be available to small businesses.

03 When conducting commercial harvest activities, the Forest should augment the firewood program by providing opportunities for collecting firewood in vegetation treatment areas.

Fish and Wildlife (FWL)

Introduction

The 2012 Planning Rule requires that forest plans provide for ecological sustainability and diversity of plant and animal communities. This plan meets that requirement through plan components in the wildlife, terrestrial vegetation, and aquatic ecosystems sections. By maintaining fish and wildlife populations that persist over the long-term and are resilient to stressors, the opportunity for humans to enjoy those populations in a variety of way is also maintained. This section therefore includes only those plan components that are directly related to specific human uses, such as fishing, hunting, and viewing.

Desired Conditions (FW-FWL-DC)

01 Elk and other big game species are present and potentially available to hunters on NFS lands during both the archery and rifle hunting seasons. Habitat on NFS lands provides both security for hunted species as well as hunting opportunities that support Montana Fish, Wildlife, and Parks population and harvest objectives.

02 Furbearers are present and potentially available to trappers on NFS lands, and habitat on NFS lands provides trapping opportunities that support Montana Fish, Wildlife and Parks population and harvest objectives.

03 Native and desired non-native wildlife species are available on NFS lands for a variety of nonhunting recreational opportunities such as viewing and photography.

04 Levels and types of hunter or trapper access are balanced with desired conditions for wildlife populations and habitat security, and with other resource desired conditions. Also see Wildlife, Other.

05 The opportunity exists on some forest lands to fish native westslope cutthroat trout.

06 In some areas unsuitable for native fish restoration, sport fisheries habitats provide for recreational fishing opportunities.

Guidelines (FW-FWL-GDL)

01 *Alternatives B and E:* In areas identified by a Forest Service wildlife biologist as of particular concern for lack of secure habitat, vegetation management activities should maintain, where present, elk security areas. The nature of these areas should be determined in cooperation with MT FWP and should be based on the best available scientific information. Since the need for elk security and the factors that create it vary on a site-specific or local area basis, specific areas and prescriptions for management actions should be identified on a project or similar level. The intent of this guideline is to reduce the potential for displacement of elk and other big game species from NFS lands during the hunting season (see FW-FWL-DC-01 and FW-FWL-GDL-02).

02 *Alternatives B and E:* In areas identified by a Forest Service wildlife biologist as of particular concern for lack of secure habitat, temporary or permanent motorized routes should not result in a reduction of existing secure habitat during the big game hunting season. The intent of this guideline is to reduce the potential for displacement of elk and other big game species from NFS lands during the hunting season.

Special Uses (SU)

Introduction

All uses of NFS lands except those authorized under the authorities governing timber, minerals, grazing and some roads are designated “special uses”. These uses benefit tens of millions of people every day. The most notable of these uses revolve around energy transmission and communications. However, many of the other use types contribute substantially to the socio-economic health of smaller rural communities as well as larger metropolitan areas.

Of all uses on NFS lands, the transmission and distribution of electricity, oil, and gas (collectively called “energy uses”) has the most profound impact to our daily lives as a whole. Energy uses on NFS lands, as opposed to other alternatives, help address the Nation’s growing energy needs. Solar and wind energy generation, although not prevalent at this time, may be future energy uses in the planning area.

Communication facilities link us over vast distances. Many sites are located on NFS lands and provide critical emergency services communication in areas where no other alternative exists. Our communities are kept safer by these vital communication links. Communication sites connect us on a global scale by providing wireless communications, internet services, television, and public radio. Mobile radio systems existing on NFS lands allow highway workers and railroads to operate more efficiently, improving interstate commerce. In some cases, communications systems connect the electric grid which allows the early detection of system malfunctions preventing large scale power outages. Occupancy at communication facilities allows citizen based organizations such as the Civil Air Patrol, Search and Rescue and Coast Guard Auxiliary to maximize their communications which enhances public safety and saves lives.

Special use authorizations on NFS lands allow municipalities to provide clean drinking water and allow farmers and ranchers the ability to convey water to crops and livestock. The support of military training operations on NFS lands via special use authorization contributes to the effectiveness of our troops which strengthens our national security.

Recreation special uses such as ski areas, outfitter guide services, and organizational camps connect people to the forest. Annually, tens of thousands of people ski down winter slopes, get packed into remote camps to hunt big game, and/or attend summer camps on NFS lands - all of which is made possible through the issuance of special uses permits.

Desired Conditions (FW-SU-DC)

01 Authorized uses connect people to the Forest and provide for maximum public benefit.

02 The public's energy and communication needs are supported through issuance of special use authorizations.

Geology, Energy and Minerals (EMIN)

Introduction

The geology of the HLC NF is extremely varied and unique. Tectonic forces, volcanism, alpine and continental glaciation, and alluvial process have shaped and reshaped all of the GAs within the planning area. A large thrust fault system shaped the Rocky Mountain GA by displacing Mississippian aged limestone over the top of Cretaceous aged shale and sandstones. Granitic intrusions dominate the Elkhorn and Divide GAs as well as intrusions in the Blackfoot, Little Belts and Crazy Mountain GAs, where processes have resulted in mineralized deposits containing gold, silver, lead, copper, and other precious metals. Pleistocene glaciers left behind jagged peaks, with high mountain cirque lakes and wide glacial outwash filled valleys. Geologic processes continue today with active geomorphologic changes including stream channel migration, flooding, earthquakes, mass wasting, and anthropogenic disturbances.

The HLC NF has a long history of mineral extraction starting in the 1860s when gold and silver was discovered in the Helena area. Silver lead deposits were discovered in the 1880s and mined until the silver panic in the 1890s. Sapphires were discovered in an intrusive dike located on the east end of the Little Belt Mountains in 1879 and have been mined off and on to this day. Other geologic resources found on the Helena-Lewis and Clark National Forest include gravel and decorative rock.

The Helena-Lewis and Clark recognizes that historic mining has left a legacy of environmental degradation throughout the Forest. Unstable mine waste and acid mine drainage from open adits continue to degrade soil and water quality. Placer mining has impacted riparian and stream habitats and water quality. Many streams on the Forest do not currently meet State water quality standards due to the impacts of mineral mining and exploration.

The FS has a minerals management mission to administer the orderly exploration, development, and production of mineral and energy resources on NFS lands to help meet the present and future needs of the Nation. Management of mineral and energy resources has been defined by federal laws, regulations, and legal decision. There are three types of mineral and energy resources:

- Locatable minerals: include commodities such as gold, silver, copper, zinc, nickel, lead, platinum, etc. and some nonmetallic minerals such as asbestos, gypsum, and gemstones. Under the Mining Law of 1872 (as codified by 36 Code of Federal Regulations 228), US citizens are guaranteed the right to prospect and explore lands reserved from the public domain and open to mineral entry. The disposal of these commodities is non-discretionary.
- Salable minerals: include common varieties of sand, stone, gravel, cinders, clay, pumice, and pumicite. The FS has the authority to dispose of these materials on public lands through a variety of methods. The disposal of these materials is discretionary.
- Leasable minerals: include commodities such as oil, gas, coal, geothermal, potassium, sodium phosphates, oil shale, sulfur, and solid leasable minerals on acquired lands. Areas of the Forest are open to leasable minerals exploration, development, and production. A leasing decision will not be a part of this draft plan. The disposal of these mineral resources is discretionary.

There are approximately 56,700 acres of lands with privately owned mineral estates within the HLC NF. The owner of the privately held minerals has the right to reasonable access and to develop their minerals.

Desired Conditions (FW-EMIN-DC)

01 Caves and karst topography retain their unique geological features. Also see FW-WL-GDL-10 &11.

02 Geologic hazards (landslides, floods, sinkholes, etc.) and associated risks to public health and safety and facilities and infrastructure are minimized or mitigated.

03 Unique geologic features and scenery are conserved for their intrinsic values and characteristics. Also see Appendix C.

04 Geologic resources provide ecological, scientific, educational, interpretative, scenic, recreational, and paleontological benefits for the public and academia.

05 The Forest continues to contribute to the economic strength and demands of the nation by supplying mineral and energy resources while assuring that the sustainability and resiliency of other resources are not compromised or degraded.

06 Mineral materials are available based upon public interest, material availability, in-service needs, and protection of other resource values, including consistency with desired conditions for other resources.

07 Abandoned mine sites don't pose a risk to human health and/or the environment.

Objectives (FW-EMIN-OBJ)

01 Complete reclamation on 1 - 5 abandoned mines over the life of the plan.

Standards (FW-EMIN-STD)

01 Superfund sites shall be managed within the context of the superfund designation in coordination with the Environmental Protection Agency and the Montana Department of Environmental Quality.

02 If previously undiscovered caves are encountered during drilling operations, then reasonable precautions shall be taken to protect the cave. This includes but is not limited to sealing the casing above and below the cave to prevent air flow and water leakage.

03 Exclude activities that could compromise the infrastructure and remediation at mine waste repositories and mine reclamation sites.

Guidelines (FW-EMIN-GDL)

01 When authorizing or reauthorizing mineral development and operations, minimize adverse effects to aquatic and riparian resources. All proposed mineral operations should avoid Riparian Management Zones (RMZ) to the extent practicable. If the RMZ cannot be avoided, then ensure operators take all practicable measures to maintain, protect, and rehabilitate fish and wildlife habitat which may be affected by the operations. Required bonding should consider (in the estimation of bond amount) the cost of stabilizing, rehabilitating, and reclaiming the area of operations.

02 When authorizing or reauthorizing mineral development and operations, minimize adverse effects to aquatic and riparian resources. This should include requirements that operators take all practicable measures to maintain, protect, and rehabilitate water quality, and habitat for fish and wildlife and other riparian associated resources which may be affected by the operations.

03 Controlled seismic surveys requiring explosives or other similar techniques should not be conducted over or close enough to known caves to create disturbances to roosting or hibernating bats or bat maternity colonies.

04 The mining heritage of the HLC NF should be preserved during mineral development.

05 During management activities, the Forest Service should notify mining claimants and leaseholders of impending actions that may affect their claims or leased lands to minimize disruption of mining operations.

Carbon Storage and Sequestration (CARB)

Introduction

Carbon sequestration is the process by which atmospheric carbon dioxide is taken up by trees, grasses, and other plants through photosynthesis and stored as carbon in biomass (trunks, branches, foliage, and roots) and soils. The sink of carbon sequestration in forests and wood products helps to offset sources of carbon dioxide to the atmosphere, such as deforestation, forest fires, and fossil fuel emissions.

Sustainable forestry practices can increase the ability of forests to sequester atmospheric carbon while enhancing other ecosystem services, such as improved soil and water quality. Planting new trees and improving forest health through thinning and prescribed burning are some of the ways to increase forest carbon in the long run. Harvesting and regenerating forests can also result in net carbon sequestration in wood products and new forest growth.

Desired Conditions (FW-CARB-DC)

01 Carbon storage and sequestration potential is sustained through maintenance or enhancement of ecosystem biodiversity and function, and forests are resilient to natural disturbance processes and changing climates. Also see Forested Vegetation and Soils.

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Chapter 3. Geographic Area Direction

Introduction

While the forestwide desired conditions indicate broad trends which we would expect to see over the next 10 to 15 years, we recognize that individual places across the HLC NF have their own unique characteristics and conditions. These places, referred to as "geographic areas" (GAs), define a landscape that people associate with on the Forest. Identifying these areas gives us the opportunity to fine-tune our forestwide management to better respond to more local conditions and situations. The HLC NF has been divided into the following ten GAs (see figure 2):

- Big Belts (BB)
- Castles (CA)
- Crazies (CR)
- Divide (DI)
- Elkhorns (EH)
- Highwoods (HW)
- Little Belts (LB)
- Rocky Mountain Range (RM)
- Snowies (SN)
- Upper Blackfoot (UB)

GAs provide a means for describing conditions and trends at a more local scale if appropriate. GAs are ecological areas that are synonymous with basin and watershed. Table 34 displays total acres and the acres of the HLC NF by GA.

Table 34. Acres within the ten GAs on the HLC NF

Geographic Area	Total Acres (All Ownerships)	NFS acres within GA	% of GA in NFS Lands
Big Belts	452,292	312,983	69
Castles	79,862	69,610	87
Crazies	70,036	57,618	82
Divide	232,890	202,577	87
Elkhorns	175,259	160,599	92
Highwoods	44,495	42,315	95
Little Belts	900,961	802,711	89
Rocky Mountain Range	782,986	777,963	99
Snowies	121,897	117,989	98
Upper Blackfoot	348,185	333,215	96

Each GA section on the following pages provides an overview of the area, including existing distinctive roles and contributions. GA specific desired conditions not covered by forestwide direction are also included. GA objectives, and in some cases standards and guidelines, are also specified. In all cases, please refer to the forestwide direction first, followed by any specific GA direction that may apply. Each GA has a set of associated maps (appendix B).

A number of small parcels that fall within FS jurisdiction are located outside of the HLC NF boundary and are not associated with any GA. These small parcels are primarily used administratively, except for the Lewis and Clark National Historic Trail Interpretive Center in Great Falls, MT, which is a large

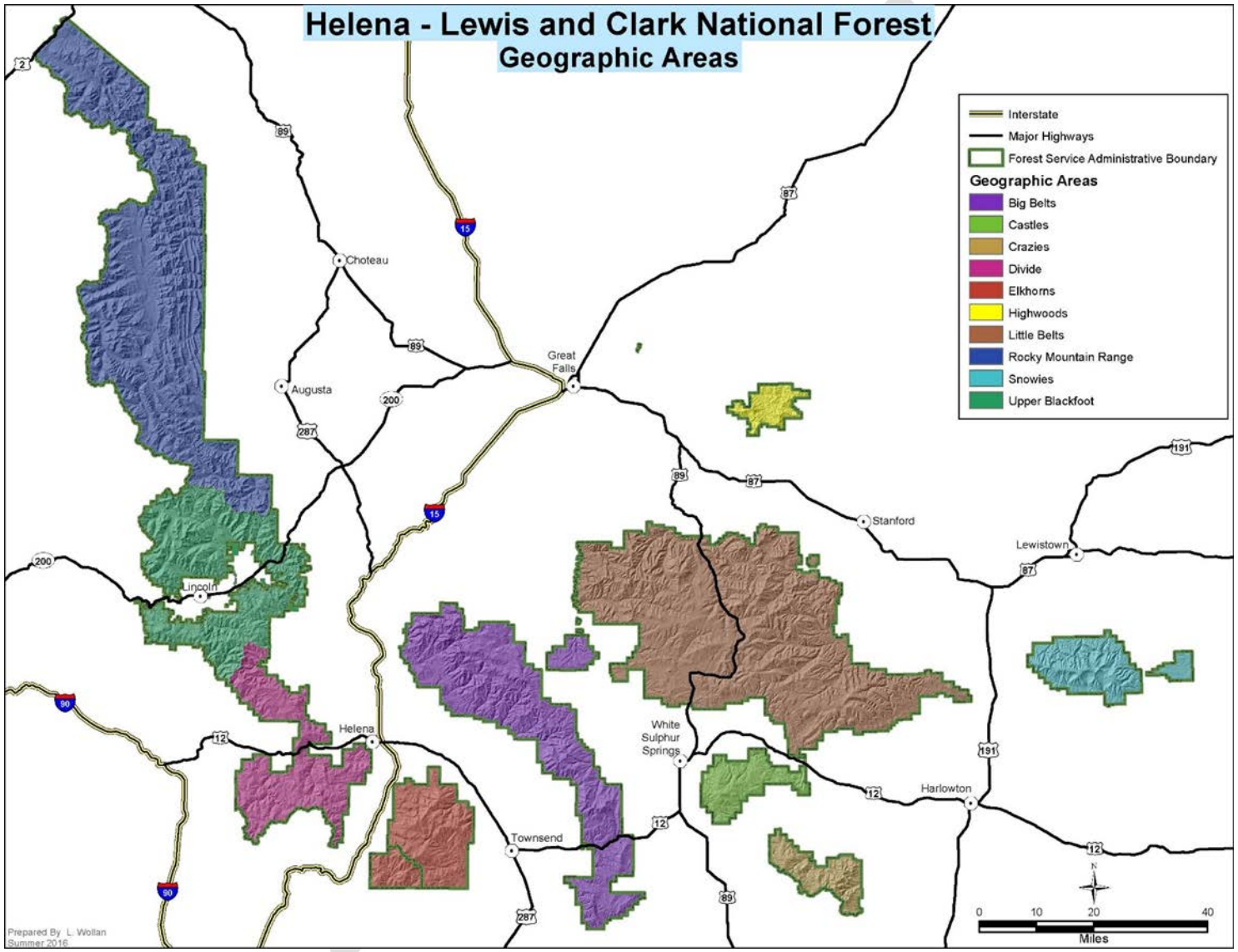
interpretive and educational facility. These small parcels often fall within or very close to the communities surrounding the HLC NF.

Table 35 describes the locations and sizes of these smaller parcels.

Table 35. Parcels that are within FS jurisdiction, but outside of HLC NF boundary

Parcel General Location and Town/Range/Section	Description	Acres
Augusta, Montana T20N R06E S17	Augusta Information Station, several administrative buildings in the city limits.	1.5
Harlowton, Montana T08N R15E S21 and S22	Administrative buildings in the city limits.	1.4
White Sulphur Springs, Montana T09N R07E S18	Belt Creek-White Sulphur Springs Ranger District office, Several administrative buildings located on several city lots within the city limits.	0.4
White Sulphur Springs, Montana T09N R07E S18		0.4
White Sulphur Springs, Montana T09N R07E S18		0.4
White Sulphur Springs, Montana T09N R07E S18		0.4
White Sulphur Springs, Montana T09N R07E S18 and T09N R07E S13		0.4
White Sulphur Springs, Montana T09N R07E S18 and T09N R07E S13		0.4
Townsend, Montana T07N R02E S32	Administrative buildings and corrals outside of the city limits.	39.8
Townsend, Montana T07N R02E S31	Administrative buildings in the city limits.	0.2
Helena, Montana T10N R03W S20	Old Helena Ranger District office, Administrative buildings in the city limits, near the airport.	18.0
Helena, Montana T10N R03W S22	Tanker Base, Administrative buildings near the airport.	8.3
Great Falls, Montana T21N R04E S32 and S33	Lewis and Clark National Historic Trail Interpretive Center within city limits.	29.3
Stanford, Montana T16N R12E S16 and S17	Administrative buildings in city limits.	6.7
Choteau, Montana T24N R05W S24	Administrative buildings and corrals north of the city limits	5.0
	Total	112.6

Figure 2. Geographic areas on the HLC NF



Big Belts Geographic Area

General Overview

The Big Belt Mountains are an island range primarily in Broadwater, Lewis and Clark, and Meagher counties with small portions in Gallatin and Cascade counties. The GA includes the Gates of the Mountains Wilderness, the outlying Dry Range, and the small communities of York and Nelson. The nearest population centers include Helena, Townsend, and White Sulphur Springs. This GA is adjacent to the Missouri river and several large reservoirs.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

The Missouri River flows northwest alongside this GA and then flows north through the Big Belt Mountains. The area was named the Gates of the Mountains by the Lewis and Clark expedition because the river is constricted through tall, picturesque limestone cliffs that open like a gate when you pass through them on the water. An area of canyons adjacent to this stretch of river shares similar geology and has been designated as the Gates of the Mountains Wilderness. The tallest mountains are found in the south central part of the range, Mount Baldy and Mount Edith. Some of the highest elevations have evidence of localized glaciation, such as the cirque on Mount Edith. Another prominent local landform feature is “the bar”, which is a deposition of material within a stream body over time. Many, such as Montana Bar, have been productive sources for valuable minerals for placer miners.

The geology of this GA is complex. The southern parts of the GA are predominantly granitic uplifted sedimentary Precambrian limestone, sandstones, and shale. The northwest end of the Big Belts has an excellent exposure of the Precambrian aged Helena (Empire shale) Formation. This area features dramatically deformed Mississippian-aged massive limestones that are exposed along the Missouri River corridor and in primary drainages. There are some pockets of rock from metamorphic and volcanic activity that are rich in minerals. Both the Big Belts and the Dry Range lack abundant surface water. High elevation lakes such as Camas, Edith, and Boulder are in basins surrounding Mount Baldy and Boulder Baldy peaks. Gipsy Lake, a manmade reservoir, is also on the east side.

The GA supports a mosaic of productive grasslands and conifer forests. Most of the Dry Range and a portion of the Big Belts along the Missouri River can be characterized as partially forested foothills with large grassland openings. This GA hosts a unique bitterbrush/sagebrush/skunkbush complex in the Sweats Gulch area, as well as a heavy sagebrush zone in the southern portion. Mountain mahogany occurs along the Missouri river, providing deer winter range. Other unique nonforested vegetation communities include rough fescue-dominated grasslands, horizontal juniper, and high elevation wetlands in the Boulder-Baldy and Mount Edith areas. The interior slopes support extensive conifer forests interspersed with higher elevation grass and shrublands, and also include several rocky peaks above treeline. The Big Belts is notable for its preponderance of warm, dry potential vegetation types and potential to promote ponderosa pine, aspen, limber pine, and open savannas, as well as whitebark pine on cold potential vegetation types at the highest elevations. Cool moist potential vegetation types and associated species (including lodgepole pine, subalpine fir, and Engelmann spruce) are present but less common in this GA than elsewhere on the Forest. Extensive sagebrush and aspen communities are present. The Long Gulch lodgepole pine test plantation is located here. The limestone cliffs near the Missouri support unique plant communities. In addition, the Needles rock formation area supports a unique bog feature where livid sedge (*Carex livida*) can be found.

The Big Belts GA provides a variety of habitats for a diversity of wildlife species, including mountain goats, bighorn sheep, bald eagles, and cliff-nesting raptors such as peregrine falcons and golden eagles. Lewis's woodpeckers, flammulated owls, and Townsend's big-eared bats, all species of conservation concern, are also found here. This GA is not within the Northern Continental Divide Ecosystem Recovery Zone for grizzly bears, but is within management Zone 2 identified in the Northern Continental Divide Ecosystem Grizzly Bear Conservation Strategy. The Big Belts GA is not occupied by Canada lynx, and is not within designated critical habitat for lynx. Very little of the Big Belts GA contains mapped potential Canada lynx habitat. The Big Belts GA provides viewing and hunting opportunities for a variety of big game species including elk, mule deer, and white-tailed deer, and has a population of wild turkeys that provides a hunting opportunity. Ray Creek and Whites Gulch support populations of westslope cutthroat trout. In addition, Beaver Creek is a blue ribbon trout stream.

Social and Economic Characteristics

The Big Belts GA provides a variety of recreation opportunities. The GA has an established system of motorized trails offering access and loop opportunities for users. Snowmobiling is also very popular in the Big Belts GA. Additionally, a number of nonmotorized trails offer recreation opportunities into quiet areas, such as the Gates of the Mountains Wilderness and the Camas Inventoried Roadless Area. These motorized and nonmotorized trail opportunities are supported by numerous trailheads and developed recreation sites strategically located throughout the Big Belts GA. The Big Belts also hosts multiple popular historic and/or recreational rental cabins, such as Bar Gulch, Rillway, Miller, and Thompson Guard Station. These cabins are a highlight of the Big Belts GA and draw many visitors who appreciate the history of the cabins and enjoy their unique recreation settings. Additionally, the Missouri River along the northern border of the Big Belt GA draws both local and regional recreation users who enjoy fishing, boating, and camping. Visitors may take an interpretive boat ride on the Missouri River or may boat on their own through the Gates of the Mountains to access unique recreation and camping opportunities that are inaccessible by vehicle.

Roads have been constructed for resource extraction and now fragment some areas of the GA. The road network serves as the primary platform from which visitors experience the area. Timber management is evident in the roaded areas. Communication towers have been constructed on high points. Utilities and transmission corridors transect the GA, including a portion of the Gates of the Mountain Wilderness. In contrast to the roaded landscapes in the GA, inventoried roadless areas are located in the GA, including the Mount Baldy Inventoried Roadless Area which provides a particularly remote expanse of land. A large livestock grazing program is active in the GA. Mineral production is primarily occurring via small mining operations, and there are several abandoned mines in the GA that are in need of reclamation.

Cultural and Historical Characteristics

The Big Belts GA has a rich history of occupation beginning with prehistoric peoples. Many cliff faces and rock shelters bear their signature in the form of pictographs and petroglyphs. Artifacts such as projectile points and associated flakes are commonly encountered. The Flathead Trail, a historic travel corridor, traverses the southern Big Belt Mountains.

Early European settlement began with the Lewis and Clark expedition of 1804-1806. Shortly thereafter, settlers and miners began to settle within the area. The presence of valuable minerals has endowed the Big Belts with a robust mining history. Relics of historic mining infrastructure and tools are frequent. Many small communities have come and gone such as Whites City, Diamond City, Watson, Vista, Manger, Duck Creek, Blackwell, Cement Gulch City, and Trout Creek. Thompson Civilian Conservation Corps Camp, Meriwether Guard Station, and Hogback Lookout stand as reminders of the Civilian Conservation Corps and FS history.

The Mann Gulch Wildfire Historic District in the northern Big Belts was listed in the National Register of Historic Places in 1999. Mann Gulch is significant in firefighting history due to the fact that thirteen fire personnel lost their lives in this drainage in 1949 while working to suppress a wildfire. Many make pilgrimages here to pay their respects, strengthen internal relationships, and revisit lessons learned.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 36 and associated map(s) (appendix B) display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

Table 36. Designated areas in the Big Belts GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Gates of the Mountains Wilderness	28,441	9	5
Inventoried Roadless Areas	148,939	47	10
Research Natural Areas	2,409	1	14
Eligible Wild and Scenic Rivers	18	N/A	N/A
Lewis and Clark National Historic Trail	.5	N/A	N/A
Hanging Valley National Recreation Trail	12	N/A	N/A

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as, but not limited to, river corridors, ski areas, recreation areas, cultural areas, municipal watersheds, major utilities and communication sites that are not congressionally designated but do have specific plan components.

Table 37 displays the special emphasis and permitted areas in this GA.

Table 37. Special emphasis and permitted areas in the Big Belts GA

Area	Acres	Percent of GA
Missouri River Corridor	3,633	1
Smith River Corridor	See Little Belts GA	See Little Belts GA
6” Petroleum Pipeline Beaver Creek	57	Less than 1
100 Kv Powerline Beaver Creek and Gates of the Mountains Wilderness	175.1	Less than 1
Hogback Communication Site Hogback Mtn	8.5	Less than 1
500 Kv Powerline Grassy Mtn	93.	Less than 1
Duck Creek Communication Site Baldy Mtn	1.3	Less than 1

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number.

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation

opportunity spectrum and its associated plan components. Table 38 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter in this GA. In addition, the associated map(s) (appendix B) display the recreation opportunity spectrum categories in this GA.

Table 38. Recreation opportunity spectrum classes for the Big Belts GA

Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	46,241	15	46,241	15
Semi-primitive Nonmotorized	108,357	34	131,546	42
Semi-primitive Motorized	38,573	12	85,298	26
Roaded Natural	112,385	36	43,403	14
Rural	9,643	3	8,710	3
Urban	0	0	0	0
Alternative C				
Primitive	46,241	15	46,241	15
Semi-primitive Nonmotorized	108,357	34	131,546	42
Semi-primitive Motorized	38,573	12	85,298	26
Roaded Natural	112,385	36	43,403	14
Rural	9,643	3	8,710	3
Urban	0	0	0	0
Alternative D				
Primitive	68,591	22	68,591	22
Semi-primitive Nonmotorized	86,678	28	109,308	34
Semi-primitive Motorized	38,573	12	85,253	27
Roaded Natural	111,761	35	43,337	14
Rural	9,596	3	8,710	3
Urban	0	0	0	0
Alternative E				
Primitive	30,843	10	30,843	10
Semi-primitive Nonmotorized	119,864	38	144,792	46
Semi-primitive Motorized	21,958	7	28,480	9
Roaded Natural	132,937	42	102,421	32
Rural	9,596	3	8,662	3
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Big Belts GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. Scenic integrity objectives (Table 39) tied to the scenic character for the Big Belts GA are displayed in the scenic integrity objectives maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 39. Scenic integrity objectives for the Big Belts GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative B		
Very High	46,241	15
High	193,077	61
Moderate	34,532	11
Low	41,527	13
Very Low	0	0
Alternative C		
Very High	46,241	15
High	175,656	56
Moderate	51,952	16
Low	41,527	13
Very Low	0	0
Alternative D		
Very High	68,594	22
High	170,773	54
Moderate	34,488	11
Low	41,525	13
Very Low	0	0
Alternative E		
Very High	30,843	10
High	207,882	66
Moderate	34,884	11
Low	41,767	13
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as both suitable and unsuitable for timber production. The Big Belts GA contributes a substantial proportion of the forestwide total area of lands suitable for timber production. Table 40 and associated map(s) in appendix B display the lands suitable for timber production in this GA.

Table 40. Lands suitable for timber production in the Big Belts GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C	67,379	21%	15%
Alternative D	67,283	21%	15%
Alternative E	69,295	22%	15%

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

Recommended Wilderness

Table 41 and associated map(s) in appendix B display the recommended wilderness areas in this GA.

Table 41. Recommended wilderness in the Big Belts GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C			
Big Log	7,086	2	3
Mount Baldy	8,314	3	4
Alternative D			
Big Log	7,086	2	1
Mount Baldy	8,314	3	2
Camas Creek	22,350	7	5
Alternative E			
n/a	n/a	n/a	n/a

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of total recommended wilderness forestwide, rounded to the nearest whole number.

Plan Components - Forested Vegetation (VEGF)

Desired Conditions (BB-VEGF-DC)

01 To complement the forestwide desired condition for tree species presence, Table 42 shows the desired condition for tree species presence in the Big Belts GA.

Table 42. Big Belts GA desired conditions for tree species presence (percent of area)[4]

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	3 (1-6)	7-10	The Big Belts GA is unique in its abundance of juniper, and unlike the forestwide range, the desired condition range for this species indicates a reduction relative to the existing condition. In addition, the desired condition range for aspen is higher than the forestwide range, as it has a high potential to be enhanced in this GA. Other desired ranges and shifts are similar to the forestwide desired condition, including an increases in limber pine, lodgepole pine, and ponderosa pine and decreases in Douglas-fir and subalpine fir relative to the 2016 condition. It is desirable to maintain and enhance the resiliency of whitebark pine.
Rocky Mountain juniper	17 (12-21)	1-5	
ponderosa pine	10 (6-13)	41-47	
Douglas-fir	49 (42-54)	50-55	
aspen	1 (0.3-3)	4-7	
Engelmann spruce	4 (1-6)	2-6	
lodgepole pine	16 (12-21)	27-43	
subalpine fir	15 (10-19)	2-6	
whitebark pine	6 (3-9)	4-12	

1Additional species may occur in minor amounts.
2 Existing condition shows the mean percent area with the 90% confidence limit in parenthesis. Source for Existing is R1 Summary Database, FIA data.
3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (BB-VEGNF-DC)

01 Nonforested cover types are present on 25-35% of the GA, as compared to the existing condition which is at the lower end of this range.

02 Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to the bitterbrush/sagebrush/skunkbush complex in Sweats Gulch, mountain mahogany communities along the Missouri river, the heavy sagebrush zone of the southern Belts, high elevation rough fescue-dominated grasslands, horizontal juniper components, and high elevation wetlands and bogs in the Boulder-Baldy and Mount Edith areas.

Plan Components - Wildlife (WL)

Desired Conditions (BB-WL-DC)

01 Bighorn sheep populations are healthy and risk of disease transmission from domestic livestock is minimal.

02 Ponderosa pine-dominated forests have concentrations of large (greater than 15" dbh) ponderosa pine and Douglas-fir trees and snags with relatively open canopy available for nesting by flammulated owls. These areas occur within a larger mosaic of closed-canopy forest and shrub-dominated openings that serve as flammulated owl roosting and foraging areas.

Standards (BB-WL-STD)

01 The most current recommendations made through agency or interagency efforts, such as the Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat (Wild Sheep Working Group 2012, *Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat* or updated versions), shall be applied during allotment planning to maintain separation of bighorn sheep from domestic sheep and goats on NFS lands.

Plan Components – Missouri River Corridor (MISCOR)

The Missouri River is a nationally recognized river famous for its fishing, outstanding scenery, and the history present throughout it. The area is a primary access route through the Gates of the Mountains, a distinctive limestone cliff formation along this portion of the Missouri River.

The Missouri River Corridor has much historic and cultural significance. The term "Gates of the Mountains" was first used by Captain Meriwether Lewis in 1805 to describe these scenic and unique cliffs. Captains Lewis and Clark passed through the corridor on route to the Pacific Ocean and back in 1805-06. The Lewis and Clark National Historic Trail, a nationally designated trail, is located in the bottom of the corridor. Additionally, the historic Mann Gulch Fire Historic Landscape is located within the Missouri River Corridor area. This historic landscape is recognized on the National Register of Historic Places and memorializes the loss of smokejumper fire fighters during the 1949 Mann Gulch fire.

Recreation use of the Missouri River Corridor is year-round but particularly high during the summer months when water recreation is the most active throughout the corridor. A commercial tour boat operation offers boat trips up the river and there are a number of developed and dispersed recreation sites along the banks of the river. This area also provides access to the western portions of the Gates of the Mountain Wilderness. In addition, there are concentrations of cliff nesting raptors in this corridor (also see FW-WLO-DC-03).

Desired Conditions (BB-MISCOR-DC)

01 The developed recreation settings and opportunities along the Missouri River corridor are ecological sustainability and recreational user conflicts are minimized.

02 The setting and recreation opportunities along the Missouri River Corridor maintain the natural scenic beauty of the river while seeking ways to enhance, protect, and improve the largely natural appearing scenic quality of the canyon's visual corridor.

03 The historic and cultural features of the Missouri River corridor are protected and enhanced. Where appropriate, interpretation is provided for forest visitors to enhance their experience(s) of the area.

04 Travelers within the Missouri River Corridor have opportunities to learn about the 1806 Lewis and Clark Expedition, the Mann Gulch Fire, and to experience and appreciate the unique natural environment of the area. Trailside interpretation and related visitor information services enhance visitor appreciation of the outdoors, the natural resources, scenery, and cultural and historic values within the corridor.

05 Existing or future developed recreation sites accommodate increased recreational use in the corridor while protecting the unique and important natural resources and historic and cultural features within the area.

06 Dispersed recreation opportunities along the river corridor allow for exploration and discovery with minimal environmental impacts and user conflicts.

Goals (BB-MISCOR-GO)

01 The operation, maintenance, and delivery of recreation along the Missouri River corridor is supported by strong partnerships and volunteer programs.

Guidelines (BB-MISCOR-GDL)

01 To protect and enhance the scenic quality of the area, management activities in the Missouri River Corridor should be consistent with the scenic integrity objective of high to very high.

Suitability (BB-MISCOR-SUIT)

01 The Missouri River Corridor is unsuitable for timber production. However, harvest may be used for the purposes of providing for public safety and enhancing the recreational or aesthetic values of the corridor.

Plan Components – Smith River Corridor (SMITH)

The Smith River Corridor is located within two GAs - Big Belts and the Little Belts. Only a small portion of the corridor crosses the Big Belts on the far western portion of the GA, called the Dry Range. The majority of the corridor is located within the Little Belts GA. Therefore, the plan components for the Smith River corridor are located in the Little Belts GA section.

Plan Components – Benefits to People (FWL)

Desired Conditions (BB-FWL-DC)

01 Habitat capable of sustaining a huntable population of mountain goats, an introduced species, occurs where compatible with habitat needs and objectives for other wildlife species.

Plan Components – Benefits to People (SU)

Goal (BB-SU-GO)

01 Work with permit holder to relocate the utility corridor outside of the Gates of the Mountains Wilderness.

Standards (BB-SU-STD)

01 Maintenance of the utility corridor in the Gates of the Mountains Wilderness shall be managed to have minimal effects on wilderness character.

Castles Geographic Area

General Overview

The Castles GA is an island mountain range east of White Sulphur Springs in Meagher County. The Castle's forested higher elevations are surrounded by lower elevations that are predominantly treeless, instilling an island appearance.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

The Castle Mountains have their own geologic story unique from the other island ranges. The range is a combination of landforms that appear as one. Western slopes culminate in a gently rising, flat-topped dome of volcanic origin that is comprised of a group of castle-like outcrops of granite. The eastern section is characterized by plateaus of sedimentary origin. Vantages throughout the GA provide impressive views of the Little Belts to the north, the Crazies to the south, the Big Belts to the west, the Bridger Mountains to the southwest, and a vast expanse of prairie to the east.

North and northwestern aspects are cloaked with a dense canopy of conifers. At higher elevations and on sun exposed aspects, forest intergrades with grassland meadows, or parks. These expansive grasslands consist of robust native plant communities that provide forage for both wildlife and livestock. This GA is dominated by nonforested and warm dry potential vegetation types, with more aspen, lodgepole pine, and limber pine than across the Forest as a whole, along with less Douglas-fir, ponderosa pine, and subalpine fir. Aspen stands grow in moist areas, and the western portion of the mountain range supports a large expanse of whitebark pine forest at the highest elevations. On the drier, eastern sections, plant communities are dominated by grassy parks interspersed with patches of conifers. Historically, fire was the primary shaper of plant communities.

The Castles GA provides habitat for a variety of wildlife species, including elk, mule deer, white-tailed deer, and black bear. This GA includes extensive sagebrush grasslands, likely supporting a number of species that use that habitat type, such as Vesper sparrow, and possibly Brewer's sparrow and loggerhead shrike. There are two historic records of greater sage grouse in or immediately adjacent to the Castles GA, although the details and importance of those observations are unclear. The northeastern portion of the GA has important elk winter range.

The Castles GA drains to the North and South Forks of the Smith River on the west side and to the North and South Forks of the Musselshell River on the east side. Many spring fed streams drain from the mountains into these forks, some cutting deep gorges and some sinking underground. Willow Creek is the municipal water source for White Sulphur Springs. The western slopes are wetter than the porous eastern limestone slopes. There is also a small lake known as Castle Lake located within this GA. Several streams on the west slope of the Castles support westslope cutthroat trout.

Water quality in the upper areas of the Willow Creek drainage is good, and the watershed is the primary source water for the municipal water for the city of White Sulphur Springs. The reservoir and infrastructure includes a small dam and stream diversion locate just off the forest on city property. A small conservation population of westslope cutthroat trout are present in the drainage.

Social and Economic Characteristics

The recreation opportunities in the Castles primarily consist of trails that allow for year-round motorized access; two small campgrounds, one developed and one primitive, that provide overnight camping opportunities; and unique geologic formations that provide for interesting hiking and exploring. Nonmotorized access to the Castles is limited. Livestock grazing is a primary multiple use on this GA. Mineral production is primarily occurring via small mining operations, and there are several abandoned mines in the GA that are in need of reclamation.

Private land inholdings and checkerboard ownership patterns in this GA make access to other NFS lands within the area challenging.

Cultural and Historical Characteristics

This GA has a long history of occupation. Native Americans left evidence of their presents in the area in the form of rock art, stone tool quarries and workshops sites. Euro-American settlement began with the discovery of metal deposits. This was followed by homesteading as a result of railroad development. The small railroad town of Lennep is a remnants of this era, as are the mining ghost towns of Castletown and Blackhawk. Locals report the active use of Prohibition stills in the surrounding foothills, with one known recorded location.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 43 and associated map(s) in appendix B display the designated areas in this GA.

Table 43. Designated areas in the Castles GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Inventoried Roadless Areas (1)	29,334	42	2

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as but not limited to river corridors, ski areas, recreation areas, cultural areas, municipal watersheds, major utilities and communication sites that are not congressionally designated but do have specific plan components. See Table 44.

Table 44. Special emphasis and permitted areas in the Castles GA

Area	Acres	Percent of GA
500 kv Power line	9	Less than 1
Howie Mountain Communication Site	1	Less than 1.
Warm Springs Agate Communication Site	1	Less than 1.
Willow Creek Municipal Watershed	6,856	9

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number.

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components. Table 45 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix B display the recreation opportunity spectrum categories in this GA.

Table 45. Recreation opportunity spectrum classes for the Castles GA

Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	16,876	24	14,577	21
Semi-primitive Motorized	16,343	24	55,132	79
Roaded Natural	36,490	52	0	0
Rural	0	0	0	0
Urban	0	0	0	0
Alternative C				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	16,876	24	14,577	21
Semi-primitive Motorized	16,343	24	55,132	79
Roaded Natural	36,490	52	0	0
Rural	0	0	0	0
Urban	0	0	0	0
Alternative D				
Primitive	30,606	44	30,606	44
Semi-primitive Nonmotorized	3,649	5	10,308	15
Semi-primitive Motorized	846	1	28,794	41
Roaded Natural	34,608	50	0	0
Rural	0	0	0	0
Urban	0	0	0	0
Alternative E				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	16,876	24	14,577	21
Semi-primitive Motorized	16,343	24	24,407	35
Roaded Natural	36,490	52	30,724	44
Rural	0	0	0	0
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Castles GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural

characteristics commonly found throughout this GA. Scenic integrity objectives (Table 46) tied to the scenic character for the Castles GA are displayed in the scenic integrity objective maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 46. Scenic integrity objectives for the Castles GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative B		
Very High	0	0
High	44,752	64
Moderate	13,832	20
Low	11,125	16
Very Low	0	0
Alternative C		
Very High	0	0
High	37,951	54
Moderate	20,633	30
Low	11,125	16
Very Low	0	0
Alternative D		
Very High	30,606	44
High	14,205	20
Moderate	13,816	20
Low	11,081	16
Very Low	0	0
Alternative E		
Very High	0	0
High	44,752	64
Moderate	13,832	20
Low	11,125	16
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as both suitable and unsuitable for timber production. While roughly a third of this GA is identified as suitable for timber production, this contributes a relatively small proportion of the forestwide total area of lands suitable for timber production. Table 47 and associated map(s) (see appendix B) display the lands suitable for timber production in this GA.

Table 47. Lands suitable for timber production in the Castles GA

	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C	18,450	27%	4%
Alternative D	17,859	26%	4%

	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative E	18,450	27%	4%

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

Recommended Wilderness

Table 48 and associated map(s) in appendix B display the recommended wilderness areas in this GA.

Table 48. Recommended wilderness in the Castles GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C			
n/a	n/a	n/a	n/a
Alternative D			
Wapiti Peak	30,606	44	6
Alternative E			
n/a	n/a	n/a	n/a

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of total recommended wilderness forestwide, rounded to the nearest whole number.

Plan Components – Watershed (WTR)

Desired Conditions (CA-WTR-DC)

01 Willow Creek municipal watershed provides a clean water supply for the city of White Sulphur Springs. See FW-WTR-STD-01.

Goals (CA-WTR-GO)

01 Coordinate management of the municipal watershed with the State of Montana and municipality.

Guidelines (CA-WTR-GDL)

01 Management activities within the Willow Creek municipal watershed should emphasize restoration and resiliency.

02 Livestock grazing is only permitted in the Willow Creek watershed when moving animals between pastures, which are adjacent to the watershed. However, there should be no allotments in the watershed.

Plan Components – Forested Vegetation (VEGF)

Desired Conditions (CA-VEGF-DC)

01 To complement the forestwide DC for tree species presence, Table 49 shows the desired condition for tree species distribution within the Castles GA.

Table 49. Castles GA desired conditions for tree species presence (percent of area)[4]

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	15 (6-23)	31-33	

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
Rocky Mountain juniper	2 (1-6)	6-7	The Castles GA is unique in its relatively high abundance of limber pine, and the desired condition indicates a desired increase from the existing condition. Also unique is that the desired condition range for Engelmann spruce and subalpine fir are similar to the existing condition, in contrast to a desire forestwide to reduce these species. In addition, the desired condition for this GA indicates a desire to decrease the extent of lodgepole pine as well as Douglas-fir relative to the existing condition.
ponderosa pine	6 (5-12)	21-22	
Douglas-fir	48 (38-62)	20-22	
aspen	2 (1-6)	0.1-2	
Engelmann spruce	2 (1-6)	5-6	
lodgepole pine	44 (32-56)	31-35	
subalpine fir	15 (7-24)	9-12	
whitebark pine	19 (10-28)	7-25	

1Additional species may occur in minor amounts.
2 Existing condition shows the mean percent area with the 90% confidence limit in parenthesis. Source for Existing is R1 Summary Database, FIA data.
3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

02 The medium tree size class is present on 3-25% of the GA, at a higher level than the existing condition. This trend differs from FW-VEGF-DC-03, but will contribute to the achievement of the forestwide DC. The other desired trends for size class in this GA are consistent with forestwide DCs. Also see appendix C.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (CA-VEGNF-DC)

01 Nonforested cover types are present on 15-30% of the GA, as compared to the existing condition which is at the lower end of this range.

02 The extent and health of native grass and shrublands support habitat for potential use by species such as Brewer's sparrows, Chestnut-collared longspurs, sandhill cranes, etc., and potential transitory use by species such as greater sage grouse, pronghorn, and others.

03 Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to sagebrush communities.

Plan Components – Wildlife (WL)

Desired Conditions (CA-WL-DC)

01 Big game winter range in the northeastern portion of the mountain range provides quality seasonal habitat for wildlife.

Crazies Geographic Area

General Overview

The Crazies GA encompasses the northern portion of the Crazy Mountains. The southern portion of the GA is administered by the Gallatin National Forest. The GA is at the junction of Meagher, Wheatland, Sweet Grass, and Park counties. White Sulphur Springs is the nearest population center.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

The Crazy Mountains make up an island range that abruptly rises from the surrounding Shield, Musselshell, and Yellowstone River valleys. This island range is a discrete geologic unit, unique from the adjacent ranges. The form of the Crazies is bold and craggy. They are of volcanic origin and enriched with granitic geology. Talus, scree, and boulder areas dot steep and moderate slopes. Broad valleys and long finger ridges radiate outward from its center. Many ridge tops and summits lack vegetation residing in the alpine. Glaciation has imparted many of these landforms with sharp, scoured edges.

The Crazy Mountains support a mix of nonforested, warm dry, cool moist, and cold potential vegetation types. Riparian forests of aspen, willow, dogwood, and cottonwood grow along their courses. Grasslands occupy much of the lower elevations, more so than the Forest as a whole, which intergrade with coniferous forest at higher elevations. Small patches of aspen punctuate the dense canopy of evergreen trees, although this species is relatively rare. Limber pine is present, but ponderosa pine and juniper are notably absent. Spruce/fir cover types are the most common, and although lodgepole pine and Douglas-fir are common, they are less prevalent here than on the Forest as a whole. At the highest elevations, whitebark pine communities are particularly prevalent, eventually giving way to nonforested alpine habitats. Historically, fire would have been a major influence on plant communities.

The Crazies GA is home to a number of wildlife species, including western toads, Clark's nutcrackers, black bears, moose, elk, mule deer, and others. The Crazies supports a population of mountain goats introduced by Montana Fish, Wildlife, and Parks in 1941 and 1943 that currently provide an important hunting and viewing opportunity. The Crazy Mountains may provide some connectivity for certain wildlife species between the Little Belts Mountains to the north, and the mountain ranges of the Greater Yellowstone Ecosystem to the south.

All of the GA's streams drain into the Musselshell River on their way to the Gulf of Mexico via the Missouri River. There is no mapped population of westslope cutthroat trout in the Crazies.

Social and Economic Characteristics

Recreation use in the Crazies is dispersed in nature and is concentrated around FS Road 66, which is the primary access to the historic Forest Lake Guard Station and a primitive campground on the edges of Forest Lake. Private land inholdings and checkerboard ownership patterns in this GA make access to other NFS lands within the area challenging. Hunting is a very popular recreation activity in the GA and outfitter and guides provide unique hunting opportunities and access that is difficult to achieve otherwise.

Cultural and Historical Characteristics

The rugged and awe-inspiring range has captivated people over time. The Mountain Crow people visited its tall peaks and special areas for vision quests. Euro-American settlement has lightly affected the area with only a few signs of habitation. Forest Lake Guard Station still stands as a sentry for FS administration. Today people still seek spiritual experiences through various recreational and other means.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 50 and associated map(s) (appendix B) display the designated areas in this GA.

Table 50. Designated areas in the Crazies GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Inventoried Roadless Areas (2)	37,373	65	3

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as but not limited to river corridors, ski areas, recreation areas, cultural areas, municipal watersheds, major utilities and communication sites that are not congressionally designated but do have specific plan components. See Table 51.

Table 51. Special emphasis and permitted areas in the Crazies GA

Area	Acres	Percent of GA
500 kv Power line	65.7	Less than 1

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number.

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity and its associated plan components. Table 52 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) (appendix B) display the recreation opportunity spectrum categories in this GA.

Table 52. Recreation opportunity spectrum classes for the Crazies GA

Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	33,899	59	36,387	63
Semi-primitive Motorized	15,126	26	21,280	37
Roaded Natural	8,642	15	0	0
Rural	0	0	0	0
Urban	0	0	0	0

Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative C				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	33,899	59	36,387	63
Semi-primitive Motorized	15,126	26	21,280	37
Roaded Natural	8,642	15	0	0
Rural	0	0	0	0
Urban	0	0	0	0
Alternative D				
Primitive	24,968	43	24,968	43
Semi-primitive Nonmotorized	10,661	19	16,164	28
Semi-primitive Motorized	15,126	26	16,534	29
Roaded Natural	6,912	12	0	0
Rural	0	0	0	0
Urban	0	0	0	0
Alternative E				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	33,899	59	36,387	63
Semi-primitive Motorized	14,338	25	5,995	10
Roaded Natural	9,430	16	15,285	27
Rural	0	0	0	0
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Crazies GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 53) for the Crazies GA are displayed in the scenic integrity objectives maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 53. Scenic integrity objectives for the Crazies GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative B		
Very High	0	0
High	51,358	89
Moderate	2,446	4
Low	3,875	7
Very Low	0	0
Alternative C		
Very High	0	0
High	47,532	82
Moderate	6,271	11

Scenic Integrity Objective	Acres	Percent of GA[1]
Low	3,875	7
Very Low	0	0
Alternative D		
Very High	24,977	43
High	27,048	47
Moderate	2,030	4
Low	3,625	6
Very Low	0	0
Alternative E		
Very High	0	0
High	51,358	89
Moderate	2,446	4
Low	3,875	7
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as both suitable and unsuitable for timber production. While nearly a quarter of this GA is identified as suitable for timber production, this contributes a small proportion of the forestwide total area of lands suitable for timber production. Table 54 and associated map(s) (appendix B) display the lands suitable for timber production in this GA.

Table 54. Lands suitable for timber production in the Crazies GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C	7,089	12%	2%
Alternative D	6,509	11%	1%
Alternative E	7,517	13%	2%

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

Recommended Wilderness

Table 55 and associated map(s) in appendix B display the recommended wilderness areas in this GA.

Table 55. Recommended wilderness in the Crazies GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C			
n/a	n/a	n/a	n/a
Alternative D			
Loco Mountain	24,977	43	5
Alternative E			
n/a	n/a	n/a	n/a

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of total recommended wilderness forestwide, rounded to the nearest whole number.

Plan Components – Forested Vegetation (VEGF)

Desired Conditions (CR-VEGF-DC)

01 The lodgepole pine cover type is present on 31-43% of this GA. This is an increase relative to the existing condition. This trend differs from FW-VEGF-DC-01 but will contribute to the achievement of the forestwide desired condition. The other desired trends for cover type in this GA are consistent with the forestwide desired conditions. Also see appendix C.

02 To complement the forestwide desired condition for tree species presence, Table 56 shows the desired condition for tree species distribution within the Crazies GA.

Table 56. Crazies GA desired conditions for tree species presence (percent of area)[4]

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	12 (4-23)	17-19	The Crazies GA is unique for its abundance of whitebark pine relative to the Forestwide ranges, as well as its lack of ponderosa pine and Rocky Mountain juniper. The desired condition ranges for these species reflect this unique character. The desired condition ranges reflect a desire to reduce Douglas-fir and subalpine fir relative to the existing condition, maintain and slightly increase limber pine, and maintain the abundance of Engelmann spruce and lodgepole pine. While ponderosa pine and aspen are extremely rare, these species should also increase.
Rocky Mountain juniper	0	0.7-2	
ponderosa pine	0	6-8	
Douglas-fir	45 (30-58)	15-21	
aspen	0	0.1-1	
Engelmann spruce	12 (2-21)	14-20	
lodgepole pine	33 (20-46)	33-45	
subalpine fir	45 (33-60)	16-24	
whitebark pine	21 (11-35)	16-20	

1Additional species may occur in minor amounts.
2 Existing condition shows the mean percent area with the 90% confidence limit in parenthesis. Source for Existing is R1 Summary Database, FIA data.
3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

03 The very large tree size class is present on 4-6% of this GA. The existing condition is similar to this desired condition. This trend differs from FW-VEGF-DC-03 but will contribute to the forestwide desired condition. The other desired trends for size class in this GA are consistent with the forestwide desired condition. Also see appendix C.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (CR-VEGNF-DC)

01 Nonforested cover types continue to be present on 15-30% of the GA.

Plan Components – Benefits to People (FWL)

Desired Conditions (CR-FWL-DC)

01 Habitat capable of sustaining a huntable population of mountain goats, an introduced species, occurs where compatible with habitat needs and objectives for other wildlife species. Also see Benefits to People, Fish and Wildlife.

Divide Geographic Area

General Overview

This GA is the scenic backdrop and primary recreational resource for Montana's capital city of Helena. It also includes the smaller communities of Austin, Rimini, Elliston, and Unionville. Portions of the GA are within Lewis and Clark, Powell, and Jefferson counties. Unlike many of the other GAs in the HLC NF plan area, the Divide is not an island range, but rather a portion of the larger Continental Divide that extends north/south across Montana. One of its most unique characteristics is that a significant portion of the GA is located west of the Continental Divide.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

The Divide GA encompasses the area south and west of Helena. East of the Continental Divide, it includes the Tenmile drainage as well as the headwaters of Prickly Pear and Little Prickly Pear Creek. West of the Continental Divide, it includes the Little Blackfoot drainage. The range is predominantly sedimentary, with some volcanic intrusions. The area has been heavily mined since the late 1800s. Red Mountain is a notable peak visible from many locations, distinguished by its expanses of bare red rock.

The Divide GA supports a wide range of vegetation conditions. Historically, fire was the primary disturbance and would determine composition and patterns of vegetation, although the most recent large fire occurred in the 1860's. West of the Continental Divide, much of the area is covered with mature conifer forest, characterized by large expanses of even-aged lodgepole pine, but also including other species such as whitebark pine, Engelmann spruce, and subalpine fir at the highest elevations and Douglas-fir with limited ponderosa pine at lower elevations. Many wetlands are present in the western portion of the GA. Large parks are distributed at both high and low elevations, including Irish Mine Hill, Baldy Mountain, Bullion Parks, and Blackhall Meadows, a unique aspen and grassland community. There are also large grasslands north of Highway 12. East of the Continental Divide, this landscape supports rolling foothills where conifer forest is interspersed with grass and shrubland communities. Limber pine is present, although limited in this GA by the extent of its natural range. This area includes the dry ponderosa pine and Douglas-fir forests and meadows that abut the city of Helena. The pine forests on both sides of the divide in this GA were particularly affected by the mountain pine beetle outbreak that occurred from 2006 to 2010. This GA also has the Cellar-Ogilvie lodgepole pine test plantation.

The Divide GA provides opportunities for connections for wildlife populations between the expanse of public lands in northern Montana with public lands in the Yellowstone area and southwest Montana. It sits at the southern end of the Northern Continental Divide Ecosystem Recovery Zone for grizzly bears. The northern portion of the Divide GA is within Unit 3 of designated Canada lynx Critical Habitat. Other wildlife species present in this GA include flammulated owl, western toad, Clarks' nutcracker, wolverine, wolves, and big game and other species that provide wildlife viewing, hunting and trapping opportunities. Several streams within Divide GA support westslope cutthroat trout.

Water quality in the upper areas of the Tenmile drainage is good, and the watershed is the primary source of municipal water for the city of Helena. This landscape encompasses a network of associated infrastructure located in and near NFS lands including Chessman Reservoir, Scott Reservoir, the Chessman flume, and five separate intakes distributed along Tenmile Creek. Historic mining has impacted water quality in lower Tenmile Creek and also the Little Blackfoot River.

Social and Economic Characteristics

The Divide landscape hosts a wide variety of recreation opportunities such as, but not limited to developed and dispersed site camping, hiking, mountain biking, fishing, snowmobiling, all-terrain vehicle riding, and driving for pleasure.

Especially unique to the Divide GA, is the South Hills Recreation Area which provides a large dispersed recreation area adjacent to the city limits of Helena. The well-used and popular trail system through this area crosses FS, Bureau of Land Management, City of Helena, and private lands and is maintained through a memorandum of understanding between the managing entities. Extension of this area north and west to the Continental Divide provides for additional remote and more backcountry dispersed recreation and trail opportunities.

A variety of developed campgrounds are located within the Divide GA. A couple of the more unique ones are Park Lake Campground and Cromwell Dixon. Park Lake Campground provides access to a small mountain lake and is one of the most popular campgrounds due to its proximity to Helena. Cromwell Dixon campground is located along the Continental Divide National Scenic Trail at the top of MacDonald Pass.

The MacDonald Pass area is also home to the MacDonald Pass Cross Country Ski Trails which are groomed and operated under a special use permit. This area offers a network of cross country skiing trails that are easily accessed by the community of Helena. As mentioned above, the Continental Divide National Scenic Trail follows the crest of the continental divide west of the city of Helena and is easily accessed from trailheads in the MacDonald Pass area. The Continental Divide National Scenic Trail crosses several GAs and focuses on remote and primitive dispersed recreation opportunities for hiking, horseback riding, and mountain biking.

The Divide GA also remains host to many active mining claims, primarily for gold, and there are several historic mining districts in the GA. Amidst the active mining claims, residential development on patented claims and extensive reclamation activities associated with historic mining are taking place throughout the GA. A large portion of this GA has been identified as a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) superfund site, which is referred to as Upper Tenmile Creek Mining Area.

Livestock grazing takes place across much of the GA and some riparian benches have been converted to pasture on private property, adding a rural setting in parts of the Divide GA.

Cultural and Historical Characteristics

While the GA has a rich history of prehistoric occupation, it’s signature on the landscape is not obvious. A legacy of mining has left behind a suite of structures, such as cabins and kilns, and over 139 named mines including the historic Charter Oak Mine and Mill, Armstrong Mine and Beattrice Mine. Many former mining communities were settled and have since vanished. Several historic administrative sites are also present on the landscape, for example the Moose Creek Ranger Station near Rimini and Kading Guard Station located near Elliston. The historic Mullan Road passed through this GA and sections are still visible on NFS land.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. The following table and associated map(s) (appendix B) display the

designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

Table 57. Designated areas in the Divide GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Inventoried Roadless Areas	63,852	32	4
Eligible Wild and Scenic Rivers (several)	21	N/A	N/A
CDNST	57	N/A	N/A
Mt. Helena National Recreation Trail	5	N/A	N/A

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as but not limited to river corridors, ski areas, recreation areas, cultural areas, municipal watersheds, major utilities and communication sites that are not congressionally designated but do have specific plan components.

The following table and associated map(s) display the special emphasis and permitted areas in this GA.

Table 58. Special emphasis and permitted areas in the Divide GA

Area	Acres	Percent of GA
South Hills Recreation Area	50,181	25
10” Natural Gas pipeline, Mullan Pass	1.8	Less than 1
10” petroleum pipeline MacDonald Pass	6.2	Less than 1
MacDonald Pass Communication Site	40	Less than 1
Tenmile municipal watershed	25,911	11

1 Percentage of total NFS lands in the GA, rounded to the nearest whole number.

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components. Table 59 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) (appendix B) display the recreation opportunity spectrum categories in this GA.

Table 59. Recreation opportunity spectrum classes for the Divide GA

Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	32,244	16	32,244	16
Semi-primitive Nonmotorized	74,033	36	52,729	26
Semi-primitive Motorized	22,404	11	66,515	33
Roaded Natural	65,940	33	41,995	21

Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Rural	8,022	4	9,160	4
Urban	0	0	0	0
Alternative C				
Primitive	32,244	16	32,244	16
Semi-primitive Nonmotorized	74,033	36	54,680	27
Semi-primitive Motorized	22,404	11	64,563	32
Roaded Natural	65,940	33	41,995	21
Rural	8,022	4	9,160	5
Urban	0	0	0	0
Alternative D				
Primitive	60,382	30	60,382	30
Semi-primitive Nonmotorized	51,891	26	36,517	18
Semi-primitive Motorized	22,772	11	58,088	29
Roaded Natural	60,998	30	40,165	20
Rural	6,598	3	7,490	3
Urban	0	0	0	0
Alternative E				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	101,700	50	81,870	40
Semi-primitive Motorized	1,131	1	7,430	4
Roaded Natural	91,790	45	104,181	51
Rural	8,022	4	9,160	5
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Divide GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 60) for the Divide GA are displayed in the scenic integrity objectives maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 60. Scenic integrity objectives for the Divide GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative B		
Very High	32,244	16
High	111,664	55
Moderate	38,598	19
Low	20,137	10
Very Low	0	0
Alternative C		
Very High	32,244	16

Scenic Integrity Objective	Acres	Percent of GA[1]
High	90,579	45
Moderate	59,689	29
Low	20,130	10
Very Low	0	0
Alternative D		
Very High	60,394	30
High	85,994	42
Moderate	36,556	18
Low	19,709	10
Very Low	0	0
Alternative E		
Very High	0	0
High	141,964	70
Moderate	40,017	20
Low	20,661	10
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as both suitable and unsuitable for timber production. A relatively large amount of this productive, forested GA is identified as suitable for timber production, which contributes a substantial proportion of the forestwide total area of lands suitable for timber production. Table 61 and associated map(s) in appendix B display the lands suitable for timber production in this GA.

Table 61. Lands suitable for timber production in the Divide GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C	62,640	31%	14%
Alternative D	60,081	30%	14%
Alternative E	71,656	35%	15%

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

Recommended Wilderness

The following table and associated map(s) in appendix B display the recommended wilderness areas in this GA.

Table 62. Recommended wilderness in the Divide GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C			
Blackfoot Meadows	18,296	9	9
Alternative D			
Blackfoot Meadows	26,900	13	6
Colorado Mountain	14,189	7	3

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative E			
n/a	n/a	n/a	n/a

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of total recommended wilderness forestwide, rounded to the nearest whole number.

Plan Components – Watershed (WTR)

Desired Conditions (DI-WTR-DC)

01 The Tenmile Creek watershed provides a clean water supply which will, with adequate treatment, result in a satisfactory and safe domestic water supply for the City of Helena. See FW-WTR-STD-01.

Goals (DI-WTR-GO)

01 Coordinate management of the municipal watershed with the State of Montana and municipality.

Guidelines (DI-WTR-GDL)

01 Management activities within the Tenmile Creek municipal watershed should emphasize restoration and resiliency.

Plan Components – Fisheries and Aquatic Habitat (FAH)

Desired Conditions (DI-FAH-DC)

01 Bull trout spawning, rearing, and migratory habitat is widely available and inhabited. Bull trout have access to historic habitat and appropriate life history strategies (for example, resident, fluvial, and adfluvial) are supported.

Goals (DI-FAH-GO)

01 Bull trout habitat trends toward recovery through cooperation and coordination with USFWS, tribes, state agencies, other federal agencies, and interested groups. Recovery is supported through accomplishment of the Bull Trout Conservation Strategy and the Bull Trout Recovery Plan.

Plan Components – Forested Vegetation (VEGF)

Desired Conditions (DI-VEGF-DC)

01 The lodgepole pine cover type is present on 25-27% of the GA, and the spruce/fir cover type is present on 3-4%. These are decreases relative to the existing condition. These trends differ from FW-DC-VEGF-01 but will contribute to the achievement of the forestwide DC. The other desired trends for cover type in this GA are consistent with the forestwide DC. Also see appendix C.

02 To complement the forestwide DC for tree species presence, Table 63 shows the desired condition for tree species distribution within the Divide GA.

Table 63. Divide GA desired conditions for tree species presence (percent of area)[4]

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	2 (2-3)	7-9	

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
Rocky Mountain juniper	3 (1-5)	3-10	The Divide GA is unique in the abundance of lodgepole pine west of the Continental Divide and ponderosa pine east of the Continental Divide. The desired condition indicates a desire to decrease lodgepole pine extent relative to the existing condition along with increases in limber pine, ponderosa pine, and Engelmann spruce. The desired conditions also indicate a reduction of Douglas-fir and subalpine fir relative to the existing condition. It is desirable to maintain the abundance and resiliency of other species such as aspen, juniper, and whitebark pine.
ponderosa pine	3 (1-5)	36-40	
Douglas-fir	53 (46-59)	48-50	
aspen	6 (3-9)	2-8	
Engelmann spruce	13 (10-19)	8-11	
lodgepole pine	59 (53-65)	32-37	
subalpine fir	23 (18-29)	9-12	
whitebark pine	8 (4-11)	5-11	

1Additional species may occur in minor amounts.
2 Existing condition shows the mean percent area with the 90% confidence limit in parenthesis. Source for Existing is R1 Summary Database, FIA data.
3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (DI-VEGNF-DC)

01 Nonforested cover types are present on 10-20% of the GA, as compared to the existing condition which is below this range.

02 Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to the large rough fescue grasslands and the bitterbrush communities in the Sweeney Gulch area.

Plan Components – Wildlife (WL)

Desired Conditions (DI-WL-DC)

01 The Divide landscape provides habitat connectivity for wide-ranging species (grizzly bear, Canada lynx, wolverine, and others) between public lands in northern Montana and those in south and southwestern Montana, including lands in the Greater Yellowstone Ecosystem.

02 Ponderosa pine-dominated forests have concentrations of large (greater than 15” diameter at breast height) ponderosa pine and Douglas-fir trees and snags with relatively open canopy available for nesting by flammulated owls. These areas occur within a larger mosaic of closed-canopy forest and shrub-dominated openings that serve as flammulated owl roosting and foraging areas.

Goals (DI-WL-GO)

01 Acquire ownership of or easements on non-NFS lands that are intermingled with or immediately adjacent to NFS lands, for the purpose of ensuring connectivity and security for wildlife species.

Guidelines (DI-WL-GDL)

01 In order to maintain or improve wildlife security and connectivity:

- Vegetation management activities should provide for wildlife hiding cover needs.
- Motorized access should not be increased.

- New trails should be constructed only where minimal impacts will occur to wildlife habitats and movement corridors.

Plan Components – South Hills Recreation Area (SHRA)

The South Hills Recreation Area is located just to the south and west and adjacent to the city of Helena, Montana. The South Hills Recreation Area is approximately 50,180 acres in size and extends to MacDonald Pass and the Continental Divide. This large landscape includes lands in and around private land ownership, shares boundaries with the City of Helena, and has shared jurisdiction with the City of Helena on many of the trails nearest the community. Additionally, the area includes large portions of nonmotorized inventory roadless areas as well as portions of the Continental Divide National Scenic Trail.

Desired Conditions (DI-SHRA-DC)

01 The area offers dispersed nonmotorized recreation opportunities with high scenic quality within close proximity to the city of Helena, Montana. Also see Forestwide Recreation Opportunities, Dispersed Recreation.

02 The area provides dispersed, trail-related recreation opportunities ranging from those that are easy and readily accessible to those that are more difficult and require greater skills.

03 Vegetation conditions enhance the recreation experience, are resilient to fire disturbances, and promote low fire hazard to values at risk, emphasizing fire resistant species compositions, open forest structures, and low coarse woody debris levels appropriate to the site.

Goals (DI-SHRA-GO)

01 Partners and volunteer groups work collaboratively with the FS for the planning, management, and offering of recreation experiences and settings within the South Hills Recreation Area.

Suitability (DI-SHRA-SUIT)

01 The South Hills Recreation Area is unsuitable for timber production, although harvest may be conducted for other resource management objectives compatible with the recreation values of the area.

02 Within the South Hill Recreation Area, mountain bike activities are suitable on FS established roads and trails only. No cross country mountain bike activities would be allowed.

03 Mountain bike activities are not suitable within the Colorado recommended wilderness areas within the South Hills Recreation Area (Alternative D only).

Elkhorns Geographic Area and Wildlife Management Unit

General Overview

The Elkhorns GA encompasses the Elkhorn Mountains, an island mountain range, in Broadwater and Jefferson counties and includes the small mining town of Elkhorn. The nearest large population center is Helena, Montana. Many smaller communities also have intimate relationships with the GA: Montana City, Clancy, Alhambra, Jefferson City, Boulder, Radersburg, Townsend, Winston, and East Helena.

The Elkhorn Mountains provide rich wildlife, and NFS management extends throughout the entire mountain range to the surrounding valley bottoms, including sizeable areas of ungulate winter range. The combination of NFS management of large blocks of year-round habitat, along with the presence of adjacent lands managed by both the Bureau of Land Management and the State of Montana, results in a unique opportunity for comprehensive and cooperative management of wildlife and their habitats. The Elkhorn Mountains were designated a Wildlife Management Unit in 1986. The Elkhorns Wildlife Management Unit is the only wildlife management unit in the nation. It encompasses the entire Elkhorns GA, which includes portions of both the HLC NF and the Beaverhead-Deerlodge National Forests. Habitats are managed in this unit to maintain viable populations of species associated with the existing ecosystems, with particular emphasis on those for which seclusion is an important requirement. Unlike other mountain ranges where winter range is largely on private land, the Elkhorns includes winter range. Collaborative groups comprising federal, state, and local citizens work toward habitat maintenance and restoration and interpretation of the area's history. The Elkhorns Wildlife Management Unit is managed cooperatively as the Elkhorn Cooperative Management Area with the Bureau of Land Management, Montana Fish, Wildlife and Parks and the Natural Resources Conservation Service. All of the plan components for the Elkhorns GA are consistent with the purposes for which the wildlife management unit was designated.

Water quality in the upper areas of McClellan Creek drainages are good, and the watershed is the primary source of municipal water for the city of East Helena. Infrastructure includes an infiltration gallery downstream of the forest boundary.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

The Elkhorns GA is surrounded by the Divide Mountains and Boulder Batholith on the west, and the Missouri and Boulder River valleys on the north, east, and, south. This GA is an island mountain range, prominently visible from the northwest, west, and southwest. Drainages have carved steep gulches and canyons. The Elkhorns GA can be divided into west and east sections by the predominant underlying geology. The majority of the Elkhorns (north, west, southwest) is part of a batholith. This geologic history has left the area rich in minerals. Evidence of glaciation is localized as boulder strewn areas of granitic rocks. The remaining approximate quarter (southwest) of the GA is underlain by sedimentary rock that lacks the same mineralization as the batholith but is rich in calcareous rock. The landforms are rugged, low mountains with hogback ridges and dry valleys.

The sedimentary geologic area found extensively on the eastern side of the range is a gradient of foothill prairie and partially forested low mountains. Grasslands and shrub communities which contain bitterbrush and sagebrush are major components. Rocky mountain juniper and Douglas-fir in particular, with limited amounts of limber pine and ponderosa pine, are found in ecotone areas with nonforested plant

communities. Plant communities on the batholith portion are mostly forested with conifers, including ponderosa pine and Douglas-fir at low elevations and lodgepole pine, subalpine fir, and whitebark pine at high elevations. Parks, rich with grasses and forbs, are frequent at lower elevations and break up the forest in montane elevations. Aspen stands and water-loving plants take advantage of riparian areas and wet seeps across the GA. Fire has historically has been a major influence to plant communities, and a large expanse of this GA burned in 1988 and is now dominated by young lodgepole pine forest.

Wildlife observed in this GA include elk, mule deer, Clark's nutcracker, river otter, wolverine, turkeys and others. The Elkhorns GA has supported bighorn sheep, although the potential for long-term persistence of a herd in the GA has been impacted by disease outbreaks.

The western side of the GA is generally wetter than the eastern side. The entire landmass is drained by many perennial and intermittent creeks including several tributaries to Prickly Pear Creek on the West, Crow Creek, Beaver Creek, and Staubach Creek on the east, and Elkhorn and Muskrat Creeks on the southwest. All creeks flow to the Missouri River, some via Prickly Pear Creek or the Boulder and Jefferson Rivers. The basins around Elkhorn and Crow Peaks harbor high elevation lakes such as Hidden Lake, Tizer Lakes, Leslie Lake, and Glenwood Lake. Crow Creek plummets over an impressive falls. Springs are important water features in the more arid eastern sections. Several of the drainages support westslope cutthroat trout.

Social and Economic Characteristics

There are numerous trailheads and dispersed recreation opportunities throughout the Elkhorns, including a number of dispersed nonmotorized trails and primitive camping areas. The area is utilized primarily by hunters, as the Elkhorns are known for the production of trophy bull elk. Trail running, driving for pleasure, and wildlife viewing are other major recreational pursuits that occur in this GA.

The interior of the GA provides an expanse of unroaded and remote country surrounding steep, rugged peaks. The lower elevations of the GA are roaded, and minimal amounts of vegetation management are visible in these areas, most commonly prescribed fire. There is an active livestock grazing program in portions of the Elkhorns; grazing allotments are present across most of the GA. Mineral production is primarily occurring via small mining operations, predominantly for gold. There are several abandoned mines in the GA that are in need of reclamation. There is an ongoing mine reclamation project at the Warm Springs Tailings site.

Cultural and Historical Characteristics

The Elkhorns GA has been occupied by human inhabitants for thousands of years. Two of the oldest known human occupations in Montana are found in this GA. However, prehistoric occupations and use are less evident on the surface than the more recent Euro-American settlement. After the discovery of valuable mineral deposits, mines and associated settlements sprang up in portions of the GA. The ghost town of Elkhorn is a good example of this era. Other communities have all but disappeared, such as Queen, Eagle City, Gold Dust, Ruddville, and Sourdough. Remnant tools and infrastructure of the mining era are found throughout the GA. Eagle and Tizer Guard stations as well as the Strawberry Lookout are living reminders of FS administration in the GA.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 64 and associated map(s) in appendix B display the designated areas

in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

Table 64. Designated areas in the Elkhorns GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Inventoried Roadless Areas	74,711	47	5
Eligible Wild and Scenic Rivers (1)	2	N/A	N/A
Candidate Research Natural Area, Poe Manley (Alternative D only)	4500	3	21

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as but not limited to river corridors, ski areas, recreation areas, cultural areas, major utilities and communication sites that are not congressionally designated but do have specific plan components.

Table 65 and associated map(s) display the special emphasis and permitted areas in this GA.

Table 65. Special emphasis and permitted areas in the Elkhorns GA

Area	Acres	Percent of GA
McClellan Creek municipal watershed	16,697	10

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components. Table 66 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix B display the recreation opportunity spectrum categories in this GA.

Table 66. Recreation opportunity spectrum classes for the Elkhorns GA

Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	91,072	56	117,681	73
Semi-primitive Motorized	6,450	4	33,725	21
Roaded Natural	60,863	38	6,988	4
Rural	2,853	2	2,853	2
Urban	0	0	0	0
Alternative C				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	91,381	57	135,541	84

Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Semi-primitive Motorized	6,450	4	15,866	10
Roaded Natural	60,554	38	6,988	4
Rural	2,853	2	2,853	2
Urban	0	0	0	0
Alternative D				
Primitive	49,229	31	37,021	23
Semi-primitive Nonmotorized	41,596	26	80,549	50
Semi-primitive Motorized	6,897	4	34,307	21
Roaded Natural	60,663	38	6,517	4
Rural	2,853	2	2,853	2
Urban	0	0	0	0
Alternative E				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	91,072	56	117,681	73
Semi-primitive Motorized	6,450	4	33,725	21
Roaded Natural	60,863	38	6,988	4
Rural	2,853	2	2,853	2
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Elkhorns GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 67) for the Elkhorns GA are displayed in the scenic integrity objectives maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 67. Scenic integrity objectives for the Elkhorns GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative B		
Very High	0	0
High	142,465	89
Moderate	5,184	3
Low	13,598	8
Very Low	0	0
Alternative C		
Very High	0	0
High	112,779	70
Moderate	35,067	22
Low	13,400	8
Very Low	0	0
Alternative D		

Scenic Integrity Objective	Acres	Percent of GA[1]
Very High	49,229	31
High	93,236	58
Moderate	5,184	3
Low	13,597	8
Very Low	0	0
Alternative E		
Very High	0	0
High	142,465	89
Moderate	5,184	3
Low	13,598	8
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. No such lands are identified in this GA in any alternative. Forestwide plan components for harvest in lands unsuitable for timber production apply. In addition, GA-specific guidance for harvest in lands unsuitable for timber production is provided in components within this section.

Recommended Wilderness

There are no recommended wilderness areas in the Elkhorns GA under any alternative.

Plan Components – Elkhorns Wildlife Management Unit (WMU)

Desired Conditions (EH-WMU-DC)

01 NFS lands within the Elkhorn Mountains GA support native species associated with the existing ecosystems, with particular emphasis on those for which seclusion is an important requirement.

Goals (EH-WMU-GO)

01 The Elkhorn Mountains are managed cooperatively across political and administrative boundaries as the Elkhorns Cooperative Management Area, through a memorandum of understanding with other agencies.

02 The Forest Service involves personnel from Montana Fish, Wildlife and Parks in the planning, analysis, and monitoring of management activities occurring in the wildlife management unit.

03 A Cooperative Elkhorns Wildlife Monitoring Program involving Montana Fish, Wildlife, and Parks and the FS 1) evaluates forest plan management direction for the wildlife management unit, 2) makes recommendations to maintain and improve wildlife habitats, 3) monitors habitat conditions and wildlife populations to determine the effectiveness of management, and 4) recommends adjustments to management based on monitoring and research.

04 Acquisition of private lands within the boundary of the wildlife management unit occurs when the opportunities arise.

Guidelines (EH-WMU-GDL)

01 Maintenance, enhancement, and restoration of wildlife and their habitats should be the priorities for resource management in the Elkhorns Wildlife Management Unit. Management activities and permitted uses should be compatible with wildlife values and habitats, and/or should be designed to avoid negative impacts to wildlife and wildlife habitats.

Suitability (EH-WMU-SUIT)

01 The Elkhorns Wildlife Management Unit is not suitable for timber production.

02 Vegetation management tools, including timber harvest and planned and unplanned fire ignitions, are suitable in the Elkhorns Wildlife Management Unit only when used for the purpose of restoration and maintenance of desired vegetation and wildlife habitat, hazardous fuel reduction, or protection of values at risk.

03 Motorized travel is not suitable in elk wintering areas from the end of hunting season through early spring, except as required for specific resource management activities.

Plan Components – Watershed (WTR)

Desired Conditions (EH-WTR-DC)

01 McClellan Creek provides a clean water supply for the City of East Helena. See FW-WTR-STD-01.

Goals (EH-WTR-GO)

01 Coordinate management of the municipal watershed with the State of Montana and municipality.

Guidelines (EH-WTR-GDL)

01 Management activities within the McClellan Creek municipal watershed should emphasize restoration and resiliency.

Plan Components – Forested Vegetation (VEGF)

Desired Conditions (EH-VEGF-DC)

01 The spruce/fir cover type is present on 4-8% of this GA. This is a decrease relative to the existing condition. This trend differs from FW-VEGF-DC-01, but will contribute to the achievement of the forestwide DC. The other desired trends for cover type in this GA are consistent with the forestwide DC. Also see appendix C.

02 To complement the forestwide desired conditions for tree species presence, Table 68 shows the desired condition for tree species distribution within the Elkhorns GA.

Table 68. Elkhorns GA desired conditions for tree species presence (percent of area)[4]

[1] Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	1 (0-4)	8-9	The desired conditions for this GA indicate a particular need to increase limber pine, aspen, and ponderosa pine relative to the existing condition, along with reducing the extent of Engelmann spruce and
Rocky Mountain juniper	5 (1-9)	4-10	
ponderosa pine	1 (1-4)	25-29	

[1] Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
Douglas-fir	28 (20-38)	35-39	subalpine fir especially where they compete with whitebark pine. The desired conditions indicate that Douglas-fir, lodgepole pine, and whitebark pine should be maintained to similar levels as the existing condition. The existing level of juniper is within the desired condition range; however, it is desirable to maintain it primarily in locations and at densities that do not detract from the extent and resilience of dry forests, savannas, and grass/shrublands.
aspen	2 (2-5)	2-4	
Engelmann spruce	20 (11-27)	4-8	
lodgepole pine	32 (22-41)	33-41	
subalpine fir	29 (19-37)	4-8	
whitebark pine	14 (6-20)	9-20	

1Additional species may occur in minor amounts.
2 Existing condition shows the mean percent area with the 90% confidence limit in parenthesis. Source for Existing is R1 Summary Database, FIA data.
3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (EH-VEGNF-DC)

01 Nonforested cover types continue to be present on 20-30% of the GA, including vigorous and resilient grassland, shrubland, and savanna communities.

02 Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to bitterbrush and sagebrush.

Plan Components – Wildlife (WL)

Desired Conditions (EH-WL-DC)

01 Habitat is available that provides for the needs of species with seclusion as a requirement.

02 Ponderosa pine-dominated forests have concentrations of large (greater than 15” diameter at breast height) ponderosa pine and Douglas-fir trees and snags with relatively open canopy available for nesting by flammulated owls. These areas occur within a larger mosaic of closed-canopy forest and shrub-dominated openings that serve as flammulated owl roosting and foraging areas.

Standards (EH-WL-STD)

01 The most current recommendations made through agency or interagency efforts, such as the Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat (Wild Sheep Working Group 2012, *Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat* or updated versions), shall be applied to maintain separation of bighorn sheep from domestic sheep and goats on NFS lands.

Guidelines (EH-WL-GDL)

01 When permitting or authorizing activities such as grazing, special uses, rights-of-way, seismic activities, and others, specific conditions should be incorporated into permits or authorizations to reduce potential impacts to wildlife. These conditions include but are not limited to conditions regarding timing of activities, location of activities or infrastructure, access, retention of forage or cover, and others.

02 Livestock animal unit months should be maintained no higher than existing levels, and should be reduced if needed to address impacts to wildlife forage or wildlife habitat.

Plan Components – Recreation Access (ACCESS)

Desired Conditions (EH-ACCES-DC)

01 The Elkhorns Wildlife Management Unit offers high quality dispersed nonmotorized recreation opportunities. Authorized motorized recreation opportunities occur in defined areas and during defined time periods.

Guidelines (EH-ACCESS-GDL)

01 Access to authorized routes to private inholdings or valid mining claims should protect wildlife habitat through restrictions on both locations and timing of use.

Suitability (EH-ACCES-SUIT)

01 *Alternative C:* Mechanized means of transportation (including bicycles) are not suitable within the interior area of the Elkhorns known as the "Elkhorns Core." (See map)

Plan Components – Roads and Trails (RT)

Standards (EH-RT-STD)

01 New permanent roads shall be constructed only for alleviating resource concerns (e.g., removing a road from a riparian area and replacing it with a road in another location) or to allow reasonable access to private lands that cannot be accessed except by crossing NFS lands. Permanent roads constructed for these purposes shall include conditions (for example, timing of use restrictions, location restrictions) in order to meet wildlife habitat objectives.

02 A trans-mountain road (bisecting the Elkhorns Mountain Range) shall not be constructed.

Guidelines (EH-RT-GDL)

01 Roads constructed for exploration or development of leasable minerals, as required by law or regulation for access to those resources, should avoid identified elk wintering areas, big-game calving or lambing areas, or other identified wildlife habitats in which wildlife are known to be sensitive to disturbance or displacement. Timing restrictions should be placed on road-building activities and road use in order to avoid disturbance and displacement of wildlife.

Plan Components – Benefits to People (TIM)

Guidelines (EH-TIM-GDL)

01 Harvest of timber or forest products such as Christmas trees and posts and poles in identified elk winter range should occur only during the non-winter season when elk use of the area is minimal. If these activities are allowed during the winter for specific resource management purposes, disturbance activities should be limited in time and space.

Plan Components – Benefits to People (EMIN)

Guidelines (EH-EMIN-GDL)

01 Where possible within law and regulation, no surface occupancy for activities associated with exploration of leasable and locatable minerals should be allowed during the season of use by elk in identified elk wintering areas, big-game calving or lambing areas, identified elk summer habitat, or other identified wildlife habitats in which wildlife are known to be sensitive to disturbance or displacement.

02 Where possible within law and regulation, activities associated with exploration of leasable minerals should include timing restrictions in order to avoid disturbance and displacement of wildlife.

Highwoods Geographic Area

General Overview

The Highwoods GA is the smallest of the GAs within the plan area and encompasses the Highwood Mountains. This isolated island range is located within Cascade, Chouteau, and Judith Basin counties. This GA is the closest NFS land to Great Falls.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

The Highwood Mountains are a small island mountain range of volcanic origin. The highest point is Highwood Baldy at 7,670 feet. The mountains have been weathered over time by natural processes, leaving them rolling and furrowed in form. The mountains are bisected by Highwood Creek. Slopes are moderately steep. North facing aspects are considerably wetter than less vegetated, rocky, south facing slopes.

The Highwoods GA contains a high proportion of warm dry and nonforested potential vegetation types, and very little cool moist or cold types. The land cover of this GA is a mosaic of conifers, deciduous trees, grass, and rock; woodland, forest, and prairie ebb and flow into one another. Open savannas, grasslands, and shrublands are common even on the warm dry forested potential vegetation types. Aspen communities are present to a higher degree than most other places in the plan area. Conifer forests are relatively dense and single-aged composed of primarily Douglas-fir and lodgepole pine, with small amounts of subalpine fir at higher elevations. Unlike the Forest as a whole, there is little to no Engelmann spruce, ponderosa pine, Rocky Mountain juniper, or limber pine. Fire was historically the main determinant of vegetative cover. Riparian areas are composed of willow, dogwood, water birch, cottonwood, Hawthorne, and other water-loving plants.

The Highwoods provides habitat for a variety of wildlife species, including a population of mountain goats. They were introduced by Montana Fish, Wildlife, and Parks in 1943 to an area east of the GA, then augmented in 1971. By 1994 they had dispersed and were established in the Highwoods GA. The Highwoods Mountains support many other wildlife species.

The majority of the area drains north to the Missouri River; drainages include Thain and Highwood Creeks. Cottonwood Creek drains to Arrow Creek on the east side, and Little Belt Creek drains the southwest portion. The area is a westslope cutthroat trout emphasis area, and has several restored westslope cutthroat trout populations, including Big Coulee, Cottonwood, and North Fork and Middle Fork Little Belt Creeks.

Social and Economic Characteristics

Within the GA, there is one small developed campground, Thain Creek Campground, and a developed trailhead in North Fork Highwood Creek. These developed sites provide access points for the many single track trails that traverse the Highwoods. These trails are used extensively by motorcycle users and bicyclists as well as by hikers and horseback riders.

The mountain goat population provides an important hunting and viewing opportunity. Other big game species are found in the Highwoods and provide important and highly sought-after hunting opportunities. In addition to hunting and trapping opportunities, wildlife viewing is an important activity in this GA. An

active grazing program comprises the primary multiple use of this landscape and contributes substantially to the economy of Choteau County.

Cultural and Historical Characteristics

Native Americans have a long history in this GA and the evidence can be seen in prehistoric occupations, rock cairns and travel routes. Euro-American use can be seen in homesteads, mines, cemeteries, trails, roads and recreational cabins. The Highwoods have a long history of grazing and their history is seen in historic corrals, fence post caches, cow camps and Grazing Association cabins. The historically significant Shonkin Grazing Association cabin and the newer Highwood Creek Grazing Association cabin are reminders of this heritage. Forest Service history is represented by trails, roads, Thain Creek campground, several dismantled guard stations, and the one remaining guard station on North Fork Highwood Creek.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 69 and associated map(s) in appendix B display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

Table 69. Designated areas in the Highwoods GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Inventoried Roadless Areas (2)	39,500	93	3
Eligible Wild and Scenic Rivers (several)	10	N/A	N/A

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as but not limited to river corridors, ski areas, recreation areas, cultural areas, municipal watersheds, major utilities and communication sites that are not congressionally designated but do have specific plan components. See Table 70.

Table 70. Special emphasis and permitted areas in the Highwoods GA

Area	Acres	Percent of GA
Highwood Baldy Communication Site	1.4	Less than 1

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number.

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components. Table 71 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix B display the recreation opportunity spectrum class categories in this GA.

Table 71. Recreation opportunity spectrum classes for the Highwoods GA

ROS Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	29,906	71	39,277	93
Semi-primitive Motorized	8,219	19	3,014	7
Roaded Natural	4,165	10	0	0
Rural	0	0	0	0
Urban	0	0	0	0
Alternative C				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	29,906	71	39,277	93
Semi-primitive Motorized	8,219	19	3,014	7
Roaded Natural	4,165	10	0	0
Rural	0	0	0	0
Urban	0	0	0	0
Alternative D				
Primitive	8,598	20	8,598	20
Semi-primitive Nonmotorized	21,308	50	30,679	73
Semi-primitive Motorized	8,219	20	3,014	7
Roaded Natural	4,165	10	0	0
Rural	0	0	0	0
Urban	0	0	0	0
Alternative E				
Primitive	0	0	0	0
Semi-primitive Nonmotorized	29,878	71	39,105	92
Semi-primitive Motorized	7,801	18	3,185	8
Roaded Natural	4,612	11	0	0
Rural	0	0	0	0
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Highwoods GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 72) for the Highwoods GA are displayed in the scenic integrity objectives maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 72. Scenic integrity objectives for the Highwoods GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative B		
Very High	0	0

Scenic Integrity Objective	Acres	Percent of GA[1]
High	41,205	97
Moderate	695	2
Low	390	1
Very Low	0	0
Alternative C		
Very High	0	0
High	41,146	97
Moderate	754	2
Low	390	1
Very Low	0	0
Alternative D		
Very High	8,598	20
High	32,607	77
Moderate	695	2
Low	390	1
Very Low	0	0
Alternative E		
Very High	0	0
High	41,064	97
Moderate	749	2
Low	478	1
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

No lands suitable for timber production are identified in this GA in the draft plan. Forestwide plan components (chapter 2) for harvest in lands unsuitable for timber production apply. In addition, GA-specific guidance for harvest is provided in components in this section. See Table 73.

Table 73. Lands suitable for timber production in the Highwoods GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C	0	0%	0%
Alternative D	0	0%	0%
Alternative E	1,048	3%	<1%

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

Recommended Wilderness

There are no recommended wilderness areas in the Highwoods GA under any alternative.

Plan Components – Forested Vegetation (VEGF)

Desired Conditions (HW-VEGF-DC)

01 The dry Douglas-fir cover type is present on 7-27% of this GA; this is an increase relative to the existing condition. The lodgepole pine cover type is present on 12-15%; this is a decrease relative to the existing condition. These trends differ from FW-VEGF-DC-01 but will contribute to the achievement of the forestwide DC. The other desired trends for cover type in this GA are consistent with the forestwide DC. Also see appendix C.

02 To complement the forestwide desired conditions for tree species presence, Table 74 shows the desired condition for tree species distribution within the Highwoods GA.

Table 74. Highwoods GA desired conditions for tree species presence (percent of area)[4]

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	3 (3-10)	16-19	This GA contains less species diversity than the other GAs on the Forest. It is unique in that the desired condition indicates a need to increase the extent of Douglas-fir relative to the existing condition, along with a decrease in lodgepole pine. Increases in limber pine, aspen, and ponderosa pine are also desired, although opportunities may be limited. It is desirable to maintain subalpine fir similar to the existing condition.
ponderosa pine	0	1-20	
Douglas-fir	34 (19-50)	48-54	
aspen	3 (3-10)	6-11	
lodgepole pine	45 (30-62)	16-36	
subalpine fir	3 (3-10)	1-5	

1Additional species may occur in minor amounts.
2 Existing condition shows the mean percent area with the 90% confidence limit in parenthesis. Source for Existing is R1 Summary Database, FIA data.
3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

03 The seedling/sapling size class is present on 1-16% of this GA; this is an increase relative to the existing condition. The medium size class is present on 2-13%; this is a decrease relative to the existing condition. These trends differ from FW-VEGF-DC-03 but will contribute to the achievement of the forestwide DC. The other desired trends for size class in this GA are consistent with the forestwide DC. Also see appendix C.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (HW-VEGNF-DC)

01 Nonforested cover types continue to be present on 30-40% of the GA.

02 Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to sagebrush communities.

Plan Components – Wildlife (WL)

Desired Conditions (HW-WL-DC)

01 The system of ridges is generally dominated by nonforested habitats and connected by nonforested or open forest habitats, and provides habitat connectivity within the mountain range for mountain goats, mule deer, blue grouse, and other species.

Plan Components – Benefits to People (FWL)

Desired Conditions (HW-FWL-DC)

01 Habitat capable of sustaining an introduced population of mountain goats at levels providing hunting opportunities occurs where compatible with the habitat needs and objectives for other, native wildlife species. Also see Benefits to People, Fish and Wildlife.

Little Belts Geographic Area

General Overview

The Little Belts GA is a large isolated mountain range in central Montana. Portions of this GA are located in Meagher, Judith Basin, Cascade, and Wheatland counties. It is surrounded by predominantly treeless foothills of prairie and sagebrush steppe. The city of Great Falls is 50 miles to its northwest, Stanford to the east, Harlowton to the southeast, and the town of White Sulphur Springs is on its southern edge. The Little Belts GA is bisected north-south by the Kings Hill scenic byway (Highway 89), along which the small historic mining communities of Niehart and Monarch reside. Most of the Little Belts can be described as remote but accessible by a well-distributed transportation network.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

The Little Belts is the largest of the isolated island ranges in central Montana, comprised primarily of rolling hills. The geology of the Little Belts is rich in limestone with pockets of metamorphic and igneous rock. Some of the oldest rocks in Montana are located within the Little Belts. Bands of limestone bluffs break up uniform expanses of evergreen forest. The limestone nature also leads to many caves throughout the GA, including Lick Creek Cave. The GA served as the landscape in much of the work of artist Charlie Russell, who resided in the area.

This large GA supports a wide diversity of vegetation communities, including expansive and productive grasslands that characterize low elevations and open flat-topped plateaus. Thick stands of conifers can be found in the interior, which at lower elevations includes limber pine and ponderosa pine (in a higher abundance than most other places on the Forest); transitioning to productive Douglas-fir and lodgepole pine forests; and Engelmann spruce, subalpine fir, and whitebark pine at the highest elevations. Some mountain summits lack vegetation, revealing gently sloping, broad ridges. Aspen is present but rare. This GA hosts several vegetation research and tree improvement areas, including the Tenderfoot Experimental Forest, the Adams Creek whitebark pine seed orchard, the future Spur Park whitebark pine test plantation, and the Wet Park lodgepole pine test plantation.

The Little Belts GA supports a wide variety of wildlife species, including carnivores such as black bear, mountain lion, bobcat and wolverine, and big game such as moose, elk, mule deer, and white-tailed deer. NFS lands in the Little Belts GA include more big game winter range than is present in most GAs on the HLC NF. The Little Belt Mountains historically supported bighorn sheep but were extirpated here by the early 1900s. Although occasional individual bighorn sheep have been observed in the Little Belts in recent years, a self-sustaining population does not currently exist in this GA. Mountain goats were introduced in the early to mid 1900s to the Little Belts, where they did not historically occur. This population did not persist, although occasional individual mountain goats are found there.

The many streams of the Little Belts are picturesque and ecologically rich. Stream courses have carved exposed escarpments and palisades. Drainages typically flow outward, radially from the center of the range where upon reaching the foothills, streams lose as much as 70-80% of their flow to the Madison aquifer. The Belt Creek watershed drains to the north, the Judith River watershed drains to the east, and the Tenderfoot and Sheep Creek watersheds drain to the Smith River on the west. Multiple streams in the Belt Creek and Judith Creek watersheds support westslope cutthroat trout.

Water quality in the upper areas of the O'Brien and Shorty Creek drainages are good, and the watershed is the primary source of municipal water for the city of Neihart. Infrastructure includes a small low head dam, a diversion on Shorty Creek and a water plant just east of forest lands. A small conservation population of westslope cutthroat trout are present in O'Brien Creek.

Social and Economic Characteristics

The Little Belts GA offers diverse recreation opportunities. This includes developed campgrounds; developed trailheads; recreation residences; Camp Rotary; Showdown ski area; King's Hill winter recreation area which includes Silvercrest groomed cross-country ski area, snowmobile, snowshoe, and dogsled opportunities; cabin rentals; and interpretive panels. The Middle Fork Judith Wilderness Study Act area is located within the center of the Little Belts Mountain range. This primitive area was identified in 1977 as important for its wilderness characteristics. Dispersed recreation activities include motorized and nonmotorized trails, snowmobile trails, caves, and dispersed camping. The Little Belts GA provides permitted access within the Smith River corridor. This GA offers significant hunting, trapping, and wildlife viewing opportunities.

This GA supports an active grazing program. Timber harvest has also been a primary multiple use in the roaded portions of the landscape, including historic logging associated with early mining and settlement of the area. While the GA includes a large roadless interior, the roaded portions of the landscape support a relatively high road density.

Mineral production primarily occurs via small mining operations, primarily for lead, zinc, silver, gold and sapphires (Yogo). There are several inholdings as well as extensive reclamation activities associated with historic mining, including two Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) superfund sites: Carpenter Snow Creek and Barker Hughesville.

Cultural and Historical Characteristics

Native Americans have a long history in the area. They utilized local outcrops as quarries for tools and weapons. They created pictographs on rock shelters, cliff walls, and overhangs. Native Americans left many remnants of past occupations across the landscape.

The GA was quickly inhabited by Euro-Americans after Missouri river travel was established and rich deposits of minerals were discovered. Mining infrastructure and tools are frequently encountered throughout the area. Many communities sprang up quickly and then disappeared. A few former community names include Galena, Summit, Silver Dyke, Carbonate, and Hughesville. Homesteading also occurred. The history of timber cutting is evident, and relics such as splash dams and log chutes exist. FS guard stations and fire lookouts, including Monument and Porphyry Lookouts, remain in various locations and conditions.

The Yogo mining district is located in a relatively remote area east of Neihart and south of Stanford on the east slope of the Little Belt Mountains along Yogo Creek. Miners were initially attracted by placer gold. However, deposits of silver, lead, and iron ore supported small scale lode mining for a number of years. The eventual discovery of sapphires brought fame to the lower Yogo district.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 75 and associated map(s) in appendix B display the designated areas

in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

Table 75. Designated areas in the Little Belts GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Middle Fork Judith Wilderness Study Act Area	82,127	10	48
Inventoried Roadless Areas (many)	439,106	55	30
Research Natural Areas (many)	5,902	1	35
Eligible Wild and Scenic Rivers (many)	62	N/A	N/A
National Recreation Trails (5)	19	N/A	N/A
Kings Hill Scenic Byways	26	N/A	N/A
Tenderfoot Creek Experimental Forest	8,870	1	100%

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as but not limited to river corridors, ski areas, recreation areas, cultural areas, municipal watersheds, major utilities and communication sites that are not congressionally designated but do have specific plan components.

Table 76 displays the special emphasis and permitted areas in this GA.

Table 76. Special emphasis and permitted areas in the Little Belts GA

Area	Acres	Percent of GA
Showdown Ski Area	563	Less than 1
Smith River Corridor	3,330	Less than 1
100 kv Electric Transmission Line	249.9	Less than 1
Porphyry Peak Communication Site	2.7	Less than 1
O'Brien Creek Municipal Watershed	7,025	Less than 1

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number.

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components. Table 77 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix B display the recreation opportunity spectrum categories in this GA.

Table 77. Recreation opportunity spectrum classes for the Little Belts GA

ROS Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	79,304	10	79,304	10
Semi-primitive Nonmotorized	216,370	27	347,877	43

ROS Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Semi-primitive Motorized	222,965	28	350,136	44
Roaded Natural	282,926	35	24,215	3
Rural	3,239	<1	3,287	<1
Urban	0	0	0	0
Alternative C				
Primitive	79,304	10	79,304	10
Semi-primitive Nonmotorized	216,370	27	347,877	43
Semi-primitive Motorized	222,965	28	350,136	44
Roaded Natural	282,926	35	24,215	3
Rural	3,239	<1	3,287	<1
Urban	0	0	0	0
Alternative D				
Primitive	175,820	22	175,820	22
Semi-primitive Nonmotorized	141,474	18	261,099	33
Semi-primitive Motorized	211,596	26	338,661	42
Roaded Natural	272,936	34	26,027	3
Rural	2,978	<1	3,211	<1
Urban	0	0	0	0
Alternative E				
Primitive	64,814	8	64,814	8
Semi-primitive Nonmotorized	230,753	29	362,348	45
Semi-primitive Motorized	151,250	19	86,047	11
Roaded Natural	355,856	44	288,324	36
Rural	2,131	<1	3,287	<1
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Little Belts GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 78) for the Little Belts GA are displayed in the scenic integrity objectives maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 78. Scenic integrity objectives for the Little Belts GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative C		
Very High	100,142	12
High	502,127	62
Moderate	93,629	12
Low	108,920	14
Very Low	0	0

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative C		
Very High	100,205	12
High	464,437	58
Moderate	131,111	16
Low	108,904	14
Very Low	0	0
Alternative D		
Very High	196,774	24
High	408,058	52
Moderate	91,643	11
Low	108,344	13
Very Low	0	0
Alternative E		
Very High	85,652	11
High	516,542	63
Moderate	93,549	12
Low	108,914	14
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as both suitable and unsuitable for timber production. Roughly one-third of this large, productive GA is identified as suitable for timber production, which contributes a substantial proportion of the forestwide total area of lands suitable for timber production. This productive GA contributes more area to this potential use than any other in the plan area. Table 79 and associated map(s) in appendix B display the lands suitable for timber production in this GA.

Table 79. Lands suitable for timber production in the Little Belts GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C	232,217	29%	52%
Alternative D	226,716	28%	52%
Alternative E	232,222	29%	49%

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

Recommended Wilderness

Table 80 and associated map(s) (appendix B) display the recommended wilderness areas in this GA.

Table 80. Recommended wilderness in the Little Belts GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C			
Deep Creek	14,490	2	7
Alternative D			

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Deep Creek	14,490	2	3
Middle Fork Judith	62,453	8	13
Tenderfoot Creek	45,870	6	10
Bighorn Thunder	47,107	6	10
Alternative E			
n/a	n/a	n/a	n/a

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of total recommended wilderness forestwide, rounded to the nearest whole number.

Plan Components – Watershed (WTR)

Desired Conditions (LB-WTR-DC)

01 O'Brien Creek municipal watershed provides a clean water supply for the city of Neihart. See FW-WTR-STD-01.

Goals (LB-WTR-GO)

01 Coordinate management of the municipal watershed with the State of Montana and municipality.

Guidelines (LB-WTR-GDL)

01 Management activities within the O'Brien Creek municipal watershed should emphasize restoration and resiliency.

02 Livestock grazing should only be allowed when moving animals between pastures, which are adjacent to the watershed. However, there should be no allotments in the watersheds.

Plan Components – Forested Vegetation (VEGF)

Desired Conditions (LB-VEGF-DC)

01 To complement the forestwide desired conditions for tree species presence, Table 81 shows the desired condition for tree species distribution within the Little Belts GA.

Table 81. Little Belts GA desired conditions for tree species presence (percent of area)[4]

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	24 (21-26)	18-25	This GA is similar to the Forestwide average desired conditions, except for its higher abundance of limber pine for which the existing condition is within the desired condition. The desired conditions indicate a need to generally maintain the extent limber pine, juniper, lodgepole pine and whitebark pine, while increasing ponderosa pine and aspen and decreasing Douglas-fir, Engelmann spruce, and subalpine fir.
Rocky Mountain juniper	4 (2-5)	4-7	
ponderosa pine	8 (6-10)	29-32	
Douglas-fir	59 (56-62)	39-45	
aspen	1 (0.3-2)	1-3	
Engelmann spruce	27 (24-30)	9-16	
lodgepole pine	43 (40-46)	35-43	
subalpine fir	23 (21-26)	9-16	
whitebark pine	10 (8-12)	5-12	

1Additional species may occur in minor amounts.
2 Existing condition shows the mean percent area with the 90% confidence limit in parenthesis. Source for Existing is R1 Summary Database, FIA data.

3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (LB-VEGNF-DC)

01 Nonforested cover types are present on 10-20% of the GA, as compared to the existing condition which is below this desired range.

Plan Components – Wildlife (WL)

Desired Conditions (LB-WL-DC)

01 The system of ridges in the southeastern Little Belts Mountains is generally dominated by nonforested habitats and connected by nonforested or open forest habitats, and provides habitat connectivity between seasonal ranges for mule deer, blue grouse, and other species.

02 Bighorn sheep populations are healthy and risk of disease transmission from domestic livestock is minimal.

Standards (LB-WL-STD)

01 The most current recommendations made through agency or interagency efforts, such as the Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat (Wild Sheep Working Group 2012, *Recommendations for Domestic Sheep and Goat Management in Wild Sheep Habitat* or updated versions), shall be applied during allotment planning to maintain separation of bighorn sheep from domestic sheep and goats on NFS lands.

Plan Components – Smith River Corridor (SMITH)

The Smith River is a nationally recognized river famous for its fishing, outstanding scenery, and the opportunities it provides for a 60 mile float through private, state, and NFS lands during the late spring and early summer months. The majority of the Smith River Corridor is located within the Little Belts GA. However, the southern portion lies within the Dry Range which is located within the Big Belts GA.

Desired Conditions (LB-SMITH-DC)

01 The developed recreation settings and opportunities along the Smith River corridor are compatible with other resources and allow for ecological sustainability.

02 Visitor experiences are focused on the natural, cultural, and historic resources along the Smith River corridor.

03 Dispersed recreation opportunities along the river corridor allow for exploration and discovery with minimal environmental impacts and user conflicts.

Goals (LB-SMITH-GO)

01 The operation, maintenance, and delivery of recreation along the Smith River is supported by partnerships and volunteer programs.

Guidelines (LB-SMITH-GDL)

01 To protect and enhance the scenic quality of the area, management activities in the Smith River Corridor should be consistent with the scenic integrity objective of high to very high.

Suitability (LB-SMITH-SUIT)

01 Timber production is not suitable in the Smith River Corridor. However, timber harvest is suitable to provide for public safety and to enhance the recreational or aesthetic values.

Plan Components – Showdown Ski Area (SHOWSKI)

The Showdown Ski Area is located on Kings Hill Pass, along Highway 89, in the Little Belts GA. This historic ski resort has been in operation since 1936 and is currently authorized by a long term special use permit which permits winter ski resort development on approximately 600 acres. At this time, the Showdown Ski Area services approximately 45,000 visitors per year.

Desired Conditions (LB-SHOWSKI-DC)

01 The Showdown Ski Area provides public access to developed recreation activities such as, but not limited to, downhill skiing, snowboarding, and snowshoeing.

02 The vegetation and forest conditions at Showdown Ski Area provide for public health and safety, recreational settings and user experiences, enhancing scenic values, protection of facilities and infrastructure. Also see FW-VEGT-DC-04, FW-VEGF-STD- 01 exceptions.

Suitability (LB-SHOWSKI-SUIT)

01 Timber production is not suitable in the Showdown Ski Area. However, timber harvest is suitable to meet other resource objectives.

Plan Components – Tenderfoot Creek Experimental Forest (TCEF)

The Tenderfoot Creek Experimental Forest encompasses the headwaters of Tenderfoot Creek in the Little Belt Mountains. The Tenderfoot Creek Experimental Forest was established in 1961 to investigate lodgepole pine harvesting techniques which maintained soil stability while increasing water yield. In the early 1900's a new objective was outlined to develop and evaluate methods for sustaining the productivity and biodiversity of east-side lodgepole pine communities. In addition, the vision of using the Experimental Forest as a demonstration area for forest research and management options for ecosystem management activities was expressed. Recent work on the experimental forest includes forest monitoring and health; mountain pine beetle assessments; spatial fuel analysis; hydrologic processes including factors affecting hydrologic connectivity, water quality, sediment transport and discharge; climate studies involving net ecosystem exchange of carbon and water; and sustainable silvicultural methods.

Management and administrative responsibilities for the Tenderfoot Creek Experimental Forest are conducted cooperatively between the Helena - Lewis and Clark National Forest and Rocky Mountain Research Station, as guided by the letter of agreement.

Desired Conditions (LB-TCEF-DC)

01 The Tenderfoot Creek Experimental Forest provides the necessary vegetation conditions and management opportunities to support research and demonstration activities conducted by the Rocky Mountain Research Station.

02 Evaluation of long-term studies continue as well as the collection of baseline hydrology, climate, and other resource information.

03 Research facilities and infrastructure (for example, buildings, roads, and signs) are sufficient to support the research and education programs of the Tenderfoot Creek Experimental Forest.

04 Dispersed recreation opportunities are present within the Tenderfoot Creek Experimental Forest and their use and management is compatible with research activities.

Suitability (LB-TCEF-SUIT)

01 The Tenderfoot Creek Experimental Forest is unsuitable for timber production. However, it is suitable for timber harvest as well as other vegetation management activities for the purposes of conducting and demonstrating research or for other reasons as mutually agreed upon between Rocky Mountain Research Station and the HLC NF.

02 The Tenderfoot Creek Experimental Forest is not suitable for the removal of non-timber forest products (for example, mushrooms, firewood, botanical products) for commercial use.

03 The Tenderfoot Creek Experimental Forest is not suitable for the removal of the following nonforest products for personal use: firewood, Christmas trees, boughs, and surface rock. Removal of other nonforest products for personal use (for example, mushrooms and botanical products) may occur.

04 The Tenderfoot Creek Experimental Forest is not suitable for livestock grazing.

05 The Tenderfoot Creek Experimental Forest is suitable for motorized travel on designated routes or trails.

Plan Components – Kings Hill Scenic Byway (KHSB)

The Kings Hill Scenic Byway is a 71-mile long National Forest scenic byway that begins at Armington Junction (the junction of US Highways 89 and 12) near Belt, MT and ends where Highway 89 intersects Highway 12, near White Sulphur Springs, MT. Approximately 40 miles of the Kings Hill Scenic Byway pass through NFS lands located in the Little Belt Mountains GA.

Desired Conditions (LB-KHSB-DC)

01 NFS lands visible from Kings Hill Scenic Byway are natural-appearing and promote high scenic qualities.

02 The interpretive and recreation infrastructure that service visitors along the scenic byway protect, complement, and promote the intrinsic scenic values along the route.

03 The interpretation along the Kings Hill Scenic Byway is cohesive and enhances the appreciation of the natural and cultural landscape of the area.

Goals (LB-KHSB-GO)

01 The interpretation along the Kings Hill Scenic Byway is supported by partnerships with state and local highway districts and volunteers. Together these groups update, promote, and maintain the signage along the Kings Hill Scenic Byway.

Guidelines (LB-KHSB-GDL)

01 To protect and enhance the scenic quality of the area, management activities in the Kings Hill Scenic Byway should be consistent with the scenic integrity objective of high in harmony with the purposes for which the scenic byway was designated.

Suitability (LB-KHSB-SUIT)

01 This area is unsuitable for timber production. However, it is suitable for timber harvest or other vegetation management tools to provide for public safety and/or to enhance the recreational and scenic values of the area.

Rocky Mountain Range Geographic Area

General Overview

The Rocky Mountain Range GA is located in portions of Teton, Pondera, Glacier, and Lewis and Clark counties. The closest communities are Augusta, Choteau, Bynum, Dupuyer, East Glacier, and Heart Butte. Great Falls is the nearest large population center, about an hour drive to the southeast. The GA is bordered by Highway 2 and Glacier National Park to the north. The Blackfeet Nation lands are to the northeast. The east and southeast are bordered by state, private, and Bureau of Land Management lands. The Upper Blackfoot GA is to the south. The Continental Divide and the Lolo and Flathead National Forests are to the west. Unlike many of the GAs in the HLC NF plan area, the Rocky Mountain Range is not an island mountain range, but rather a part of the expansive Continental Divide ecosystem that extends across Montana.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

This GA is a part of the larger Rocky Mountain Front, where large bands of exposed limestone along a roughly 90 mile long Lewis Thrust fault are visible. Two highlights of this overthrust formation are Scapegoat Mountain, a large escarpment in the Scapegoat wilderness; and the Chinese Wall, a limestone escarpment that averages 1,000 feet high and extends for approximately 22 miles. The Continental Divide is located along the top of this long limestone escarpment. The distinct ridges are locally known as reefs.

During the Pleistocene age, the last ice age, the GA was heavily glaciated and sculpted by mountain glaciers moving though and east out of the mountains onto the foot hills and prairies. Many glacial derived sediment and ice chiseled features dominate the landscape. Moraines, ice block features, and u-shaped valleys all add to the scenic quality of the Rocky Mountain Front.

Many wildfires in this GA have been managed to achieve multiple resource objectives, allowing fire to operate as an important disturbance, and drive the mosaic and pattern of vegetation. There are many natural barriers that tend to slow or stop fire spread, including major river drainages and rocky ridges.

The Northwest Glaciated Plains are characterized by large open expanses of what was historically short grass prairie. It has been predominantly converted to agricultural purposes. Kettle ponds seasonally dot the rolling foothills. Vegetation within the forest boundary is largely influenced by natural processes. This GA is characterized by a dominance of cool moist and cold forest potential vegetation types, in contrast to most other areas on the Forest. Prairie, limber pine, and aspen cover lower foothills. Rare cottonwood can be found, more so than on other GAs. Prairie vegetation extends into the front ridges and gives way to conifer forests. Engelmann spruce and subalpine fir forests are particularly prevalent. Lodgepole pine and Douglas-fir forests are also common along with whitebark pine at the highest elevations. Ponderosa pine and Rocky Mountain juniper are rare. Exposed rock, aspen, and open grassland break up the forest. This GA hosts high plant diversity and is home to several endemic species.

The very diverse topography and vegetation of this GA supports a wide array of wildlife species. All of the wildlife species present before Euro-American settlement of the continent, with the exception of bison, are believed to be present on this GA. Two species (grizzly bear and Canada lynx) that are currently listed as Threatened under the federal Endangered Species Act are present in this GA. The Rocky Mountain Range GA is part of the Northern Continental Divide Ecosystem Recovery Zone for

grizzly bears, and is within Unit 3 of federally designated Canada lynx Critical Habitat. Other uncommon species that are present include the white-tailed ptarmigan, harlequin duck, northern bog lemming, and wolverine.

The Sun River Game Preserve was established in 1913 by the Montana legislature to protect what was then a dwindling elk population. It is the largest state game preserve and one of only a few remaining in Montana. Despite the elk population having grown substantially since its establishment, the preserve continues to be championed by many members of the public. The bighorn sheep population in the Sun River area of the Rocky Mountain Range GA has been one of the most robust and resilient herds in Montana, and has been the source for sheep transplanted to other states and areas within Montana to augment or re-establish declining or extirpated herds.

Water drains from the mountains eastward from the continental divide. Many of the streams and rivers are noted for their ecological and scenic value. Upon exiting the forest boundary, the majority of water is quickly captured in reservoirs for agricultural use. Most precipitation comes in the form of snow. The major drainages include the Two Medicine, Teton, Dearborn, Birch Creek and Sun River watersheds. There are several streams that support westslope cutthroat trout, including a meta-population in the Badger watershed.

Strong, frequent Chinook winds in this GA provide open winter range habitat key to many wildlife species, including big game. The strong winds also affect plant communities, such as dry limber pine, krummholz, savannah, and snow that is pushed and drifted into coulees that melt and irrigate snow-bank riparian areas.

Social and Economic Characteristics

A large portion of the Rocky Mountain Range GA is designated wilderness and includes portions of the Scapegoat and Bob Marshall Wilderness Areas. These two wilderness areas are components of a greater wilderness complex that totals well over 1.5 million acres, the 5th largest wilderness area in the lower 48 states. With the passing of the National Defense Act of 2015 in December 2014, an additional 67,112 acres were added to these wilderness areas, and 197,568 acres of Conservation Management Area were also designated. The GA’s proximity to this wilderness complex, Glacier National Park, and adjacent wild areas of Canada make it a critical component of the Northern Continental Divide Ecosystem.

The GA is a destination for Montanans as well as visitors from all over. People are drawn to the area because of its remoteness, stunning landscape, recreational opportunities, and because it is one of the significant remaining wild places in the lower 48 states. Many lodges, resorts, cabins, and ranches have intimate relationships with the area. Multiple guard stations, work centers, and lookouts help the FS steward the vast country.

Recreation use within the GA is diverse and ranges from primitive settings found within the wilderness areas to well-established developed sites in a roaded natural setting. Because of the large amount of designated wilderness there is substantial backcountry recreation. Backpacking, horseback riding, and commercial outfitting are the primary recreation opportunities present in these remote reaches. Conversely, in the front country, one can find developed campgrounds and trailheads, commercial resorts, cabin rentals, and an airstrip. There is a high proportion of recreation residences in comparison to other GAs on the HLC NF. The Continental Divide National Scenic Trail follows the continental divide through this GA. This area has a history of oil and gas production.

Cultural and Historical Characteristics

Portions of the Old North Trail, an ice-free corridor used for southward travel through North America, run through this GA. More recent indigenous cultures revere the area as a sacred landscape with spiritual importance for ceremonial purposes. Its continued use for cultural and spiritual resources has led to the designation of the Badger-Two Medicine area as a Traditional Cultural District. A special emphasis area, Badger-Two Medicine, is proposed to address and support special management needs of this area. Archaeological sites dot the entire GA.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 82 and associated map(s) in appendix B display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

Table 82. Designated areas in the Rocky Mountain Range GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Bob Marshall Wilderness	351,651	45	12
Scapegoat Wilderness	100,607	13	4
Conservation Management Areas	197,568	25	100
Inventoried Roadless Areas (2)	359,341	46	25
Research Natural Areas (2)	1,774	1	11
Eligible Wild and Scenic Rivers (many)	200	N/A	N/A
Continental Divide National Scenic Trail	135	N/A	N/A

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as but not limited to river corridors, ski areas, recreation areas, cultural areas, municipal watersheds, major utilities and communication sites that are not congressionally designated but do have specific plan components.

Table 83 displays the special emphasis and permitted areas in this GA.

Table 83. Special emphasis and permitted areas in the Rocky Mountain Range GA

Area	Acres	Percent of GA
Badger Two Medicine Special Area	129,591	17
Teton Pass Ski Area	407	Less than 1
Mount Baldy Communication Site	1	Less than 1
BNSF Railroad Right-of-Way	33.2	Less than 1
10” Natural Gas Transmission Pipeline	37	Less than 1
Rocky Mountain Front Conservation Management Area	195,073	25

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number.

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components. Table 84 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix B display the recreation opportunity spectrum categories in this GA.

Table 84. Recreation opportunity spectrum classes for the Rocky Mountain Range GA

ROS Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	453,171	58	453,171	58
Semi-primitive Nonmotorized	271,415	35	278,771	36
Semi-primitive Motorized	22,619	3	35,671	5
Roaded Natural	27,822	4	7,413	1
Rural	3,227	<1	3,227	<1
Urban	0	0	0	0
Alternative C				
Primitive	453,171	58	453,171	58
Semi-primitive Nonmotorized	271,415	35	278,771	36
Semi-primitive Motorized	22,619	3	35,671	5
Roaded Natural	27,822	4	7,413	1
Rural	3,227	<1	3,227	<1
Urban	0	0	0	0
Alternative D				
Primitive	578,437	74	579,532	74
Semi-primitive Nonmotorized	146,149	19	152,410	20
Semi-primitive Motorized	22,619	3	35,671	5
Roaded Natural	27,822	4	7,413	1
Rural	3,227	<1	3,227	<1
Urban	0	0	0	0
Alternative E				
Primitive	453,171	58	453,171	58
Semi-primitive Nonmotorized	271,415	35	278,771	36
Semi-primitive Motorized	22,619	3	35,671	5
Roaded Natural	27,822	4	7,413	1
Rural	3,227	<1	3,227	<1
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Rocky Mountain Range GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic

and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 85) for the Rocky Mountain Range GA are displayed in the scenic integrity objectives maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 85. Scenic integrity objectives for the Rocky Mountain Range GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative B		
Very High	453,176	58
High	322,645	41
Moderate	1,777	<1
Low	660	<1
Very Low	0	0
Alternative C		
Very High	453,176	58
High	310,360	40
Moderate	13,834	2
Low	658	<1
Very Low	0	
Alternative D		
Very High	579,537	74
High	196,284	25
Moderate	1,777	<1
Low	660	<1
Very Low	0	0
Alternative E		
Very High	453,176	58
High	322,416	41
Moderate	1,777	<1
Low	658	<1
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. No lands suitable timber production are identified in this GA in any alternative. Forestwide plan components (chapter 2) for harvest in lands unsuitable for timber production apply. In addition, GA-specific guidance for harvest is provided in components in this section.

Recommended Wilderness

There are no recommended wilderness areas in the Rocky Mountain Range GA under any alternative.

Plan Components – Forested Vegetation (VEGF)

Desired Conditions (RM-VEGF-DC)

01 The dry Douglas-fir cover type is present on 4-7% of this GA; this is a similar level to the existing condition. The mixed mesic conifer cover type is present on 4-8% of the GA, which is also similar to the existing condition. The lodgepole pine cover type is present on 17-29%, which is an increase from the existing condition. These trends differ from FW-VEGF-DC-01 but will contribute to the forestwide DC. The other desired trends for cover type in this GA are consistent with the forestwide DC. Also see appendix C.

02 To complement the forestwide desired conditions for tree species presence, Table 86 shows the desired condition for tree species distribution within the Rocky Mountain Range GA.

Table 86. Rocky Mountain GA desired conditions for tree species presence (percent of area)[4]

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	5 (2-8)	4-10	The desired conditions indicate some reductions of Engelmann spruce and subalpine fir relative to the existing condition are desired, particularly on cold broad potential vegetation types where they compete with whitebark pine, although these species should be promoted in identified potential lynx habitat. The desired conditions also indicate an increase in ponderosa pine, where opportunities exist, but this is a rare and minor species in this geographic area.
Rocky Mountain juniper	3 (0.4-5)	1-3	
ponderosa pine	0	1-5	
Douglas-fir	27 (20-33)	25-32	
aspen	5 (2-8)	4-8	
Engelmann spruce	33 (27-40)	15-25	
lodgepole pine	32 (26-40)	38-44	
subalpine fir	36 (29-43)	18-31	
whitebark pine	14 (9-20)	11-22	

1Additional species may occur in minor amounts.
2 Existing condition shows the mean percent area with the 90% confidence limit in parenthesis. Source for Existing is R1 Summary Database, FIA data.
3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

03 In identified potential lynx habitat (see glossary), the appropriate amounts, distributions, and structural conditions of Engelmann spruce and subalpine fir that provide quality lynx habitat are present.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (RM-VEGNF-DC)

01 Nonforested cover types continue to be present on 10-20% of the GA, as compared to the existing condition which is just above this desired range.

Plan Components – Wildlife (WL)

Desired Conditions (RM-WL-DC)

01 The Rocky Mountain Range GA provides habitat connectivity for wide-ranging species (grizzly bear, Canada lynx, wolverine, and others) between public lands in northern Montana and those in central and southern Montana, including lands in the Greater Yellowstone Ecosystem.

02 Bighorn sheep populations are healthy and risk of disease transmission from domestic livestock is minimal.

03 Known harlequin duck breeding streams are relatively undisturbed by human activities during the brood-rearing time period.

Standards (RM-WL-STD)

01 To avoid potential conflicts with grizzly bears and to avoid risk of disease transmission to wild bighorn sheep, domestic sheep or goat grazing on NFS lands with the Rocky Mountain Range GA will not be permitted.

Guidelines (RM-WL-GDL)

01 Livestock grazing in identified bighorn sheep winter range should be managed to prioritize maintenance of overwinter forage for bighorn sheep.

02 In order to minimize potential disturbance to harlequin duck broods, management and recreation activities that have the potential to separate or displace harlequin pairs or broods (for example, timber harvest, road construction and heavy maintenance, boating, rafting) should be avoided on or immediately adjacent to known harlequin duck breeding streams during the brood-rearing period.

Plan Components – Teton Pass Ski Area (TETONSKI)

The Teton Pass Ski Area is along the Teton Canyon Road. This ski area is approximately 30 miles west of Choteau, MT. Teton Pass Ski resort has been in operation since 1966 and is currently authorized by a long-term special use permit which permits winter ski resort development and some summer activities on approximately 407 acres. At this time, the Teton Pass Ski Area services approximately 6,000 - 8,000 visitors per year.

Desired Conditions (RM-TETONSKI-DC)

01 The Teton Pass Ski Area provides public access to developed recreation activities such as, but not limited to, downhill skiing, snowboarding, snowshoeing, and backcountry skiing.

02 The vegetation and forest conditions at Teton Pass Ski Area provide for public health and safety, recreational settings and user experiences, enhancing scenic values, protection of facilities and infrastructure. Also see FW-VEGF-STD-01.

Suitability (RM-TETONSKI-SUIT)

01 The Teton Pass Ski Area is not suitable for timber production. However, timber harvest may occur to meet other resource objectives.

Plan Components – Badger Two Medicine (BTM)

The area commonly known as the Badger Two Medicine encompasses approximately 129,600 acres at the northern end of the Rocky Mountain Range GA. The majority of this area is located within the Badger-Two Medicine Traditional Cultural District, an area acknowledged for its significance to the oral traditions and culture practices of the Blackfeet people, who have used the lands for traditional purposes for generations and continue to value the area as important to maintaining their community's continuing cultural identity. This area also falls within the 1895 Agreement with the Indians of the Blackfeet Indian Reservation in Montana, which states that the Blackfeet Nation will retain treaty rights to extract timber, fish, animals, and other resources in the Badger Two Medicine area.

Desired Conditions (RM-BTM-DC)

01 The Badger Two Medicine is a large, undeveloped landscape that is open to nonmotorized recreation and reflects the traditional cultural values.

02 The Badger Two Medicine area is characterized by a natural environment where ecological processes such as natural succession, fire, insects, and disease function and exist. Impacts from visitor uses do not detract from the natural setting.

03 Education and research opportunities are available within the Badger Two Medicine area.

Standards (RM-BTM-STD)

01 The Badger Two Medicine area shall be managed in close consultation to fulfill Blackfeet treaty obligations, and the federal trust responsibility. The area shall be managed to protect and honor Blackfeet reserved rights and sacred land. The uses of this area must be compatible with desired conditions and compatibility shall be determined through government to government consultation.

02 Management activities within the Badger Two Medicine area shall not pose adverse effects to the Badger Two Medicine Traditional Cultural District. Management activities shall consider scientific research and ethnographic research as they relate to Blackfeet cultural land-use identities when analyzing project effects.

03 Management shall recognize, ensure, and accommodate Blackfeet tribal members access to the Badger Two Medicine area for the exercise of reserved treaty rights, and enhances opportunities for tribal members to practice spiritual, ceremonial and cultural activities.

Suitability (RM-BTM-SUIT)

01 This area is unsuitable for timber production. However, timber harvest to meet objectives other than timber production should particularly emphasize habitat restoration, hazardous fuel reduction, and support tribal treaty rights.

Plan Components – Rocky Mountain Front Conservation Management Area (CMA)

On December 19, 2014, President Obama signed into effect Public Law 113-291: National Defense Authorization Act for Fiscal Year 2015. Included within this law was language that established the Rocky Mountain Front Conservation Management Area. The law includes approximately 195,073 acres of Federal land managed by the FS and approximately 13,087 acres of Federal land managed by the Bureau of Land Management.

Desired Conditions (RM-CMA-DC)

01 The conservation management area on the Rocky Mountain Front conserves, protects, and enhances the recreational, scenic, historical, cultural, fish, wildlife, roadless, and ecological values of the area for the benefit and enjoyment of present and future generations.

02 The vegetation and forest conditions of the Rocky Mountain Front Conservation Management Area provide for public health and safety, recreational settings and user experiences, enhance scenic values, protect facilities and infrastructure.

03 Nonmotorized recreation trail opportunities enable access to the primitive and semi-primitive recreation opportunity spectrum settings within the conservation management area.

Standards (RM-CMA-STD)

01 No new or temporary roads shall be constructed within the Rocky Mountain Front Conservation Management Area, except:

- To reroute or close an existing route to protect resources.
- To allow motorized access for timber management activities not more than ¼ mile from Teton Road, South Fork Teton Road, Sun River Road, Beaver Willow Road, or Benchmark Road.
- To allow for administrative access, permitted access, and access to valid existing rights.
- For emergency purposes.

02 Temporary roads that are constructed for vegetation management projects shall be restored within 3 years of project completion, including site preparation and planning activities.

Guidelines (RM-CMA-GDL)

01 Management strategies for terrestrial and aquatic nonnative invasive species should provide for the control, prevention, and eradication of invasive species within the Rocky Mountain Front Conservation Management Area.

Suitability (RM-CMA-SUIT)

01 The Rocky Mountain Front Conservation Management Area is not suitable for timber production. However, timber harvest may occur to meet other resource objectives.

02 Permitted grazing is suitable in the Rocky Mountain Front Conservation Management Area.

Snowies Geographic Area

General Overview

The Snowies is the GA farthest to the east within the HLC NF plan area. This remote GA is primarily in Fergus County with smaller portions in Golden Valley County. Lewistown is the largest nearby population center.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

The Snowies GA includes both the Big and Little Snowy Mountain ranges, which constitute portions of an extensive series of low, rolling hills. This GA displays prominent changes in elevation accentuated by the surrounding grassland, high plains, and conifer timbered foothills.

The Little Snowies are separated from the Big Snowies by a subtle break in topography. They are characterized by nonforested and warm dry forested potential vegetation types, with foothills that are partially forested primarily with limber pine, ponderosa pine, and Douglas-fir. The Little Snowies are especially noted for unique expanses of ponderosa pine which transition from a 3-needled to a 2-needled variety that typifies populations in the eastern part of Montana. Due to its position in the rain shadow created by the Big Snowies, the country is semi-arid and dominated by grassy vegetation. The landform is rolling with slopes that are gentle to flat, except where creeks have dissected them. The area lacks prominent high points.

The Big Snowies is the largest and most prominent landform in this GA, higher in elevation and larger than the Little Snowy range, dominated by cool moist potential vegetation types. The spine of this landform runs east-west for approximately 25 miles, and 10 miles north-south. Middle elevations are clad with coniferous trees. At the highest elevations, the forest transitions into a tree-less plateau of alpine that is characterized by rock and tundra. Floristically, the Big Snowies are unique with many vegetation types compressed into the same area. Fire was the historic driver of plant communities. Slopes vary from steep rocky canyons to gentle benches. The northern portion of the GA receives abundant moisture and supports dense forests of Douglas-fir, lodgepole pine, subalpine fir, and Engelmann spruce with some whitebark pine. These moist forests create a unique setting not found in the more arid GAs nearby. The southern portion of the GA supports a notably expansive aspen complex, although aspen is not noted in existing data.

The Snowies GA includes habitat for big game species such as, moose, elk, mule deer, and white-tailed deer, black bear, and mountain lion. These mountain ranges historically supported bighorn sheep, as well as a transplanted mountain goat population that is now extinct or nearly so. An introduced population of wild turkeys provides a valued hunting opportunity in the Little Snow Mountains.

Streams flowing out of the north side of the Big Snowy Mountains flow into the Judith River. Major streams on the north side of the Big Snowies include Rock, Cottonwood, Flatwillow and Half Moon Creeks. Those flowing out of the south side flow into the Musselshell River. South side streams include Careless and Swimming Woman Creeks; both flow south out of a unique geologic feature known as a pseudo cirque. Snow in the Big Snowy Mountains is a primary source of water that feeds the underlying Madison limestone aquifer and Big Spring, which is a first-magnitude artesian spring (and primary water source of Big Spring Creek) that surfaces approximately 6 miles south of Lewistown. Big Spring

(approximately 50,000 to 64,000 US gallons per minute) provides Lewistown's water supply, which requires no treatment for use by consumers. Halfmoon, Big Spring and Cottonwood Creeks support westslope cutthroat trout. The major drainages in the Little Snowies are Willow Creek and the North Fork of Pole Creek, both of which drain south to the Musselshell River.

The upper watershed of Big Spring Creek, Middle and East Fork of Big spring Creek, is the recharge area for the municipal watershed and the watershed is the primary source of municipal water for the city of Lewistown. The City receives its water from Big Spring Creek six miles south of town, north of the forest boundary.

Social and Economic Characteristics

Most of the Little Snowies is used for dispersed recreation opportunities, such as hunting and camping. The area is known for its wild turkey populations and wildlife viewing is a popular activity. Crystal Lake is one of the Big Snowy Mountain's crown jewels. It is a shallow lake of natural origin, roughly 15 feet at its deepest and underlain by a bed of limestone. There are a number of developed recreation sites along Crystal Lake and Crystal Lake Guard station still actively facilitates FS stewardship and is available as a cabin rental. Several dispersed trails take off from this location and provide access to interpretive points such as the Ice Caves, which is one of many caves in the area.

The Big Snowies Wilderness Study Act (approximately 88,000 acres) is located within the center of the Big Snowy mountain range. This undeveloped area is managed to preserve opportunities for inclusion in the National Wilderness Preservation System and includes opportunities for a more primitive recreation experience.

Livestock grazing in the Little Snowies also supports the local economy.

Cultural and Historical Characteristics

The Little Snowy Mountain range has a rich cultural history, beginning with Native Americans and then later with homesteaders. Today, large ranches maintain the open character of the area. Pine Grove Cemetery continues to be the final resting place for early Euro-American occupants.

The Big Snowy Mountains have long been a unique and revered destination. Early Native Americans visited its basins and summits. Their artifacts and art still sporadically adorn the range. Lower slopes and foothills were homesteaded and have become large, iconic ranches. Unique, biophysical phenomena, such as ice caves, continue to attract visitors.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 87 and associated map(s) in appendix B display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

Table 87. Designated areas in the Snowies GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Big Snowies Wilderness Study Act Area	87,968	74	52
Inventoried Roadless Areas (2)	97,113	82	7
Research Natural Areas (3)	3,483	3	21
Eligible Wild and Scenic Rivers (1)		N/A	N/A

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Crystal Lake Loop National Recreation Trail	2	N/A	N/A

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as but not limited to river corridors, ski areas, recreation areas, cultural areas, municipal watersheds, major utilities and communication sites that are not congressionally designated but do have specific plan components.

Table 88 and associated map(s) display the special emphasis and permitted areas in this GA.

Table 88. Special emphasis and permitted areas in the Snowies GA

Area	Acres	Percent of GA
Big Spring Creek municipal watershed	9,649	8

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components. Table 89 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix B display the recreation opportunity spectrum categories in this GA.

Table 89. ROS classes for the Snowies GA

ROS Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	95,636	81	95,636	81
Semi-primitive Nonmotorized	202	<1	207	<1
Semi-primitive Motorized	6,541	6	21,878	19
Roaded Natural	15,118	13	456	<1
Rural	676	<1	0	0
Urban	0	0	0	0
Alternative C				
Primitive	95,636	81	95,636	81
Semi-primitive Nonmotorized	202	<1	207	<1
Semi-primitive Motorized	6,541	6	21,878	19
Roaded Natural	15,118	13	456	<1
Rural	676	<1	0	0
Urban	0	0	0	0
Alternative D				
Primitive	95,636	81	95,636	81
Semi-primitive Nonmotorized	202	<1	202	<1

ROS Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Semi-primitive Motorized	6,541	6	21,878	19
Roaded Natural	15,118	13	456	<1
Rural	676	<1	0	0
Urban	0	0	0	0
Alternative E				
Primitive	88,850	75	75,328	64
Semi-primitive Nonmotorized	4,245	4	4,041	3
Semi-primitive Motorized	0	0	15,458	13
Roaded Natural	24,406	21	23,346	20
Rural	671	<1	0	0
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Snowies GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 90) for the Snowies GA are displayed in the scenic integrity objectives maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 90. Scenic integrity objectives for the Snowies GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative B		
Very High	95,929	81
High	3,869	3
Moderate	4,658	4
Low	13,762	12
Very Low	0	0
Alternative C		
Very High	95,929	81
High	3,869	3
Moderate	4,658	4
Low	13,762	12
Very Low	0	0
Alternative D		
Very High	95,929	81
High	3,869	3
Moderate	4,658	4
Low	13,762	12
Very Low	0	0
Alternative E		
Very High	88,859	75

Scenic Integrity Objective	Acres	Percent of GA[1]
High	10,491	9
Moderate	4,901	4
Low	13,967	12
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. No lands suitable for timber production are identified in this GA in the draft plan. Forestwide plan components (chapter 2) for harvest in lands unsuitable for timber production apply. In addition, GA-specific guidance for harvest is provided in components in this section. See Table 91.

Table 91. Lands suitable for timber production in the Snowies GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C	0	0	0
Alternative D	0	0	0
Alternative E	17,377	15%	4%

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

Recommended Wilderness

Table 92 and associated map(s) in appendix B display the recommended wilderness areas in this GA.

Table 92. Recommended wilderness in the Snowies GA

	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C			
Big Snowies	95,299	81	45
Alternative D			
Big Snowies	95,299	81	20
Alternative E			
n/a	n/a	n/a	n/a

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of total recommended wilderness forestwide, rounded to the nearest whole number.

Plan Components – Watershed (WTR)

Desired Conditions (SN-WTR-DC)

01 Big Spring Creek municipal watershed provides a clean water supply for the city of Lewistown. See FW-WTR-STD-01.

Goals (SN-WTR-GO)

01 Coordinate management of the municipal watershed with the State of Montana and municipality.

Guidelines (SN-WTR-GDL)

01 Within the Big Spring Creek municipal watershed, management activities should emphasize restoration and resiliency.

02 Livestock grazing in the Big Spring Watershed should only be permitted as long as the desired conditions are met.

Plan Components – Forested Vegetation (VEGF)

Desired Conditions (SN-VEGF-DC)

01 The lodgepole pine cover type is present on 15-30% of this GA. This is an increase relative to the existing condition. This trend differs from FW-VEGF-DC-01 but will contribute to the forestwide DC. The other desired trends for cover type in this GA are consistent with the forestwide DC. Also see appendix C.

02 To complement the forestwide desired conditions for tree species presence, Table 93 shows the desired condition for tree species distribution within the Snowies GA.

Table 93. Snowies GA desired conditions for tree species presence (percent of area)[4]

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	26 (19-34)	5-35	This GA is unique for its extent of ponderosa pine, primarily in the Little Snowies portion. Unlike most other areas, the existing condition is within the desired condition, and maintenance of this extent is desirable. It is also desirable to maintain the extent of limber pine, juniper, and subalpine fir near existing levels, while decreasing Douglas-fir and increasing lodgepole pine. Increases in aspen and whitebark pine are also be desirable.
Rocky Mountain juniper	2 (2-4)	3-5	
ponderosa pine	26 (19-34)	25-30	
Douglas-fir	62 (54-70)	44-55	
aspen	2 (2-5)	1-2	
Engelmann spruce	48 (39-56)	17-20	
lodgepole pine	18 (12-25)	22-36	
subalpine fir	19 (13-27)	21-36	
whitebark pine	1 (1-2)	2-5	

1Additional species may occur in minor amounts.
2 Existing condition shows the mean percent area with the 90% confidence limit in parenthesis. Source for Existing is R1 Summary Database, FIA data.
3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

03 Juniper recruitment into mule deer and elk summer range in the Little Snowies portion of the GA is minimal, although at the GA scale maintenance of this species is appropriate.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (SN-VEGNF-DC)

01 Nonforested cover types continue to be present on 5-10% of the GA.

Guidelines (SN-VEGNF-GDL)

01 When conducting management activities, vegetation should be managed to enhance and maintain high quality forage on big game summer range, particularly on the northern slopes of the Big Snowy Mountains.

Plan Components – Benefits to People (TIM)

Guidelines (SN-TIM-GDL)

01 Timber harvest on lands unsuitable for timber production, as well as other vegetation management activities, should emphasize ponderosa pine habitat restoration, wildlife habitat, reducing hazardous fuels, protecting communities and values at risk, and providing for public safety.

Plan Components – Benefits to People (FWL)

Desired Conditions (SN-FWL-DC)

01 Habitat capable of sustaining an introduced population of mountain goats at levels providing hunting opportunities occurs where compatible with the habitat needs and objectives for other, native wildlife species. Also see Benefits to People, Fish and Wildlife.

02 Habitat capable of sustaining an introduced population of wild turkeys at levels providing hunting opportunities occurs where compatible with the habitat needs and objectives for other, native wildlife species. Also see Benefits to People, Fish and Wildlife.

Upper Blackfoot Geographic Area

General Overview

The Upper Blackfoot GA spans Lewis and Clark and Powell counties. The community of Lincoln is within the GA, and the city of Helena is relatively nearby. The Upper Blackfoot GA lies primarily west of the Continental Divide and is therefore influenced by a more maritime climate than the other GAs. It is not an island mountain range, but rather a portion of the greater Continental Divide landscape that extends across Montana. The Rocky Mountain Range GA and Flathead National Forest are directly north and the Divide GA is to the south. Montana Highway 200 cuts east-west through the center of the GA, crossing over Rogers Pass to follow the Blackfoot River. The northwest corner is a part of the Scapegoat Wilderness and the greater Bob Marshall Wilderness complex. This GA is a critical component of the Southern Crown of the Continent ecosystem.

Please see maps (appendix B) for detailed information.

Distinctive Roles and Contributions

Ecological Characteristics

The landform west of the divide is characterized by mostly rolling hills and mountains that are underlain by various types of rock. High peaks are topped with volcanic rocks with areas of exposed rock. The effects of glaciation are present. The landforms east of the divide are characterized by rounded mountains that are underlain by volcanic rocks and sedimentary rocks that have changed through geologic processes. Summits lack much exposed rock and the effects of glaciation are absent. There are a few notable passes over the Continental Divide: Rogers, Stemple, and Flesher passes.

The Upper Blackfoot GA contains a mosaic of nonforested and forested potential vegetation types. Most of the area is forested with conifers, predominantly lodgepole pine, Douglas-fir, and subalpine fir with some Rocky Mountain juniper, ponderosa pine, limber pine, Engelmann spruce, and whitebark pine. Notably, western larch occurs in low amounts at the far eastern edge of its range. This species is not present in any other GA within the plan area. Aspen stands are intermittent. Grasslands are limited, but do occur along valley bottoms and sun exposed aspects. Wetland complexes (such as Indian Meadows), fens, and other groundwater dependent ecosystems harbor rich assemblages of plants. Fire is a major driver in the structure and composition of plant communities. The unique climate of this area, being west of the Divide and subject to more maritime influences than the rest of the plan area, gives rise to unique species associations at higher elevations, such as ponderosa pine and limber pine mixed with whitebark pine. There is also a unique botanical area near Granite Butte containing a montane rough fescue grassland, a snowglade feature, and a whitebark pine ribbon forest.

The species and habitats on the Upper Blackfoot GA differ from most of the plan area due to it being predominantly west of the Continental Divide. Two species (grizzly bear and Canada lynx) that are currently listed as Threatened under the federal Endangered Species Act are present in this GA. The north half of the Upper Blackfoot GA is part of the Northern Continental Divide Ecosystem Recovery Zone for grizzly bears – which is the southernmost extent of the Northern Continental Divide Ecosystem Grizzly Bear Recovery Zone. This GA is also within Unit 3 of federally designated Canada lynx Critical Habitat. Other uncommon species that are present include the harlequin duck, and wolverine, and occasionally fisher may be present. The Upper Blackfoot GA also provides habitat for moose, white-tailed deer, elk, wolves, and mule deer. Mountain goats may occasionally be present in higher elevations near the boundary with the Rocky Mountain Range GA.

The Blackfoot River finds its headwaters here in the GA. This highly valued recreational and scenic river clips other portions of the GA. This GA has many important headwater streams emanating from the high country's snow melt. All streams west of the divide feed into the Blackfoot River on its way to the Clark Fork of the Columbia River. Major drainages east of the divide flow towards the Missouri River. Many natural lakes occur throughout. High value populations of bull trout and westslope cutthroat trout are found throughout the GA, including Landers Fork and Poorman Creek.

Social and Economic Characteristics

Recreation use in the Upper Blackfoot GA varies by location. The northern area includes the south part of the Scapegoat Wilderness (part of the greater Bob Marshall Wilderness complex), and recreation activities such as backpacking, horseback riding, and outfitter guiding take place across the landscape. There are a few developed recreation sites within the GA including a couple of campgrounds and a few larger developed trailheads. Additionally, there is dispersed recreation use with both motorized and nonmotorized trails and dispersed camping in many of the stream bottoms. Snowmobiling and dog sledding are the primary winter activities along with cross country skiing, particularly on Stemple Pass. The Continental Divide National Scenic Trail transects the GA, north to south. Numerous snowmobile trails lead from the community of Lincoln onto NFS lands. This GA also has the Lincoln Airstrip.

Mineral production occurs via small mining operations, primarily for gold, silver, lead and copper. There are several inholdings as well as extensive reclamation activities associated with historic mining, including a State superfund site at the Upper Blackfoot Mining Complex/Mike Horse.

Cultural and Historical Characteristics

Native American groups once occupied, seasonally used, or traveled though this large river valley and the adjacent foothills and mountains. Native Americans attach great cultural significance to the ancient campsites, hunting and plant gathering places, tool stone quarries, paint pigment sources, vision questing sites, and old trails found throughout the GA.

The Euro-American settlement mirrors that of Montana in general. Portions of the Lewis and Clark Trail traverse the Blackfoot River and Alice Creek. The trail passes over the Continental Divide at Lewis and Clark Pass. The Lewis and Clark Expedition of 1804-1806 gave way to fur trapping and trading, then early military expeditions and railroad route explorations. A gold strike in Abe Lincoln Gulch brought permanent settlement at the Old Lincoln townsite. Remnants of former communities dot the landscape such as the post offices and dwellings of McClellan Gulch, Rochester, Gould, Stemple Pass, and Mike Horse. Relics of historic mining infrastructure and tools are frequent. Three historic buildings, Webb Lake Guard Station, Stonewall Lookout, and Granite Butte Lookout, stand testament to the FS's administration.

Designated Areas

Designated areas are specific areas or features within the plan area that have been given a permanent designation to maintain its unique special character or purpose. Please see chapter 2 for forestwide direction of designated areas. Table 94 and associated map(s) in appendix B display the designated areas in this GA. Note that there can be overlap between the different areas and that there can also be portions of the GA outside of a designated area, so the sum of these acreages may differ from the total GA acreage.

Table 94. Designated areas in the Upper Blackfoot GA

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Scapegoat Wilderness	83,519	25	15
Inventoried Roadless Areas	152,170	46	11

Designated Area	Acres/Miles	Percent of GA[1]	Percent Forestwide Total[2]
Research Natural Areas (existing and proposed)	3,243	1	19
Eligible Wild and Scenic Rivers (many)	42	N/A	N/A
Continental Divide National Scenic Trail	49	N/A	N/A
Lewis and Clark National Historic Trail	12	N/A	96

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number. Not applicable to linear features.
[2] Percentage of total NFS lands of the same designation on the Forest, rounded to the nearest whole number. Not applicable to linear features.

Special Emphasis and Permitted Areas

Special emphasis and permitted areas include areas such as but not limited to river corridors, ski areas, recreation areas, cultural areas, municipal watersheds, major utilities and communication sites that are not congressionally designated but do have specific plan components. See Table 95.

Table 95. Special emphasis and permitted areas in the Upper Blackfoot GA

Area	Acres	Percent of GA
66 Kv Electric Transmission Line	33.8	Less than 1

[1] Percentage of total NFS lands in the GA, rounded to the nearest whole number.

Other Resource Emphasis Areas

Recreation Opportunity Spectrum

The recreation opportunity spectrum influences the suitability of lands for various multiple uses or activities based on the desired conditions. Please see chapter 2 for a description of the recreation opportunity spectrum and its associated plan components. Table 96 displays the percentage breakout of each recreation opportunity spectrum class for both summer and winter. In addition, the associated map(s) in appendix B display the recreation opportunity spectrum categories in this GA.

Table 96. Recreation opportunity spectrum classes for the Upper Blackfoot GA

ROS Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative B				
Primitive	139,525	42	139,525	42
Semi-primitive Nonmotorized	113,637	34	57,010	17
Semi-primitive Motorized	8,138	2	93,146	28
Roaded Natural	71,835	22	43,455	13
Rural	481	<1	481	<1
Urban	0	0	0	0
Alternative C				
Primitive	139,525	42	139,525	42
Semi-primitive Nonmotorized	113,637	34	57,010	17
Semi-primitive Motorized	8,138	2	93,146	28
Roaded Natural	71,835	22	43,455	13
Rural	481	<1	481	<1
Urban	0	0	0	0

ROS Class	Summer		Winter	
	Acres	Percent of GA[1]	Acres	Percent of GA[1]
Alternative D				
Primitive	139,525	42	139,525	42
Semi-primitive Nonmotorized	113,637	34	57,010	17
Semi-primitive Motorized	8,138	2	93,146	28
Roaded Natural	71,835	22	43,455	13
Rural	481	<1	481	<1
Urban	0	0	0	0
Alternative E				
Primitive	86,267	26	86,267	26
Semi-primitive Nonmotorized	158,527	48	101,617	30
Semi-primitive Motorized	2,151	<1	61,701	19
Roaded Natural	86,191	26	83,552	25
Rural	481	<1	481	<1
Urban	0	0	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Scenic Integrity Objectives

The scenic character for the Upper Blackfoot GA is described in the Distinctive Roles and Contributions section. This scenic character highlights the ecological, social and economic, and historic and cultural characteristics commonly found throughout this GA. The locations of scenic integrity objectives (Table 97) for the Upper Blackfoot GA are displayed in the scenic integrity objectives maps (appendix B). Please refer to FW-SCENERY for plan components (desired conditions, goals, objectives, standards, and guidelines) that apply to scenery and aesthetics.

Table 97. Scenic integrity objectives for the Upper Blackfoot GA

Scenic Integrity Objective	Acres	Percent of GA[1]
Alternative B		
Very High	139,554	42
High	150,965	45
Moderate	33,418	10
Low	9,708	3
Very Low	0	0
Alternative C		
Very High	139,554	42
High	131,408	39
Moderate	52,976	16
Low	9,708	3
Very Low	0	0
Alternative D		
Very High	139,554	42
High	150,965	45
Moderate	33,418	10
Low	9,708	3

Scenic Integrity Objective	Acres	Percent of GA[1]
Very Low	0	0
Alternative E		
Very High	87,234	26
High	201,886	61
Moderate	34,504	10
Low	10,021	3
Very Low	0	0

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.

Lands Suitable for Timber Production

Lands suitable for timber production are areas where timber production is an appropriate management objective. Please see chapter 2 for information on timber suitability and plan components for harvest on lands identified as both suitable and unsuitable for timber production. A relatively large amount of this productive GA is identified as suitable for timber production, which contributes a substantial proportion of the forestwide total area of lands suitable for timber production. Table 98 and associated map(s) in appendix B display the lands suitable for timber production in this GA.

Table 98. Lands suitable for timber production in the Upper Blackfoot GA

Alternative	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C	54,825	16%	12%
Alternative D	54,825	16%	13%
Alternative E	56,618	17%	12%

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of the total NFS lands suitable for timber production forestwide, rounded to the nearest whole number

Recommended Wilderness

Table 99 and associated map(s) in appendix B display the recommended wilderness areas in this GA.

Table 99. Recommended wilderness in the Upper Blackfoot GA

	Acres	Percent of the GA[1]	Percent of Forestwide Total[2]
Alternative B/C			
Dearborn Silverking	20,088	6	9
Red Mountain	1,901	1	1
Arrastra Creek	8,257	2	4
Nevada Mountain	39,345	12	18
Alternative D			
Dearborn Silverking	20,088	6	4
Red Mountain	1,901	1	<1
Arrastra Creek	8,257	2	2
Nevada Mountain	44,702	13	9
Alternative E			
n/a	n/a	n/a	n/a

[1] Percentage of the total NFS lands found in the GA, rounded to the nearest whole number.
[2] Percentage of total recommended wilderness forestwide, rounded to the nearest whole number.

Plan Components – Fisheries and Aquatic Habitat (FAH)

Desired Conditions (UB-FAH-DC)

01 On NFS lands, spawning, rearing, and migratory habitat is widely available and inhabited by native species. Bull trout have access to historic habitat, which supports appropriate life history strategies (for example, resident, fluvial, and adfluvial).

Goals (UB-FAH-GO)

01 Bull trout population trends toward recovery through cooperation and coordination with USFWS, tribes, state agencies, other federal agencies, and interested groups. Recovery is supported through accomplishment of the Bull Trout Conservation Strategy and the Bull Trout Recovery Plan.

Plan Components – Forested Vegetation (VEGF)

Desired Conditions (UB-VEGF-DC)

01 The western larch cover type is maintained or increased where opportunities exist.

02 To complement the forestwide desired conditions for tree species presence, Table 100 shows the desired condition for tree species distribution within the Upper Blackfoot GA.

Table 100. Upper Blackfoot desired conditions for tree species presence (percent of area)

Tree Species[1]	Existing (percent)[2]	Desired Range (percent)[3]	Discussion
limber pine	9 (7-13)	11-12	This GA is unique because western larch is present, and it is desirable to maintain or increase it relative to the existing condition. In contrast to the Forestwide desired conditions, there is also a desire to maintain the abundance of Engelmann spruce and Douglas-fir. The desired trends for other species are similar to Forestwide, including the maintenance of lodgepole pine, limber pine, juniper, and whitebark pine; increasing ponderosa pine and aspen; and decreasing subalpine fir relative to the existing condition.
Rocky Mountain juniper	2 (1-4)	4-9	
ponderosa pine	1 (1-3)	28-32	
Douglas-fir	45 (40-51)	40-45	
aspen	1 (0.2-3)	1-3	
Engelmann spruce	15 (11-19)	11-17	
lodgepole pine	46 (40-51)	39-48	
western larch	1 (1-2)	0.1-2	
subalpine fir	34 (28-39)	11-19	
whitebark pine	7 (3-9)	5-10	

1Additional species may occur in minor amounts.
2 Existing is mean with (90% confidence limit). Source for Existing is R1 Summary Database, FIA data.
3Desired is derived from a modelling process called SIMPPLLE.
4 Total percentage may greater 100% because more than 1 tree species can be present on a site. Area includes all forested and nonforested potential vegetation types.

03 In identified lynx habitat (see glossary), the appropriate amounts, distributions, and structural conditions of Engelmann spruce and subalpine fir that provide quality lynx habitat are present.

Plan Components – Nonforested Vegetation (VEGNF)

Desired Conditions (UB-VEGNF-DC)

01 Nonforested cover types are present on 10-15% of the GA, as compared to the existing condition which is just above the upper bound of this desired condition.

02 Unique plant communities persist and are in a condition consistent with natural processes. This includes but is not limited to habitats dominated by rough fescue, silver sagebrush, potentilla fruticose, wetland meadows, and the Indian Meadow fens.

Plan Components – Wildlife (WL)

Desired Conditions (UB-WL-DC)

01 The Upper Blackfoot GA provides habitat connectivity for wide-ranging species (grizzly bear, Canada lynx, wolverine, and others) between public lands in northern Montana and those in central and southern Montana, including lands in the Greater Yellowstone Ecosystem.

02 Ponderosa pine-dominated forests have concentrations of large (greater than 15” diameter at breast height) ponderosa pine and Douglas-fir trees and snags with relatively open canopy available for nesting by flammulated owls. These areas occur within a larger mosaic of closed-canopy forest and shrub-dominated openings that serve as flammulated owl roosting and foraging areas.

03 Known harlequin duck breeding streams are relatively undisturbed by human activities during the brood-rearing time period.

Guidelines (UB-WL-GDL)

01 Resource management activities in the west-central and east-central portions of the GA, where NFS lands narrow and approach the area of private lands surrounding Highway 200, should maintain or enhance high quality wildlife habitat, wildlife movement areas, and connectivity. In order to improve wildlife security and connectivity in these areas:

- Vegetation management activities should provide for wildlife hiding cover needs
- Motorized access should not be increased
- New trails should be constructed only where minimal impacts will occur to wildlife habitats and movement corridors

02 In order to minimize potential disturbance to harlequin duck broods, management and recreation activities that have the potential to separate or displace harlequin pairs or broods (for example, timber harvest, road construction and heavy maintenance, boating, rafting) should be avoided on or immediately adjacent to known harlequin duck breeding streams during the brood-rearing period.

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Glossary

The glossary defines terms used throughout the document. If a term's definition(s) is associated with a particular species, management direction, or originates from a specific source, the source is cited or applicable direction is referenced with the following bracketed abbreviations:

- [GBCS] Grizzly Bear Conservation Strategy for the Northern Continental Divide Ecosystem (draft 2013, final in progress).
- [NCDE Food/Wildlife Attractant Storage Orders] one or more special orders related to occupancy and use restrictions for the Northern Continental Divide Ecosystem for grizzly bears
- [NRLMD] Northern Rockies Lynx Management Direction 2007
- [LCAS] Lynx Conservation and Assessment Strategy 2013
- [NWCG] National Wildfire Coordinating Group 2013

activity area a land area affected by a management activity to which soil quality standards are applied. An activity area must be feasible to monitor and includes harvest units within timber sale areas, prescribed burn areas, grazing areas or pastures within range allotments, riparian areas, recreation areas, and alpine areas. Temporary roads, skid trails, and landings are considered to be part of an activity area.

adaptive management the general framework encompassing the three phases of planning: assessment, plan development, and monitoring (36 Code of Federal Regulations 219.5). This framework supports decision-making that meets management objectives while simultaneously accruing information to improve future management by adjusting the plan or plan implementation. Adaptive management is a structured, cyclical process for planning and decision-making in the face of uncertainty and changing conditions with feedback from monitoring, which includes using the planning process to actively test assumptions, track relevant conditions over time, and measure management effectiveness.

administrative site a location or facility constructed for use primarily by government employees to facilitate the administration and management of public lands. Examples on NFS lands include, but are not limited to, ranger stations, warehouses, and guard stations.

adfluvial migration of fish between lakes to rivers.

administrative use a generic term for authorized agency activity.

aerial retardant avoidance area mapped areas (interactive map online at https://www.fs.fed.us/fire/retardant/index.html) that are to be avoided during applications of fire retardant; including: habitat for threatened, endanger, proposed, candidate or sensitive species and all waterways. This national direction is mandatory and would be implemented except in cases where human life or public safety is threatened and retardant use within avoidance areas could be reasonably expected to alleviate that threat**.**

aircraft an airplane, helicopter, or other machine capable of flight

airstrip an area of land that is used as a runway for aircraft to take off and land

animal unit month the amount of dry forage required by one mature cow of approximately 1,000 pounds or its equivalent, for one month, based on a forage allowance of 26 pounds per day.

aquifer is an underground layer of water-bearing permeable rock, rock fractures or unconsolidated material (gravel, sand or silt) from witch groundwater can be extracted using a water well.

aquatic organism passage provides the ability for fish and other aquatic creatures to move up and downstream under a road.

attractant a nourishing substance, which includes human food or drink (canned, solid or liquid), livestock feed (except baled or cubed hay without additives), pet food, and garbage. (Northern Continental Divide Ecosystem Food/Wildlife Attractant Storage Order)

alpine high elevation ecosystem dominated by grasses and low-lying shrubs

baseline the environmental conditions at a specific point in time.

best management practice the method(s), measure(s), or practice(s) selected by an agency to meet its nonpoint source control needs. Best management practices include but are not limited to structural and nonstructural controls and operation and maintenance procedures. Best management practices can be applied before, during, and after pollution-producing activities to reduce or eliminate the introduction of pollutants into receiving waters (36 Code of Federal Regulations 219.19).

biodiversity the variety and abundance of plants, animals, and other living organisms and the ecosystem processes, functions, and structures that sustain them. Biodiversity includes the relative complexity of species and communities across the landscape at a variety of scales, connected in a way that provides for the genetic diversity to sustain species over the long-term.

biological soil crust are a complex mosaic of cyanobacteria, green algae, lichens, mosses, microfungi, and other bacteria occurring on the soil surface in open spaces within arid and semiarid systems.

biophysical settings a grouping of potential vegetation types based on broad climatic and site conditions, such as temperature and moisture gradients. Also see potential vegetation types.

board foot a unit of measurement represented by a board one foot square and one inch thick.

boreal forest (lynx) a forest type to which lynx and snowshoe hares are strongly associated. The predominant vegetation of boreal forest is conifer trees, primarily species of spruce (Picea spp.) and fir (Abies spp.). (USFWS Critical Habitat Final Rule 2009)

broadcast burn a management treatment where a prescribed fire is allowed to burn over a designated area within well-defined boundaries. A broadcast burn is used for reduction of fuel hazard, as a resource management treatment, or both.

candidate species a status (1) for USFWS candidate species, a species for which the U.S. Fish and Wildlife Service possesses sufficient information on vulnerability and threats to support a proposal to list as endangered or threatened, but for which no proposed rule has yet been published by the U.S. Fish and Wildlife Service; (2) for National Marine Fisheries Service candidate species, a species that is: (i) the subject of a petition to list and for which the National Marine Fisheries Service has determined that listing may be warranted, pursuant to section 4(b)(3)(A) of the Endangered Species Act (16 United States Code (U.S.C.) 1533(b)(3)(A)), or (ii) not the subject of a petition but for which the National Marine Fisheries Service has announced in the Federal Register the initiation of a status review.

canopy the forest cover of branches and foliage formed by tree crowns.

canopy base height the lowest height above the ground at which there is a sufficient amount of canopy fuel to propagate fire vertically into the canopy; canopy base height is an effective value that incorporates ladder fuels such as shrubs and understory trees.

canopy fuel the live and dead foliage, live and dead branches, and lichen of trees and tall shrubs that lie above the surface fuels.

capability the potential of an area of land and/or water to produce resources, supply goods and services, and allow resource uses under a specified set of management practices and at a given level of management intensity. Capability depends upon current conditions and site conditions (climate, slope, landform, soils, and geology), as well as the application of management practices (silviculture systems, or protection from fires, insects, and disease).

carbon pool an area that contains an accumulation of carbon or carbon-bearing compounds or having the potential to accumulate such substances. May include live and dead material, soil material, and harvested wood products.

carbon stock the amount or quantity contained in the inventory of a carbon pool.

clearcut a harvest technique: 1) a stand in which essentially all trees have been removed in one operation. Note: depending on management objectives, a clearcut may or may not have reserve trees left to attain goals other than regeneration. 2). A regeneration or harvest method that removes essentially all trees in a stand (synonym is clearcutting). Also see regeneration method.

climate change adaptation an adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities. This adaption includes initiatives and measures to reduce the vulnerability of natural and human systems against actual or expected climate change effects. Adaptation strategies include the following: building resistance to climate-related stressors; increasing ecosystem resilience by minimizing the severity of climate change impacts, reducing the vulnerability and/or increasing the adaptive capacity of ecosystem elements; facilitating ecological transitions in response to changing environmental conditions.

climax the final stage of succession in a plant community. A relatively stable condition where plant species on the site are able to perpetuate themselves indefinitely in the absence of disturbance.

coarse woody debris a piece or pieces of larger sized dead woody material (for example, dead boles, limbs, and large root masses) on the ground or in streams. Minimum size to be defined as “coarse” is generally 3 inches diameter.

commercial thinning a treatment that selectively removes trees large enough to be sold as products, such as sawlogs, poles or fence posts, from an overstocked stand. This treatment is usually carried out to improve the health and growth rate of the remaining crop trees, or to reduce fire hazard.

commercial use/activity a use or activity on NFS lands (a) where an entry or participation fee is charged, or (b) where the primary purpose is the sale of a good or service, and in either case, regardless of whether the use or activity is intended to produce a profit (36 Code of Federal Regulations 251.51).

community wildfire protection plans are strategic plans developed by communities to address issues such as wildfire response, hazard mitigation, community preparedness, or structure protection—or all of the above. The Healthy Forests Restoration Act (HFRA) in 2003 includes statutory incentives for the US Forest Service (USFS) and the Bureau of Land Management (BLM) to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction

projects. In order for a community to take full advantage of this opportunity, it must prepare a Community Wildfire Protection Plan (CWPP).

composition the biological elements within the different levels of biological organization, from genes and species to communities and ecosystems.

confidence interval a range of values around the estimated mean that defines a specified probability that the value of a parameter lies within it.

contemporary vegetation management challenges are issues with controlling, restoring or improving vegetation dynamics to achieve certain resource objectives. Some examples include but are not limited to such things as controlling invasive exotic weeds, reducing fire risk in the wildland-urban interface, and finding chemical-free ways to control weeds, etc.

cohort a group of trees developing after a single disturbance, commonly consisting of trees of similar age, although it can include a considerable range of tree ages of seedling origin and trees that predate the disturbance.

connectivity the ecological conditions that exist at several spatial and temporal scales that provides landscape linkages that permit the exchange of flow, sediments, and nutrients; the daily and seasonal movements of animals within home ranges; the dispersal and genetic interchange between populations; and the long distance range shifts of species, such as in response to climate change (36 Code of Federal Regulations 219.19). Connectivity needs vary by species.

conservation the protection, preservation, management, or restoration of natural environments, ecological communities, and species.

consumptive water use the act of removing water from an available supply and utilizing it in a manner that it is not returned to a waterbody.

coppice a forest regeneration method by which the majority of regeneration is from sprouts or root suckers. The suitable species on the HLC NF for this method is limited to aspen.

cover the elements of the environment used by an animal for hiding. Cover varies depending upon the species or the time of year and may include a variety of vegetation types as well as topography. The amount and quality of cover needed depends on the animal's size, mobility, and reluctance or willingness to venture into relatively open areas. Cover can occur as horizontal cover, which may provide security from disturbance by humans or predators, or thermal cover (often provided by vegetation canopy), which can help animals regulate body temperature during periods of extreme heat or cold.

cover type the vegetation composition of an area, described by the dominant plant species. Also see forest type.

Cretaceous is a geologic period and system from 145 ± 4 to 66 million years (Ma) ago.

critical habitat (for a threatened or endangered species) (1) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act (16 United States Code 1533), on which are found those physical or biological features (a) essential to the conservation of the species, and (b) which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of the Endangered Species Act (16 USC 1533), upon a determination by the Secretary that such areas are essential for the conservation of the

species. Endangered Species Act, sec. 3 (5)(A), (16 USC 1532 (3)(5)(A)). Critical habitat is designated through rulemaking by the Secretary of the Interior or Commerce. Endangered Species Act, sec. 4 (a)(3) and (b)(2) (16 United States Code 1533 (a)(3) and (b)(2)).

crown the part of a tree or other woody plant bearing live branches and foliage.

culmination of mean annual increment of growth see mean annual increment of growth

decision document a record of decision, decision notice, or decision memo (36 Code of Federal Regulations 220.3).

dedicated skid trail a pathway used repeated, and only, to move logs or trees from the stump to a landing, where they are processed and loaded onto trucks.

deferred trail maintenance the backlog of trails in need of maintenance.

deleterious having a harmful or injurious effect.

density (stand) the number of trees growing in a given area usually expressed in terms of trees per acre.

designated area an area or feature identified and managed to maintain its unique special character or purpose; some categories of designated areas may be designated only by statute and some categories may be established administratively in the land management planning process or by other administrative processes of the federal executive branch; examples of statutorily designated areas are national heritage areas, national recreational areas, national scenic trails, wild and scenic rivers, wilderness areas, and wilderness study areas; examples of administratively designated areas are experimental forests, research natural areas, scenic byways, botanical areas, and significant caves.

designated over-the-snow route a course managed under permit or agreement or by the agency, where use is encouraged, either by on-the ground marking or by publication in brochures, recreation opportunity guides or maps (other than travel maps), or in electronic media produced or approved by the agency. The routes identified in outfitter and guide permits are designated by definition; groomed routes also are designated by definition.

desired condition (DC) a description of specific social, economic, and/or ecological characteristics of the plan area, or a portion of the plan area, toward which management of the land and resources should be directed. Also see chapter 1.

desired plant community is selected as the one species composition (of the many possible within any given ecological site or equivalent) that is most compatible with management objectives for a site. This decision depends on the relative value expected to be obtained from alternative land uses, as well as the feasibility of implementing actions required to change the present vegetation to a more desirable type. It is unlikely that the desired plant community would feature substandard levels of soil protection, biotic integrity and hydrologic function, because it is assumed that maintaining site potential should be an intrinsic goal of any management plan. Desired plant community is in essence the benchmark against which to compare existing vegetation and provides a system to evaluate the success of current practices in meeting management objectives. (Global Rangelands 2016).

diameter breast height (d.b.h.) the diameter of a tree measured 4.5 feet above the ground on the uphill side of the tree, or diameter of a log measured 4.5 feet from the large end of the log.

discretionary the exploration and development of leasable mineral resources are discretionary activities, meaning that leasing them may or may not be allowed.

disturbance an event that alters the structure, composition, or function of terrestrial or aquatic habitats; any relatively discrete event in time that disrupts ecosystem, watershed, community, or species population structure and/or function and changes resources, substrate availability, or the physical environment. Natural disturbances include, among others, drought, floods, wind, fires, wildlife grazing, and insects and pathogens; human-caused disturbances include actions such as timber harvest, livestock grazing, roads, and the introduction of exotic species.

disturbance activities are activities which result in notable vegetation removal and/or soil disturbance (road construction, timber harvest, etc.).

disturbance regime a description of the characteristic types of disturbance on a given landscape; the frequency, severity, size, and distribution of these characteristic disturbance types, and their interactions. The natural pattern of periodic disturbances, such as fire or flooding.

disturbance/displacement the repeated avoidance of humans by a species by shifting its habitat use in space or time.

driver (ecology) see ecosystem driver.

duff the partially decayed organic matter on the forest floor.

early-seral/successional stage (forest) the earliest stage in the sequence of plant communities that develop after a stand replacing disturbance, such as fire or regeneration harvest. On the forested communities of the HLC NF, this stage typically occurs in the period from 1 to 30 or 40 years after the disturbance, and is dominated by grass, forbs, shrubs, and seedling/sapling sized trees.

early successional forest patches are specifically defined for modeling purposes as areas classified into the seedling/sapling size class (less than 5” diameter) and transitional areas reforesting following disturbance (these areas have little to no tree cover but are found on forested potential vegetation types).

ecological condition the biological and physical environment that can affect the diversity of plant and animal communities, the persistence of native species, and the productive capacity of ecological systems; ecological conditions include habitat and other influences on species and the environment; examples of ecological conditions include the abundance and distribution of aquatic and terrestrial habitats, connectivity, roads and other structural developments, human uses, and invasive species.

ecological integrity the quality or condition of an ecosystem when its dominant ecological characteristics (for example, composition, structure, function, connectivity, and species composition and diversity) occur within the natural range of variation and can withstand and recover from most perturbations imposed by natural environmental dynamics or human influence. The quality of a natural unmanaged or managed ecosystem in which the natural ecological processes are sustained, with genetic, species and ecosystem diversity assured for the future.

ecological site an ecological site is a distinctive kind of land with specific soil and physical characteristics that differs from other kinds of land in its ability to produce distinctive kinds and amounts of vegetation, and in its ability to respond similarly to management actions and natural disturbances. (NRCS, National Range and Pasture Handbook, December 2003)

ecological sustainability see sustainability.

ecosystem (36 Code of federal Regulations 219.19) a spatially explicit, relatively homogeneous unit of the Earth that includes all interacting organisms and elements of the abiotic environment within its boundaries. The term ecosystem can be used at a variety of scales; for the forest plan, the ecosystem is referred to spatially at the forestwide and geographic area scales as well as within potential vegetation types. An ecosystem is commonly described in terms of its:

- composition: The biological elements within the different levels of biological organization, from genes and individual plant and animal species to communities (such as cover types).
- structure: The organization and physical arrangement of biological elements such as, snags and down woody debris, vertical (size class and structure class) and horizontal (density) distribution of vegetation, stream habitat complexity, landscape pattern, and connectivity.
- function: Ecological processes that sustain composition and structure, such as energy flow, nutrient cycling and retention, soil development and retention, predation and herbivory, and natural disturbances such as wind, fire, and floods.
- connectivity: See connectivity.

ecosystem driver a natural or human-induced factor that directly or indirectly causes a change in an ecosystem. Examples include climate change, fire events, invasive species and flooding.

ecosystem resilience see resilience

ecosystem service the benefit(s) people obtain from an ecosystem, including: (1) provisioning services, such as clean air and fresh water, energy, fuel, forage, fiber, and minerals; (2) regulating services, such as long-term storage of carbon; climate regulation; water filtration, purification, and storage; soil stabilization; flood control; and disease regulation; (3) supporting services, such as pollination, seed dispersal, soil formation, and nutrient cycling; and (4) cultural services, such as educational, aesthetic, spiritual and cultural heritage values, recreational experiences and tourism opportunities.

ecosystem stressor a factor that may directly or indirectly degrade or impair ecosystem composition, structure or ecological process in a manner that may impair its ecological integrity, such as an invasive species, loss of connectivity, or the disruption of a natural disturbance regime.

ecotone a zone of transition between two distinctly different plant communities, where they meet and integrate. It may be narrow or wide; local (between a field and forest) or regional (between forest and grassland ecosystems); gradual or manifested as a sharp boundary line. This zone usually exhibits competition between organisms common to both communities. For this Plan, this term is used to describe the zone of transition between nonforested grass/shrub communities and forested communities, and may often blend with savannas. This zone shifts in location and condition based on climate influences, successional processes, and disturbance processes.

elk security The protection inherent in any situation that allows elk to remain in a defined area despite an increase in stress or disturbance associated with the hunting season or other activities (Lyon and Christensen 1992).

endangered species a species that the Secretary of the Interior or the Secretary of Commerce has determined is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act. Endangered species are listed at 50 Code of Federal Regulations sections 17.11, 17.12, and 224.101.

environmental document a written analysis that provides sufficient information for a responsible official to undertake an environmental review. Examples include: a categorical exclusion, an environmental assessment, and an environmental impact statement.

epidemic (outbreak) the rapid spread, growth, and development of pathogen or insect populations that affect large numbers of a host population throughout an area at the same time.

even-aged stand a stand of trees composed of a single age class (cohort). Usually trees in a single age class are within + 20 years of each other.

even-aged system a planned sequence of treatments designed to maintain and regenerate a stand with predominantly one age class. Treatments include clearcutting, seedtree, shelterwood, and coppice regeneration methods.

final regeneration harvest the final timber harvest in a sequence of harvests designed to regenerate a timber stand or release a regenerated stand. A final regeneration harvest could be a clearcut, removal of a shelterwood or seedtree system, or a selectin cut.

fire control see fire suppression

fire hazard the potential fire behavior for a fuel type, regardless of the fuel type's weather-influenced fuel moisture content or its resistance to fireline construction. Fire behavior assessment is based on physical fuel characteristics, such as fuel arrangement, fuel load, condition of herbaceous vegetation, and presence of elevated fuels.

fire regime a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention but including the influence of prehistoric human burning (Agee 1993; Brown 1995; Hann and Bunnell 2001). The five natural fire regimes are classified based on the average number of years between fires combined with the severity of the fire (the amount of vegetation replacement), and its effect on the dominant overstory vegetation (Hann 2005). The five natural fire regimes on the HLC NF are as follows, with detail added to describe conditions found on the HLC NF:

Fire Regime Group	Frequency (Fire Return Interval)	Severity	Representative Vegetation Types / Habitats
I	0 to 35 years	Nonlethal, low intensity to mixed severity (less than 75 percent of the dominant overstory vegetation replaced)	Ponderosa pine, dry-site Douglas-fir *Open forest, woodland, shrub and savanna structures maintained by frequent non-lethal fire; also includes mixed severity fire that create a mosaic of different age classes, post-fire open forests. Mean fire return interval can be greater than 35 years in systems with high temporal variation. These fires result in minimal overstory mortality (<25% of dominant overstory) and small patch size (Agee 1998; Arno et al. 2000; Hessburg et al 2005). The forests that adapted to these fires on the HLC NF were often dominated by ponderosa pine or Douglas-fir; fire maintained these species and promoted open, often uneven-aged, structures. Surviving fire-resistant trees reforest the gaps created by disturbance. These fires also maintained open, dry forest savanna structures and a shifting distribution of dry limber pine/juniper ecotone communities.*
II	0 to 35 years	Stand-replacing (greater than 75 percent of the dominant overstory	Drier grasslands; cool-site sagebrush (such as Mountain big sagebrush) *Shrub or grasslands maintained or cycled by frequent fire; fire typically remove non-sprouting shrubs, tops of sprouting shrubs*

Fire Regime Group	Frequency (Fire Return Interval)	Severity	Representative Vegetation Types / Habitats
		vegetation replaced)	*and most tree regeneration. These fires are important in vegetation communities such as big mountain sagebrush.*
III	35 to 100+ years	Nonlethal and mixed severity (less than 75 percent of the dominant overstory vegetation replaced)	Interior dry-site shrub communities (such as warm-site sagebrush - Big sage, basin big sagebrush); moist-site Douglas-fir/lodgepole pine forests *A mosaic of different ages, open forests, early to mid-seral forest structure stages, and shrub and herb dominated patches is maintained by infrequent fire events. Mixed severity fires kill a moderate amount of the overstory, burning with a mosaic of severities but replacing <75% of the overstory (Barrett et al. 2010). Highly variable patch sizes are created, with a mosaic of effects including stand replacement, low severity, and unburned areas (Agee 1998; Arno et al. 2000). This creates an irregular pattern with an abundant amount of edge. Fire tolerant species often survived many fire events, with large, old trees becoming prominent overstory components. These fires also resulted in unburned patches that could develop into climax conditions dominated by shade tolerant species.*
IV	35 to100+ years	Stand-replacing, high intensity (greater than 75 percent of the dominant overstory vegetation replaced)	Lodgepole pine *Large patches of similar age, post-fire structures and early to mid-seral forests are cycled by infrequent fire events. Stand replacing fires kill most of the trees (>75%) over a substantial area (Barrett et al. 2010) and creating an intermediate amount of edge (Agee 1998; Arno et al. 2000). Lodgepole pine regenerates large areas without a living seed source by storing serotinous cones on trees and in the soil that open under intense heat. Fire return intervals are generally long; however, shorter intervals also occur (USDA 1990; Barrett 1993) and forests may re-burn after the dead trees have fallen. Lodgepole pine produces open cones at a very young age to re-seed re-burned or understocked patches. Serotiny in fire-prone ecosystems is typically expressed from 30-60 years of age (USDA 1983) to ensure that seed is available for regeneration after the next stand-replacing event.*
V	200+ year	Stand-replacing, high intensity.	Boreal forest and high elevation conifer forest; lodgepole pine/subalpine fir; subalpine fir; whitebark pine *Variable size patches of shrub and herb dominated structures, or early to mid to late seral forest occur depending on the type of biophysical environment and are cycled by rare fire or other disturbance events. These forests often have complex structures influenced by small gap disturbances and understory regeneration. These fires result may result in the regeneration of lodgepole pine but also provide suitable sites for the establishment of whitebark pine at the highest elevations. Many sites become dominated by subalpine fir at the later stages of succession.*

fire risk the probability or chance of fire starting determined by the presence and activities of causative agents.

fire suppression the work and activities connected with fire extinguishing operations, beginning with discovery and continuing until the fire is completely extinguished.

fire-adapted species a plant type that has evolutionary adaptations to survive and thrive in an ecosystem where fire is a primary driver, including tree species that are termed fire-tolerant as well as trees and other plant species that have a myriad of other types of adaptations. Some examples of adaptations are the serotinous cones of lodgepole pine (which open only when heated in a fire); fast early tree growth for rapid site domination; rhizomatous (below ground) root systems or root crowns; seeds with hard, fire resistant seed-coats; or very lightweight, wind-dispersed seed (also see fire-tolerant species).

fire-intolerant tree species a tree type that is susceptible to severe damage or mortality in a fire event. Characteristics typically include thin bark at maturity, crowns that retain lower branches (close to the ground), less protected buds and needles. For example, subalpine fir, grand fir and spruce are fire-intolerant species in the HLC NF.

fire-tolerant tree species a tree type resistant to severe damage or mortality in a fire event. Characteristics include thick bark at maturity, readily self-pruning (lower branches are shed as the tree grows), and protected buds. Examples of fire-tolerant species on the HLC NF are western larch, ponderosa pine and, to a lesser extent, Douglas-fir.

fish passage a clear access for migrating fish through a potential barrier.

focal species a small subset of species whose status permits inference to the integrity of the larger ecological system to which it belongs and provides meaningful information regarding the effectiveness of the plan in maintaining or restoring the ecological conditions to maintain the diversity of plant and animal communities in the plan area. Focal species would be commonly selected on the basis of their functional role in ecosystems (36 Code of Federal Regulations 219.19).

food-conditioned (bear) a bear that associates humans and areas of human activity (e.g., campgrounds, cabins, dwellings, etc.) with food, usually as a result of repeatedly obtaining food rewards (e.g., garbage, camp food, pet or livestock food, bird seed, etc.) in such areas.

forage the browse and nonwoody plants available to livestock or wildlife for feed.

forage allocations for ecological needs at the allotment management planning level a determination of forage production for the dominant ecological sites (or their equivalent) within the grazing allotment is determined. Forage allocations permitted for livestock grazing are made after analyzing the effects to other resources. Examples of resource areas taken into consideration prior to determining forage availability for livestock grazing include soil health, native plant community viability and resilience, hydrologic function, aquatic habitat quality, and the forage and cover needs of wildlife species.

forb a herbaceous (herb-like) plant other than grass or grass-like plants.

forest connectivity see ‘connectivity’ above; an area providing those functions for wildlife species that prefer to remain within or close to forested cover.

forest dominance type a classification that reflects the most common tree species within a forest stand. The dominant species comprises at least 40 percent of the stocking, as measured by canopy cover, basal area, or trees per acre, depending on available information and stand characteristics.

forest floor All organic matter generated by forest vegetation, including litter and unincorporated humus, on the mineral soil surface

forest health the perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to

disturbance. A useful way to communicate about the current condition of the forest, especially with regard to the ability of the ecosystem to respond to disturbances. Note: perception and interpretation of forest health are influenced by individual and cultural viewpoints, land management objectives, spatial and temporal scales, the relative health of the stands that comprise the forest, and the appearance of the forest at a point in time.

forest land an area at least 10 percent occupied by forest trees of any size or formerly having had such tree cover and not currently developed for nonforest uses. Lands developed for nonforest use include areas for crops, improved pasture, residential or administrative sites, improved roads of any width and adjoining road clearing, and power line clearings of any width.

forest management the practical application of biological, physical, quantitative, managerial, economic, social, and policy principles to the regeneration, management, utilization, and conservation of forests to meet specified goals and objectives while maintaining the productivity of the forest. Note: forest management includes management for aesthetics, fish, recreation, urban values, water, wilderness, wildlife, wood products, and other forest resource values. Forest management varies in intensity from leaving the forest alone, to a highly intensive regime composed of periodic silvicultural treatments.

forest plan a document that guides sustainable, integrated resource management of the resources within a plan area and within the context of the broader landscape, giving due consideration to the relative values of the various resources in particular areas (36 Code of Federal Regulations 219.1(b)). Consistent with the Multiple-Use Sustained-Yield Act of 1960 (16 United States Code 528–531), the FS manages NFS lands to sustain the multiple use of its renewable resources in perpetuity while maintaining the long-term health and productivity of the land. Resources are managed through a combination of approaches and concepts for the benefit of human communities and natural resources.

forest structure a complex three-dimensional construct consisting of the various horizontal and vertical physical elements of the forest, including tree diameters, tree heights, tree ages, stand density, canopy layers, quantity/quality of deadwood, herbaceous species, and the clumpiness of the stand. There is no one measure to quantify or describe structure. Often individual forest attributes are described and integrated to evaluate forest structure, such as tree sizes or ages or number of canopy layers.

forest system road see NFS road.

forest type a category of forest usually defined by its vegetation, particularly its dominant vegetation as based on percentage cover of trees (for example, subalpine fir/spruce; lodgepole pine).

fuel management an act or practice of controlling flammability and reducing resistance to control of wildand fuels through mechanical, chemical, biological or manual means, or by fire, in support of land management objectives. [NWCG]

fuel treatment the manipulation or removal of dead or live plant materials to reduce the likelihood of ignition and/or lessen potential damage and resistance to fire control (example treatments include, lopping, chipping, crushing, piling and burning). [NWCG]

fuelwood a term for wood that is used for conversion to a form of energy (for example, firewood, biomass).

function ecological processes that sustain composition and structure, such as energy flow, nutrient cycling and retention, soil development and retention, predation and herbivory, and natural disturbances such as wind, fire, and floods.

geographic area (GA) a spatially contiguous land area identified within the plan area. A geographic area may overlap with a management area (36 Code of Federal Regulations 219.19).

geographic information system (GIS) a computer process that links database software to graphics (spatially explicit) software and provides database and analytic capabilities.

goals (GO) broad statements of intent, other than desired conditions, usually related to process or interaction with the public. Also see chapter 1.

gradient (stream) the slope of a streambed.

graminoids grasses.

grazing allotment a designated area of land that is available for livestock grazing and is represented on a map. A grazing allotment can include NFS and non-NFS lands. Permits are issued for the use of allotments or portions of allotments. Allotments may be FS Manual 2205):

- active: Livestock grazing allotments, including pack and saddle stock allotments.
- closed: Areas having suitable livestock range that have been closed to livestock grazing by administrative decision or action.
- combined: An allotment that has been combined into another allotment, and therefore, no longer exists as an independent allotment.
- vacant: An allotment that does not have a current grazing permit issued.

grazing authorizations and reauthorizations Grazing permits with term status of ten years or with temporary status of one year. Upon expiration of an existing grazing permit, they can be reauthorized provided eligibility and qualification requirements are met. Upon sale of base property or permitted livestock, a grazing permit with term status may be authorized to the purchaser of base property or permitted livestock as the preferred applicant, provided they eligibility and qualifications requirements are met.

grazing permit in nonuse status a term that applies to circumstances where a grazing permit holder either does not place any livestock, or at numbers less than 90% of permitted, on an allotment due to personal convenience, resource protection, or range research reasons (FSH 2209.13). Approval for grazing permit non-use is granted by a Forest Service authorized officer prior to livestock turnout for the specific grazing year.

Grizzly Bear Conservation Strategy (GBCS) a document published by the U.S. Fish and Wildlife Service that describes the regulatory framework for management of the Northern Continental Dive Ecosystem grizzly bear population and its habitat upon recovery and subsequent removal from the Federal list of Threatened and Endangered Species.

ground cover is the material on the soil surface that impedes raindrop impact and overland flow of water. Ground cover consists of all living and dead herbaceous and woody material in contact with the ground and all rocks greater than 0.75 inches in diameter.

ground fire a term used to describe organic material, such as duff, organic soils, roots, and rotten buried logs, burning beneath the surface. [NWCG]

ground-based logging system a log skidding method using tracked or wheeled tractors. These tractors or "skidders" typically operate on gentle slopes (for example, on slopes less than 40%). Steeper slopes may require cable logging systems.

groundwater-dependent ecosystem a community of plants, animals, and other organisms whose extent and life processes depend on groundwater. Examples include many wetlands, groundwater-fed lakes and streams, cave and karst systems, aquifer systems, springs, and seeps.

group selection method a cutting method to develop and maintain uneven-aged stands by the removal of small groups of trees (generally up to 0.5 acre in size) at periodic intervals to meet a predetermined goal of size distribution and species composition in remaining stands.

group use an activity conducted on NFS lands that involves a group of 75 or more people, either as participants or spectators (36 Code of Federal Regulations 251.51).

guide to provide services or assistance (such as supervision, protection, education, training, packing, touring, subsistence, transporting people, or interpretation) for pecuniary remuneration or other gain to individuals or groups on NFS lands (36 Code of Federal Regulations 251.51).

guideline (GDL) a constraint on project and activity decision-making that allows for departure from its terms, so long as the purpose of the guideline is met. Also see chapter 1.

habitat type an aggregation of plant communities of similar biophysical characteristics, and similar function and response to disturbances. A habitat type will produce similar plant communities at climax. On the HLC NF, habitat types are based upon Pfister et al. 1977. Also see potential vegetation type.

habituated (bear) a bear that does not display avoidance behavior near humans or in human use areas (e.g., campgrounds, lodges, town sites, cabin or dwelling yards, within 100m of open roads, etc.), as a result of repeated exposure to those circumstances.

hazard tree a tree that has the potential to cause property damage, personal injury or fatality in the event of a failure, where failure is the mechanical breakage of a tree or tree part. Failures often result from the interaction of defects, weather factors, ice or snow loading or exposure to wind. Tree hazards may include dead or dying trees, dead parts of live trees, or unstable live trees (due to structural defects or other factors) that are within striking distance of people or property (a target). Defects are flaws in a tree that reduce its structural strength. Trees may have single or multiple defects, which may or may not be detectable. Failures result in accidents only if they strike a target.

Healthy Forests Restoration Act the public law (108-148), passed in December 2003, which provides statutory processes for hazardous fuel reduction projects on certain types of at-risk NFS and Bureau of Land Management managed public lands. The Healthy Forests Restoration Act also provides other authorities and direction to help reduce hazardous fuel and restore healthy forest and rangeland conditions on lands of all ownerships. [NRLMD]

heterogeneity exhibiting dissimilarity among members of a group (Helms 1998).

highway a term that includes all roads that are part of the National Highway System. (23 Code of Federal Regulations 470.107(b))

high use areas areas that receive high levels of visitor use such as trailheads, developed campgrounds, etc.

high value resources are identified often through a wildfire risk assessment and include things such as but not limited to; communities, watersheds, infrastructure, ecosystem functions, air quality, rangeland values, recreation, timber, wildlife….

historic climax the plant community that existed at the time of European immigration and settlement in North America. It is the plant community that was best adapted to the unique combination of environmental factors associated with the site. The historic climax plant community was in dynamic equilibrium with its environment. It is the plant community that was able to avoid displacement by the suite of disturbances and disturbance patterns (magnitude and frequency) that naturally occurred within the area occupied by the site.

historical range of variation the variation in ecological conditions resulting from disturbance regimes and other natural influences under which the ecosystem and forests evolved. Typically refers to the period prior to the dramatic changes in human land uses and patterns beginning with the influx of European-Americans about the mid-1800s. Historical range of variation is considered valuable for providing a context or frame of reference to evaluate current ecosystem conditions and understanding what an ecologically healthy and sustainable condition might look like. Also see natural range of variation.

home range an area, from which intruders may or may not be excluded, to which an individual animal restricts most of its usual activities.

hydrologic unit code (HUC) The United States is divided and sub-divided into successively smaller hydrologic units (watersheds) which are classified into six levels: regions (HUC 1), sub-regions (HUC 2), basin (HUC 3), subbasin (HUC 4), watershed (HUC 5), subwatersheds (HUC 6). The hydrologic units are arranged or nested within each other, from the largest geographic area (regions) to the smallest geographic area (cataloging units). Each hydrologic unit is identified by a unique hydrologic unit code consisting of two to twelve digits based on the levels of classification in the hydrologic unit system.

inherent capability of the plan area the ecological capacity or ecological potential of an area characterized by the interrelationship of its physical elements, its climatic regime, and natural disturbances.

integrated resource management a means to realize many benefits from a forest or other natural area and assure the renewable benefits are there for future generations. [NWCG]

integrity (ecology) see ecological integrity

interagency consultation a process required by Section 7 of the Endangered Species Act whereby federal agencies proposing activities in a listed species habitat confer with the USFWS about the impacts of the activity on the species.

intermediate harvest a removal of trees from a stand between the time of its formation and a regeneration harvest. Most commonly applied intermediate cuttings are release, thinning, improvement, and salvage.

intermittent stream a stream that flows only at certain times of the year when it receives water, usually from springs or a surface source such as melting snow.

invasive plant management activities activities designed to locate, monitor, prevent and reduce invasive species infestations. These include prevention, survey, inventory, treatment, and monitoring activities.

invasive species an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. A species that causes, or is likely to cause, harm and that is exotic to the ecosystem it has infested. Invasive species infest both aquatic and terrestrial areas and can be identified within any of the following four taxonomic categories: plants, vertebrates, invertebrates, and pathogens (Executive Order 13112).

key ecosystem characteristic the dominant ecological characteristic(s) that describes the composition, structure, function and connectivity of terrestrial, aquatic and riparian ecosystems that are relevant to addressing important concerns about a land management plan. Key ecosystem characteristics are important to establishing or evaluating plan components that would support ecological conditions to maintain or restore the ecological integrity of ecosystems in the plan area.

laccolith is a sheet intrusion (or concordant pluton) that has been injected between two layers if sedimentary rocks. The pressure of the magma is high enough that the overlying strata's are forced upwards forming a dome shape rock formation.

lacustrine of, relating to, or associated with lakes

ladder fuel a term to describe plant materials that provide vertical continuity between forest strata, thereby allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease

land management plan see forest plan

landscape a defined area irrespective of ownership or other artificial boundaries, such as a spatial mosaic of terrestrial and aquatic ecosystems, landforms, and plant communities, repeated in similar form throughout such a defined area (36 Code of Federal Regulations 219.19).

landtype a unit shown on an inventory map with relatively uniform potential for a defined set of land uses. Properties of soils landform, natural vegetation, and bedrock are commonly components of landtype delineation used to evaluate potentials and limitations for land use.

large/very large live tree concentrations are defined using the following minimum criteria:

- warm dry potential vegetation type: Large tree concentrations are areas with at least 5 trees per acre of trees greater than or equal to 15" diameter. Very large tree concentrations are areas with at least 4 trees per acre greater than or equal to 20" diameter.
- cool moist potential vegetation type: Large tree concentrations are areas with at least 10 trees per acre of trees greater than or equal to 15" diameter. Very large tree concentrations are areas with at least 10 trees per acre greater than or equal to 20" diameter.
- cold potential vegetation type: Large tree concentrations are areas with at least 8 trees per acre of trees greater than or equal to 15" diameter. Very large tree concentrations are areas with at least 8 trees per acre greater than or equal to 20" diameter

late-seral/successional stage (forest) a late stage in the sequence of plant communities that develops after a disturbance, such as fire or harvest. On the forested communities of the HLC NF, this stage may begin to develop 140 years or more after the disturbance. Forest structures can be very diverse, with wide range in densities, number of canopy layers and trees sizes. Usually larger trees are dominant (greater than16 inches diameter breast height).

Lidar is a detection system that works on the principle of radar but uses a light from a laser.

linkage (also linkage habitat, linkage area, or linkage zone) an area that will support a low density population of a species during certain parts of the year, and that facilitates demographic or genetic connectivity between geographically separate patches of habitat suitable for that species. Linkage areas facilitate movements of an animal (for example, dispersal, breeding season movements, exploratory movements) beyond its home range. Linkage areas may include sizeable areas of nonhabitat and areas influenced by human actions.

livestock a type of domestic animal raised for commercial production purposes (for example, cattle). Small livestock includes animals such as sheep, goats, and llamas.

livestock movement guides defined utilization limits for key species developed at the allotment management plan level that when achieved would trigger the need for livestock to be moved to the next scheduled pasture/area or off of the allotment depending on the authorized management system in place on any respective allotment.

losing stream is a stream or river that loses its water as it flows downstream. Water infiltrates into the ground recharging the local groundwater because the groundwater is below the bottom of the stream channel.

lynx habitat an area within a boreal forest with gentle rolling topography, dense horizontal cover, deep snow, and moderate to high snowshoe hare densities (more than 1 hare/2 ha (0.4 hares/2 ac)). In the western United States, forest cover types dominated by Engelmann spruce, subalpine fir and lodgepole pine provide habitat for lynx. [LCAS]

maintain to keep in existence or continuance of the desired ecological condition in terms of its desired composition, structure, and processes. Depending upon the circumstance, ecological conditions may be maintained by active or passive management or both.

management area a land area identified within the plan area that has the same set of applicable plan components. A management area does not have to be spatially contiguous (36 Code of Federal Regulations 219.19).

management system (timber) an administrative method that includes even-aged stand and uneven-aged stand protocols.

naturally-ignited (wildfire) a wildfire caused by natural process most often lightning.

mature multi-story structural stage (forest) a phase characterized by understory reinitiation, resulting in several tree age classes and vegetation layers. Fallen trees may be present, creating gaps in the overstory canopy. In lynx habitat, these stands typically have high horizontal cover from young understory trees and lower limbs of mature trees that reach the ground or snow level. [LCAS]

mature tree a tree which has achieved its maximum or near-maximum mean annual rate of growth in height or diameter.

MBF/MMBF (thousand board feet and million board feet, respectively) a specialized unit of measure for the volume of lumber in the United States and Canada. One board foot is the volume of a 1-foot length of a board 1 foot wide and 1 inch thick.

mean annual increment of growth the total increment of increase in volume of a stand (standing crop plus thinning removals) up to a given age divided by that age. Culmination of mean annual increment of growth is the age in the growth cycle of an even-aged stand at which the average annual rate of increase

of volume is at a maximum. In land management plans, mean annual increment is expressed in cubic measure and is based on the expected growth of stands, according to intensities and utilization guidelines in the plan.

mechanized travel/mechanical transport a contrivance for moving people or material in or over land, water, or air, having moving parts, that provides a mechanical advantage to the user, and that is powered by a living or nonliving power source. This includes, but is not limited to, sailboats, hang gliders, parachutes, bicycles, game carriers, carts, and wagons. It does not include wheelchairs when used as necessary medical appliances. It also does not include skis, snowshoes, rafts, canoes, sleds, travois, or similar primitive devices without moving parts (36 Code of Federal Regulations 2320.5(3)).

mesic a type of habitat that is moderately moist.

mid-seral/successional stage (forest) a mid-stage in the sequence of plant communities that develop after a disturbance, such as fire or harvest. On the forested communities of the HLC NF, stands may be considered in this stage from about 40 to 140 years after the disturbance. Stand structure, such as density and number of canopy layers, can vary widely. Dominant tree sizes are typically from 5 to 15 inches diameter breast height.

mine reclamation the process of restoring land that has been mined to a natural or economically usable state. Although the process of mine reclamation occurs once mining is completed, the preparation and planning of mine reclamation activities occur prior to a mine being permitted or started.

minerals the FS defines three types of mineral (and energy) resources:

- locatable minerals: Commodities such as gold, silver, copper, zinc, nickel, lead, platinum, etc. and some nonmetallic minerals such as asbestos, gypsum, and gemstones.
- salable minerals: Common varieties of sand, stone, gravel, cinders, clay, pumice and pumicite.
- leasable minerals: Commodities such as oil, gas, coal, geothermal, potassium, sodium phosphates, oil shale, sulfur, and solid leasable minerals on acquired lands.

mitigate to avoid, minimize, rectify, reduce, or compensate the adverse environmental impacts associated with an action.

mixed-severity fire/mixed-severity fire regime a combination of nonlethal, low-intensity to stand-replacing fire effects within the perimeter of a single fire, or across consecutive events. Mixed-severity fire regimes give rise to unique patch dynamics and ecosystem responses.

modified thinning technique a precommercial thin prescription for a stand dominated by seedling or sapling size trees specifying use of techniques designed to develop multiple tree canopy layers over time, enhancing long-term species and structural diversity within forest stands, and contributing to forest conditions more resilient to future disturbance and climate change (also see appendix B, potential management strategies, Canada lynx habitat section).

monitoring a systematic process of collecting information to evaluate effects of actions or changes in conditions or relationships.

motorized equipment a machine that uses a motor, engine, or other nonliving power sources. This includes, but is not limited to, such machines as chain saws, aircraft, snowmobiles, generators, motorboats, and motor vehicles. It does not include small battery or gas powered hand carried devices such as shavers, wristwatches, flashlights, cameras, stoves, or other similar small equipment.

motorized route a NFS road or NFS trail that is designated for motorized use on a motor vehicle use map pursuant to 36 Code of Federal Regulations 212.51

motorized use the designation of roads, trails, and areas that are open to motor vehicle use as specified in Federal Register / Volume 70, Number 216 / Wednesday, November 9, 2005 /36 Code of federal Regulations Parts 212, 251, 261, Travel Management; Designated Routes and Areas for Motor Vehicle Use; Final Rule.

multiple use is defined by the Multiple-Use Sustained-Yield Act of 1960 (16 United States Code 528–531) as "the management of the various renewable surface resources of the NFS so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output." Additionally, the first paragraph of the MUSY Act states, "Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, that, it is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes" (emphasis added).

National Forest System the National Forest lands reserved or withdrawn from the public domain of the United States, all National Forest lands acquired through purchase, exchange, donation, or other means, the National Grasslands and land utilization projects administered under title III of the Bankhead-Jones Farm Tennant Act (50 Stat. 525, 7 United States Code 1010-1012), and other lands, waters or interests therein which are administered by the FS or are designated for administration through the FS as a part of the system.

native knowledge a way of knowing or understanding the world, including traditional ecological and social knowledge of the environment derived from multiple generations of indigenous peoples' interactions, observations, and experiences with their ecological systems. Native knowledge is place-based and culture-based knowledge in which people learn to live in and adapt to their own environment through interactions, observations, and experiences with their ecological system. This knowledge is generally not solely gained, developed by, or retained by individuals, but is rather accumulated over successive generations and is expressed through oral traditions, ceremonies, stories, dances, songs, art, and other means within a cultural context.

native species an organism that was historically or is present in a particular ecosystem as a result of natural migratory or evolutionary processes; and not as a result of an accidental or deliberate introduction into that ecosystem. An organism's presence and evolution (adaptation) in an area are determined by climate, soil, and other biotic and abiotic factors.

natural range of variation (NRV) the variation of ecological characteristics and processes over scales of time and space that are appropriate for a given management application. Also see historical range of variation. The natural range of variation (or historic range of variation) is a tool for assessing the ecological integrity and does not necessarily constitute a management target or desired condition. The natural range of variation can help identify key structural, functional, compositional, and connectivity characteristics, for which plan components may be important for either maintenance or restoration of such ecological conditions.

natural regeneration a renewal of a tree crop by natural seeding, sprouting, suckering, or layering.

naturally ignited wildfire see wildfire

nonattainment area an area within a State that exceeds the national ambient air quality standards.

nonconsumptive water use the act of removing water from an available supply and utilizing it in a manner that it returns to a waterbody.

nondiscretionary exploration and development of locatable mineral resources are nondiscretionary activities, meaning that the Forest Service cannot prohibit reasonably necessary activities required or the exploration, prospecting, or development of valuable mineral deposits.

nonpoint source pollution a discharge from a diffuse source, such as polluted runoff from an agricultural area or precipitation, to a water body.

Northern Continental Divide Ecosystem a region identified in the Grizzly Bear Conservation Strategy encompassing about 110,636 sq. km. of western and central Montana, that is one of five areas in the lower 48 states where grizzly bear populations occur.

noxious weed an exotic plant species established, or that may be introduced in the area, which may render land unfit for agriculture, forestry, livestock, wildlife, or other beneficial uses.

objective (OBJ) a concise, measurable, and time-specific statement of a desired rate of progress toward a desired condition or conditions. Also see chapter 1.

occupied lynx habitat mapped lynx habitat is considered occupied by lynx when [2006 Amendment to the Canada Lynx Conservation Assessment]:

1. There are at least 2 verified lynx observations or records since 1999 on the national forest unless they are verified to be transient individuals; or
2. There is evidence of lynx reproduction on the national forest

off-highway vehicle a motor vehicle designed for, or capable of, cross-country travel on or immediately over land, water, sand, snow, ice, marsh, swampland, or other natural terrain (36 Code of Federal Regulations 212.1).

old growth forest an ecosystem that is distinguished by old trees and related structural attributes. This term is deliberately defined generically, as the use of the term old growth and definitions for old growth vary substantially by ecological regions, forest types, local conditions, literature source, and a host of other factors. In the context of the HLC NF ecosystem the definitions for old growth are those provided within the document titled “Old Growth Forest Types of the Northern Region (Green et al. 1992, and errata 12/11).

old-growth associated species the group of wildlife species that is associated with old-growth forest plant communities on the HLC NF.

old-growth habitat a community of forest vegetation characterized by a diverse stand structure and composition along with a significant showing of decadence. The stand structure will typically have multi-storied crown heights and variable crown densities. There is a variety of tree sizes and ages ranging from small groups of seedlings and saplings to trees of large diameters exhibiting a wide range of defect and breakage both live and dead, standing and down. The time it takes for a forest stand to develop into an

old-growth habitat condition depends on many local variables such as forest type, habitat type, and climate. Natural chance events involving forces of nature such as weather, insect, disease, fire, and the actions of man also affects the rate of development of old-growth stand conditions. Old-growth habitat may or may not meet the definition for old growth forest (Green et al 1992).

opening (as pertaining to maximum opening size standard for timber harvest) a forest patch in a seedling/sapling size class (average stand diameter breast height is less than five inches) created as a result of one even-aged harvest operation (clearcut, seedtree or shelterwood seed cutting). Legacy or reserve trees left to meet other desired conditions are not counted in the calculation of size class for determining the seedling/sapling classification. Adjacent seedling/sapling stands created as a result of an earlier harvest operation are not considered part of an opening.

outfitting to rent on, or deliver to, NFS lands for pecuniary remuneration or other gain any saddle or pack animal, vehicle, boat, camping gear, or similar supplies or equipment (36 Code of Federal Regulations 251.51).

over snow motorized use an activity involving a motor vehicle that is designed for use over snow and that runs on a track or tracks and/or a ski or skis, while in use over snow (36 Code of Federal Regulations 212.1, Definitions).

over snow standard season the time period for over snow motorized use. Generally, the season is defined as December 1 to March 31 of each year; however exceptions apply in specific areas and are noted at the applicable locations as well as in Over Snow Vehicle Use Maps for the HLC NF.

overstory the portion of the trees that form the uppermost canopy layer in a forest of more than one story.

passive crown fire a type of fire in which individual or small groups of trees torch out, but solid flaming in the canopy cannot be maintained except for short periods. Passive crown fire encompasses a wide range of crown fire behavior from the occasional torching of an isolated tree to a nearly active crown fire. Also called torching and candling.

patch an area distinguished from its surroundings by environmental discontinuities, such as a small area of early seral/successional forest (seedling/sapling size class) surrounded by mid-seral and late-seral/successional forest (small to large tree size classes).

perennial a stream that flows continuously throughout most years and whose upper surface generally stands lower than the water table in the region adjoining the stream.

permit a special use authorization which provides permission, without conveying an interest in land, to occupy and use NFS land or facilities for specified purposes, and which is both revocable and terminable (36 Code of Federal Regulations 251.51).

permit modification the revision of one or more grazing permit terms and conditions made in accordance with 36 Code of Federal Regulations 222.4(a)(7) or (a)(8) (or applicable Code of Federal Regulations as revised).

piscicide chemical substance which is poisonous to fish.

plan a document, or set of documents, that provides management direction for an administrative unit of the NFS developed under the requirements of the 2012 Planning Rule or a prior planning rule. Also see forest plan.

plan area the NFS lands covered by a forest plan.

planned fire Any fire ignited by management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and where applicable, National Environmental Policy Act requirements must be met, prior to ignition.

Pleistocene is the geological epoch which lasted from about 2,588,000 to 11,700 years ago, spanning the world's recent period of repeated glaciations.

palustrine includes any inland wetland which lacks flowing water. Wetlands within this category include inland marshes and swamps, as well as bogs, fens and floodplains.

point source pollution a discharge from a known pollutant source , such as a sewage treatment plant, to a water body from a single location.

pole a tree at least 5 inches diameter breast height and smaller than 8 inches diameter at breast height.

potential vegetation type/potential vegetation group an assemblage of habitat types on the basis of similar biophysical environments, such as climate, slope and soil characteristics. This biophysical environment influences the vegetation characteristics and ecosystem processes that occur. The vegetation communities and conditions that would develop over time given no major natural or human disturbances (the climax plant community) would be similar within a particular potential vegetation type classification.

Precambrian is the largest span of time in Earth's history before the current Phanerozoic Eon. It spans from the formation of Earth about 4.6 billion years ago (Ga) to the beginning of the Cambrian Period, about 541 million years ago (Ma), when hard-shelled creatures first appeared in abundance.

precommercial thinning the selective felling, deadening, or removal of trees in a young stand dominated by trees less than 5 inches diameter breast height. Primary purposes for thinning include to accelerate diameter increment on the remaining stems, to maintain a specific stocking or stand density range, to develop desired tree species composition, and/or to improve the vigor and quality of the trees that remain.

prescribed burning or prescribed fire a fire ignited via management actions to meet specific objectives. A written, approved prescribed fire plan must exist, and National Environmental Policy Act requirements (where applicable) must be met, prior to ignition. [NWCG]

productivity the capacity of NFS lands and their ecological systems to provide the various renewable resources (such as timber) in certain amounts in perpetuity. In land management, productivity is an ecological term, not an economic term.

projected timber sale quantity the estimated quantity of timber meeting applicable utilization standards that is expected to be sold during the plan period. As a subset of the projected wood sale quantity (PWSQ), the projected timber sale quantity includes volume from timber harvest for any purpose from lands in the plan area based on expected harvests that would be consistent with the plan components. The PTSQ is also based on the planning unit’s fiscal capability and organizational capacity. Projected timber sale quantity is not a target nor a limitation on harvest, and is not an objective unless the responsible official chooses to make it an objective in the plan.

projected wood sale quantity the estimated quantity of timber and other wood products that is expected to be sold from the plan area for the plan period. The projected wood sale quantity consists of the projected timber sale quantity as well as other woody material such as fuelwood, firewood, or biomass

that is also expected to be available for sale. The projected wood sale quantity includes volume from timber harvest for any purpose based on expected harvests that would be consistent with the plan components. The projected wood sale quantity is also based on the planning unit's fiscal capability and organizational capacity. Projected wood sale quantity is not a target nor a limitation on harvest, and is not an objective unless the responsible official chooses to make it an objective in the plan.

project an organized effort to achieve an outcome on NFS lands identified by location, tasks, outputs, effects, times, and responsibilities for execution (36 Code of Federal Regulations 219.19).

proposed action a project, activity, or action that a federal agency aims to implement or undertake, and which is the subject of an environmental analysis. Proposed action is a specific term defined under the National Environmental Policy Act.

proposed species a type of animal or plant that is proposed by the USFWS, or the National Marine Fisheries Service, through the Federal Register to be listed for protection under Section 4 of the Endangered Species Act.

public involvement a process designed to broaden the information base upon which agency decisions are made. The process involves informing the public about FS activities, plans, and decisions, and participation in the planning processes which lead to final decision making.

rangelands are land on which the indigenous vegetation (climax or natural potential) is predominantly grasses, grass-like plants, forbs, or shrubs and is managed as a natural ecosystem. If plants are introduced, they are managed similarly. Rangelands include natural grasslands, savannas, shrublands, many deserts, tundra, alpine communities, marshes, and wet meadows (Society for Range Management 1999). Also included in this definition are oak and pinyon-juniper woodlands.

rangeland health the degree to which the integrity of the soil and ecological processes are sustained.

range improvements developments and/or activities (treatments) intended to improve rangeland and watershed conditions, enhance wildlife habitat, enhance or improve livestock grazing management or serve similar purposes. There are two kinds of range improvements: nonstructural and structural. Seedings or prescribed burns are examples of nonstructural range improvements. Fences or facilities such as wells or water pipelines are examples of structural improvements.

reach a length of stream channel, lake, or inlet exhibiting, on average, uniform hydraulic properties and morphology.

rearing habitat a stable and protected micro-environment for a species to birth and rear their young. For example, for juvenile westslope cutthroat trout, rearing habitat is primarily the pool environment found in streams.

reasonable assurance a judgment made by the Responsible Official based on the best available scientific information and local professional experience that practices based on existing technology and knowledge are likely to deliver the intended results. Reasonable assurance applies to average and foreseeable conditions for the area and does not constitute a guarantee to achieve the intended results.

recently burned forest a forest area that has burned (via natural or planned ignition) in the last 10 years. These areas contain specific vegetation characteristics including recently burned snags.

recovery the improvement in the status of a listed species to the point at which listing as federally endangered or threatened is no longer appropriate (36 Code of Federal Regulations 219.19). This

definition is for the purposes of the land management planning regulation at 36 Code of Federal Regulations part 219 and Land Management Planning Handbook 1909.12, and with respect to threatened or endangered species.

recovery plan a document that details actions or conditions necessary to promote improvement in the status of a species listed under the Endangered Species Act, to the point at which listing is no longer appropriate.

recreation the set of recreation settings and opportunities on the NFS that is ecologically, economically, and socially sustainable for present and future generations. Also see sustainable recreation.

recreation development scale a relative scale of development that is used in Forest Service recreation management and planning to describe the level of development associated with the diverse recreation opportunity spectrum settings within the forest.

> **recreation development scale 1** recreation sites with minimum site modification. Rustic or rudimentary improvements designed for protection of the site rather than comfort of the users. Use of synthetic materials excluded. Minimum controls are subtle. No obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access not provided or permitted. Development scale 1 recreation sites are most associated with Primitive ROS settings.
>
> **recreation development scale 2** recreation sites with little site modification. Rustic or rudimentary improvements designed primarily for protection of the site rather than the comfort of the users. Use of synthetic materials avoided. Minimum controls are subtle. Little obvious regimentation. Spacing informal and extended to minimize contacts between users. Motorized access provided or permitted. Primary access over primitive roads. Interpretive services informal. Development scale 2 recreation sites are most associated with Semi-primitive ROS settings (both non-motorized and motorized).
>
> **recreation development scale 3** recreation sites with moderate modification. Facilities about equal for protection of natural site and comfort of users. Contemporary/rustic design of improvements is usually based on use of native materials. Inconspicuous vehicular traffic controls usually provided. Roads may be hard surfaced and trails formalized. Development density about three family units per acre. Primary access may be over high standard roads. Interpretive services informal, but generally direct. Development scale 3 recreation sites are most associated with Roaded Natural ROS settings.
>
> **recreation development scale 4** recreation site that are heavily modified. Some facilities designed strictly for comfort and convenience of users. Luxury facilities not provided. Facility design may incorporate synthetic materials. Extensive use of artificial surfacing of roads and trails. Vehicular traffic control usually obvious. Primary access usually over paved roads. Development density about three to five family units per acre. Plant materials usually native. Interpretive services often formal or structured. Development scale 4 recreation sites are most associated with Rural ROS settings.
>
> **recreation development scale 5** recreation sites with a high degree of site modification. Facilities mostly designed for comfort and convenience of users and usually include flush toilets; may include showers, bathhouses, laundry facilities, and electrical hookups. Synthetic materials commonly used. Formal walks or surfaced trails. Regimentation of users is obvious. Access usually by high-speed highways. Development density about five or more family units per acre. Plant materials may be foreign to the environment. Formal interpretive services usually

available. Designs formalized and architecture may be contemporary. Mowed lawns and clipped shrubs not unusual. Development scale 5 recreation sites are most associated with Urban ROS settings.

recreation event a recreational activity conducted on NFS lands for which an entry or participation fee is charged, such as animal, vehicle, or boat races; dog trials; fishing contests; rodeos; adventure games; and fairs.

recreation opportunity spectrum the opportunity to participate in a specific recreation activity in a particular recreation setting to enjoy desired recreation experiences and other benefits that accrue. Recreation opportunities include nonmotorized, motorized, developed, and dispersed recreation on land, water, and in the air. The six classes are the following:

- **primitive** large, remote, wild, and predominately unmodified landscapes. There is no motorized activity and little probability of seeing other people. Primitive ROS settings are managed for quiet solitude away from roads, people, and development. There are few, if any facilities or developments. Most of the primitive recreation opportunity spectrum settings coincide with designated wilderness boundaries.
- **semi-primitive nonmotorized** large, semi-remote, areas of the forest that provide for backcountry nonmotorized uses. Mountain bikes and other mechanized equipment are often present. Rustic facilities are present for the primary purpose of protecting the natural resources of the area. These settings are not as vast or remote as the primitive ROS settings, but offer opportunities for exploration, challenge, and self-reliance.
- **semi-primitive motorized** large, semi-remote areas of the forests that provide for motorized backcountry motorized on designated routes or in designated areas. Routes are designed for off highway vehicles and other high clearance vehicles. This setting offers visitors motorized opportunities for exploration, challenge, and self-reliance. Mountain bikes and other mechanized equipment are also sometimes present. Rustic facilities are present for the primary purpose of protecting the natural resources of the area or providing portals to adjacent areas of primitive, or semi-primitive, nonmotorized areas.
- **roaded natural** the roaded natural setting is managed as natural appearing with nodes and corridors of development that support higher concentrations of use, user comfort, and social interaction. The road system is well defined and can typically accommodate sedan travel. System roads also provide easy access to adjacent in semi-primitive motorize, semi-primitive nonmotorized and primitive areas.
- **rural** the rural settings represent the developed recreation sites and modified natural settings with higher concentrations of use and increased opportunities for group recreation activities and social interactions. Facilities are designed primarily for user comfort and convenience. The road system is well defined, often paved, and can easily accommodate all forms of transportation. Rural settings often include a combination of private lands intermixed with FS lands.
- **urban** the urban setting is characterized by a substantially developed environment although the background may have natural appearing elements. Highly developed ski areas, visitor centers, interpretive centers, and resorts are examples of an urban setting on National FS lands. Urban areas offer visitor comfort and convenience and modern building materials, such as concrete and asphalt, are a common occurrence.

recreation setting the social, managerial, and physical attributes of a place that, when combined, provide a distinct set of recreation opportunities. The FS uses the recreation opportunity spectrum to define

recreation settings and categorize them into six distinct classes: primitive, semi-primitive nonmotorized, semi-primitive motorized, roaded natural, rural, and urban. Also see recreation opportunity.

reforestation the renewal of forest cover by planting, seeding, and natural means (such as seed from existing trees on the site).

refugia location and habitats that support populations of organisms that are limited to small fragments of their geographic range

regeneration the renewal of a forest, whether by natural or artificial means. This term may also refer to a tree crop itself.

regeneration harvest any removal of trees intended to assist in the regeneration of a new age class or to make regeneration of a new age class possible. Regeneration harvest may be through even-aged or uneven-aged methods.

regeneration method the cutting approach used to regenerate a stand. Example methods include clearcut, seedtree and shelterwood cutting methods.

relative return on investment ROI is a means to evaluate the conservation benefits of an invasive plant control project in relation to cost (Murdock et al. 2007).

resilience (ecology) the capacity of a (plant or animal) community or ecosystem to maintain or regain normal function and development following disturbance.

resistance the ability of a community to avoid alteration of its present state by a disturbance (Helms 1998)

resource selection function the relative probability of an animal using a unique set of habitat (landscape) characteristics. For studies involving radio-collared animals, “use” of landscape combinations is compared to the “availability” of those combinations in a designated study area.

restocked the condition of the growing space occupancy of trees to be achieved after a disturbance that has substantially altered the existing stocking (see “stocking”).

restoration the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed; ecological restoration focuses on reestablishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystems sustainability, resilience, and health under current and future conditions (36 Code of Federal Regulations 219.19).

riffle a shallow rapid where the water flows swiftly over completely or partially submerged obstructions (rocks, etc.) to produce surface agitation, but standing waves are absent.

riparian area a three-dimensional ecotone of interaction that include terrestrial and aquatic ecosystems that extend into the groundwater, above the canopy, and outward across the floodplain, up the near-slopes that drain to the water, laterally into the terrestrial ecosystem, and along the water course at variable widths.

riparian ecosystem a transition between the aquatic ecosystem and the adjacent upland terrestrial ecosystem. A riparian ecosystem is identified by soil characteristics and by distinctive vegetative communities that require free or unbounded water.

riparian management zone Riparian management zones (RMZs) are portions of watersheds where riparian-associated resources receive primary emphasis, and management activities are subject to specific plan components including standards and guidelines. RMZs include traditional riparian corridors, wetlands, intermittent streams, and other areas that maintain the integrity of aquatic ecosystems. RMZs shall be delineated on the ground based on site conditions as follows:

- **Category 1** Fish-bearing streams: RMZs consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet total, including both sides of the stream channel), whichever is greatest.
- **Category 2** Permanently flowing non-fish bearing streams: RMZs consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet total, including both sides of the stream channel), whichever is greatest.
- **Category 3** *Constructed ponds and reservoirs, and wetlands greater than 1 acre* – RMZs consist of the body of water or wetland and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance from the edge of the wetland greater than 1 acre or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.
  Lakes and natural ponds - RMZs consist of the body of water and: the area to the outer edges of the riparian vegetation, or to the extent of seasonally saturated soil, or to the extent of unstable and potentially unstable areas, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance, whichever is greatest.
- **Category 4** *Seasonally flowing or intermittent streams, wetlands, seeps and springs less than 1 acre, and unstable and potentially unstable areas* - This category applies to features with high variability in size and site-specific characteristics. At a minimum, the RMZs should include:
  - The extent of unstable and potentially unstable areas (including earthflows).
  - The stream channel and extend to the top of the inner gorge.
  - The stream channel or wetland and the area from the edges of the stream channel or wetland to the outer edges of the riparian vegetation, extending from the edges of the stream channel to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest. A site-potential tree height is the average maximum height of the tallest dominant trees for a given site class.
  - Intermittent streams are defined as any non-permanent flowing drainage feature having a definable channel and evidence of annual scour or deposition. This includes what are sometimes referred to as ephemeral streams if they meet these two physical criteria. Fish-bearing intermittent streams are distinguished from non-fish-bearing intermittent streams by the presence of any species of fish for any duration. Many intermittent streams may be used as spawning and rearing streams, refuge areas during flood events in larger rivers and streams or travel routes for fish emigrating from lakes. In these instances, the guidelines for fish-bearing streams would apply to those sections of the intermittent stream used by the fish.

In order to achieve watershed desired conditions, the RMZ is broken into two areas called the inner and outer RMZs. Some activities are prohibited or restricted in the inner RMZ, whereas more active management is allowed in the outer RMZ. RMZs are not intended to be “no touch zones,” but rather “carefully managed zones” with an increase in protections in close proximity to water resources.

riparian wildlife habitat an environment that occurs along lakes, rivers, streams, springs, and seeps where the vegetation and microclimate are influenced by year-round or seasonal water and associated high water tables. Plant and animal species in these areas are more productive and diverse than on nearby uplands, making these areas very important to many wildlife species.

road a motor vehicle route more than 50 inches wide, unless identified and managed as a trail. (36 Code of Federal Regulations 212.1, FS Manual 7705):

- decommissioned: The stabilization and restoration of an unneeded road to a more natural state (36 Code of Federal Regulations 212.1).
- forest road or trail: A route wholly or partly within or adjacent to and serving the NFS that is necessary for the protection, administration, and utilization of the NFS and the use and development of its resources (36 Code of Federal Regulations 212.1 – Definitions)
- impassable: A road that has been treated in such a manner that the road is blocked and there is little resource risk if road maintenance is not performed on a regular basis (self-maintaining).
- intermittent stored service/intermittent service road, closed to traffic: The road is in a condition that there is little resource risk if maintenance is not performed.
- maintenance level: A term for the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria (FS Handbook 7709.59, 62.32)

  Level 1: These are roads that have been placed in storage between intermittent uses. The period of storage must exceed 1 year. Basic custodial maintenance is performed to prevent damage to adjacent resources and to perpetuate the road for future resource management needs. Emphasis is normally given to maintaining drainage facilities and runoff patterns.

  Level 2: Assigned to roads open for use by high clearance vehicles. Passenger car traffic, user comfort, and user convenience are not considerations.

  Level 3: Assigned to roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities

  Level 4: Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds

  Level 5: Assigned to roads that provide a high degree of user comfort and convenience.

- NFS: A forest road other than a road which has been authorized by a legally documented right-of-way held by a State, county, or other local public road authority (36 Code of Federal Regulations 212.1)
- temporary: A road necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road and that is not included in a forest transportation atlas (36 Code of Federal Regulations 212.1

rotation the number of years (including the regeneration period) required to establish and grow timber under an even-aged management system to a specified condition or maturity for regeneration harvest.

salvage harvest The removal of dead trees or trees being damaged or dying due to injurious agents other than competition, to recover value that would otherwise be lost.

sanitation cutting or removal of trees to improve stand health by stopping or reducing the actual or anticipated spread of insects and disease.

sapling a young tree that is larger than a seedling but smaller than a pole or small tree; typically 5 to about 25 feet tall and 1 to 5 inches diameter breast height.

savanna a lowland grassland with a scattering of trees. Widely scattered trees are present with less than 10% tree canopy cover and the understory is dominated by grass and/or shrubs.

sawtimber a collection of logs cut from trees with minimum diameter (typically greater than 6 or 7 inches diameter breast height) or trees of the same minimum diameter and of sufficient length and stem quality suitable for conversion to lumber.

scarification the removal of the surface organic material (duff) of an area, typically to prepare the site for reforestation.

scenery management system describes the existing and desired conditions of scenic character within a plan area

scenic character a combination of the physical, biological, and cultural images that gives an area its scenic identity and contributes to its sense of place; scenic character provides a frame of reference from which to determine scenic attractiveness and to measure scenic integrity.

scenic integrity objectives a measure of the degree to which a landscape is visually perceived to be complete when compared to the scenic character of that area.

- very high: Landscapes where the valued landscape character “is” intact with minute if any deviations. The existing landscape character and sense of place is expressed at the highest possible level. These landscapes generally provide for ecological change only.
- high: Landscapes in which the valued landscape character “appear” intact. Deviations may be present but must repeat the form, line, color, texture, and pattern common to the landscape character so completely and at such a scale that they are not evident. Management activities do not dominate the landscape.
- moderate: Landscapes in which the valued landscape character “appears slightly altered”. Noticeable deviations must remain visually subordinate to the landscape character being viewed. Management activities are subordinate to the attributes described within the described scenic character of the area.
- low: Landscapes in which the valued landscape character “appears altered”. Deviations begin to dominate the landscape character being viewed but borrow valued attributes such as size, shape, edge effect and pattern of natural openings vegetation type changes or architectural styles outside of the landscape being viewed. Management activities are visible and sometimes dominant features on the landscape.
- very low: Landscape where the valued landscape character “appears heavily altered”. Deviations may strongly dominate the valued landscape character. They may not borrow from valued attributes such as sized, shape, edge effect and pattern of natural opening, vegetative type changes or architectural styles within or outside of the landscape being viewed. Management activities are visible and dominate the views of the overall landscape.

scion a detached living portion of a plant, such as a bud or shoot, often a branch tip, that is grafted onto the root-bearing part of another plant.

security habitat an area with low levels of human disturbance or habitat that allows a wildlife species to remain in a defined area despite an increase in stress or disturbance. The components of security habitat can include vegetation, topography, the size of the patches of vegetation, road density, distance from roads, intensity of the disturbance, and seasonal timing of the disturbance. This general definition covers most uses of the term security habitat, except for elk and grizzly bear, which have specific definitions.

sediment solid material, both mineral and organic, that is in suspension, being transported, or has been moved from its site of origin by air, water, gravity, or ice.

seedling a young tree that has just germinated but has not yet reached sapling size, typically 1 to 5 feet tall.

seedling/sapling a size category for forest stands in which trees less than 5 inches in diameter and less than about 25 feet tall are the predominant vegetation.

seedtree method a cutting technique used to regenerate a stand in which nearly all trees are removed from an area, except for a small number of trees that are left singly or in small groups.

seedtree with reserves the application of the seedtree method with the intention of retaining or reserving all or a portion of the seed trees for future stand structure.

selection method a cutting technique used to regenerate a forest stand and maintain an uneven-aged structure, by periodically removing some trees within multiple size classes either singly or in small groups or strips.

seral a biotic community that is developmental; a transitory stage in an ecologic succession.

seral/structural stage a phase of development of an ecosystem in ecological succession from a disturbed, relatively unvegetated state to a complex, mature plant community.

shade-intolerant a plant species that does not grow well or dies from the effects of too much shade.

shade-tolerant a plant species that can develop and grow successfully in the shade of other plants.

shelterwood method a cutting technique used to regenerate an even-aged stand in which some of the mature trees are left to provide protection for regeneration species (greater numbers of trees are left in this method than with the seedtree method). This technique may be performed uniformly throughout the stand, in strips, or in groups. Regeneration may be natural or artificial (planting).

shelterwood with reserves the application of the shelterwood cutting technique with the intention of retaining or reserving all or a portion of the shelterwood trees for future stand structure.

silvicultural diagnosis the compiling, summarizing, evaluation and analyzing of forest stand and/or landscape data. Includes describing desired conditions, interpreting management direction and determining feasible alternative silvicultural systems and initial treatments. Integrates other resource conditions and considerations, such as soils, wildlife habitat and visual sensitivity.

silvicultural prescription a written document that describes management activities needed to implement one or more silvicultural treatments, or a treatment sequence. The prescription documents the results of the analysis during the diagnosis phase.

silvicultural system a management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. It includes cultural management practices performed during the

life of the stand, such as regeneration cutting, thinning, and use of genetically improved tree seeds and seedlings to achieve multiple resource benefits.

silviculture the theory and practice of controlling the establishment, composition, growth, and quality of forest stands in order to achieve the objectives of management.

site preparation a general term for a variety of activities that remove competing vegetation, slash, and other debris that may inhibit the reforestation effort.

site productivity the combined effect of physical and climate properties, soil depth, texture, nutrient load, precipitation, temperature, slope, elevation, and aspect, on tree growth of a specific area of land.

ski area a site and attendant facilities expressly developed to accommodate alpine or Nordic skiing and from which the preponderance of revenue is generated by the sale of lift tickets and fees for ski rentals, for skiing instruction and trail passes for the use of permittee-maintained ski trails. A ski area may also include ancillary facilities directly related to the operation and support of skiing activities (36 Code of Federal Regulations 251.51).

slash the residue left on the ground after felling and other silvicultural operations, or that has accumulated there as a result of storms, fire, or natural pruning.

snag a standing dead tree usually greater than 5 feet in height and 6 inches in diameter breast height.

species of conservation concern a species, other than federally recognized threatened, endangered, proposed, or candidate species, that is known to occur in the plan area and for which the Regional Forester has determined that the best available scientific information indicates substantial concern about the species' capability to persist over the long-term in the plan area (36 Code of federal Regulations 219.9(c)).

stand a community of trees occupying a specific area and sufficiently uniform in canopy composition , age, and size class to be a distinguishable unit, forming a single management entity.

standard (STD) a mandatory constraint on project and activity decision making, established to help achieve or maintain the desired condition or conditions, to avoid or mitigate undesirable effects, or to meet applicable legal requirements. Also see chapter 1.

stand-replacing disturbance an agent such as fire, blowdown, insect or disease epidemic, or timber harvest, which kills or removes enough trees (usually considered 80% or more of the tree component) to result in an early seral/successional forest.

stem exclusion structural stage (or closed canopy structural stage) a phase when trees initially grow fast and quickly occupy the growing space, creating a closed canopy. Because the trees are tall, little light reaches the forest floor so understory plants (including smaller trees) are shaded and grow more slowly. Species that need full sunlight usually die; shrubs and herbs may become dormant. New trees are precluded by a lack of sunlight or moisture. (Oliver and Larson, 1996) [NRLMD]

stocking a measure of timber stand density as it relates to the optimum or desired density to achieve a given management objective.

storm proofing measures taken to reduce the risk or amount of damage to roads from major storms.

stressor (ecology) see ecosystem stressor

structural stage a particular forest condition, characterized by a set of forest structural characteristics (such as tree diameters, tree heights, tree densities, canopy layers) that is representative of a particular period of stand development. Also see stand initiation structural stage, stem exclusion structural stage, and understory reinitiation structural stage.

structure the organization and physical arrangement of biological elements such as, snags and down woody debris, vertical and horizontal distribution of vegetation, stream habitat complexity, landscape pattern, and connectivity. Also see forest structure.

substrate a mineral and/or organic material that forms the streambed (stream bottom).

subwatershed a 6th level/12 digit hydrologic unit code watershed. They range in size from 10,000 to 40,000 acres, as defined in the U.S. Geological Survey hierarchical system of watersheds.

succession/successional stage a predictable process of changes in structure and composition of plant and animal communities over time. Conditions of the prior plant community or successional stage create conditions that are favorable for the establishment of the next stage. The different stages in succession are often referred to as “seral,” or “successional” stages.

suitability of lands a determination made regarding the appropriateness of various lands within a plan area for various uses or activities, based on the desired conditions applicable to those lands. The terms suitable and suited and not suitable and not suited can be considered the same.

summer range a part of the overall range of a species where the majority of individuals are located between spring green-up and the first heavy snowfall; in some areas or for some species winter range and summer range may overlap.

sustainability the capability to meet the needs of the present generation without compromising the ability of future generations to meet their needs. For purposes of this part, “ecological sustainability” refers to the capability of ecosystems to maintain ecological integrity; “economic sustainability” refers to the capability of society to produce and consume or otherwise benefit from goods and services including contributions to jobs and market and nonmarket benefits; and “social sustainability” refers to the capability of society to support the network of relationships, traditions, culture, and activities that connect people to the land and to one another, and support vibrant communities (36 Code of federal Regulations 219.19).

sustainable recreation the set of recreation settings and opportunities on the NFS that is ecologically, economically, and socially sustainable for present and future generations.

sustained yield limit the amount of timber, meeting applicable utilization standards, “which can be removed from [a] forest annually in perpetuity on a sustained-yield basis” (National Forest Management Act at section 11, 16 United States Code 1611; 36 Code of Federal Regulations 219.11(d)(6))). It is the volume that could be produced in perpetuity on lands that may be suitable for timber production. Calculation of the limit includes volume from lands that may be deemed not suitable for timber production after further analysis during the planning process. The calculation of the sustained yield limit is not limited by land management plan desired condition, other plan components, or the planning unit's fiscal capability and organizational capacity. The sustained yield limit is not a target but is a limitation on harvest, except when the plan allows for a departure.

system road see NFS road.

threatened species a species that the Secretary of the Interior or the Secretary of Commerce has determined is likely to become an endangered species within the foreseeable future throughout all, or a significant portion, of its range. Threatened species are identified by the Secretary of the Interior in accordance with the 1973 Endangered Species Act. Threatened species are listed at 50 Code of Federal Regulations sections 17.11, 17.12, and 223.102.

thrust fault is a type of low angle fault, or break in the Earth's crust across which there has been relative movement, in which rocks of lower stratigraphic position are pushed up and over higher strata. They are often recognized because they place older rocks above younger.

timber harvest the removal of trees for wood fiber use and other multiple-use purposes (36 Code of federal Regulations 219.19).

timber harvest the removal of trees for wood fiber use and other multiple-use purposes

timber management the growing of, tending to, commercial harvesting of, and regeneration of crops of trees. [NRLMD]

timber production the purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use (36 Code of Federal Regulations 219.19).

total maximum daily load is a pollution budget and includes a calculation of the maximum amount of a pollutant that can occur in a waterbody and allocated the necessary reductions to one or more pollutant sources (metals, sediment, turbidity, etc.). A total maximum daily load serves as a planning tool and potential starting point for restoration or protection activities with the ultimate goal of attending or maintaining water quality standards.

total soil resource commitment is the conversion of a productive site to an essentially nonproductive site (0 to 40 percent of natural productivity) for a period of more than 50 years. Examples include system roads, administrative sites, developed campgrounds, rock quarries, mine sites, livestock watering facilities, and home ignition zones.

trail a route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail (36 Code of Federal Regulations 212.1).

trail class the prescribed scale of development for a trail, representing its intended design and management standards.

trailhead an area that provides parking for or access to a singular trail or trails through the forest.

transitory range forested lands that are suitable for grazing for a limited time following a complete or partial forest removal

transportation livestock livestock used as pack and saddle stock for travel on NFS lands.

two-aged stand a stand containing two distinctive age classes or cohorts.

underburning a fire that consumes surface fuels but not trees and some large shrubs.

understory the trees and other woody species which grow under a more or less continuous cover of branches and foliage formed collectively by the upper portion of adjacent trees and other woody growth.

understory re-initiation structural stage establishment of a new age class of trees after overstory trees begin to die, are removed, or no longer fully occupy their growing space. The stand of trees begins to stratify into vertical layers, with some small shade-tolerant trees in the understory. [LCAS]

uneven aged stand a stand of trees of three or more distinct age classes, either intimately mixed or in groups.

uneven aged system a planned sequence of treatments designed to regenerate or maintain a timber stand with three or more age classes. Treatments include single-tree, selection, and group selection regeneration methods.

untrammeled a term defined in the context of the Wilderness Act as an area where human influence does not impede the free play of natural forces or interfere with natural processes in the ecosystem.

unique and/or limited ecological sites ecological sites (or their equivalent) that are limited in size/area and/or distribution.

utilization standards utilization standards are specifications for merchantable forest products offered in a timber sale.

vegetation management a process that changes the composition and structure of vegetation to meet specific objectives, using such means as prescribed fire or timber harvest. For the purposes of this decision, the term does not include removing vegetation for permanent developments like mineral operations, ski runs, roads and the like, and does not apply to fire suppression or to wildland fire use.

viable population a population of a species that continues to persist over the long term with sufficient distribution to be resilient and adaptable to stressors and likely future environments. (36 Code of Federal Regulations 219.19)

viewshed the visible portion of the landscape seen from viewpoints. Viewpoints can include residences, recreational facilities, and travelways.

water quality the physical, chemical, and biological properties of water.

water yield the runoff from a watershed, including groundwater outflow.

watershed a region or land area drained by a single stream, river, or drainage network; a drainage basin.

watershed condition the state of a watershed based on physical and biogeochemical characteristics and processes.

watershed condition framework The watershed condition framework is a comprehensive approach for proactively implementing integrated restoration on priority watersheds on national forests and grasslands.

weighted average/weighted mean similar to an arithmetic mean or average, where instead of all data points contributing equally to the final average, some data points contribute more than others. In the example of patch sizes of early successional seedling/sapling forests, the data point is the patch. Patches are “weighted” by their acreage, and thus larger patches will contribute more to the determination of average than the smaller patches. This statistic gives insight into how large the largest patches really are, and how the individual patches are distributed along the range from smallest to largest patch size.

wetland is an area that under normal circumstances has hydrophytic vegetation, hydric soils, and wetland hydrology.

wild and scenic river a waterway designated by Congress as part of the National Wild and Scenic Rivers System, which was established in the Wild and Scenic Rivers Act of 1968 (16 United States Code 1271, 1271–1287).

wilderness an area of land designated by Congress as part of the National Wilderness Preservation System that was established in the Wilderness Act of 1964 (16 United States Code 1131–1136).

wildfire unplanned ignition of a wildland fire or an escaped prescribed fire. Wildfire includes unplanned fires that are human-caused and those that are naturally-ignited by lightning.

wildland fire Any nonstructure fire that occurs in the wildland. There are two types of wildland fire: unplanned (natural or human-caused ignitions) and planned (prescribed fire).

wildland-urban interface a term is defined by the Healthy Forest Restoration Act § 101:

> (A) an area within or adjacent to an at-risk community that is identified in recommendations to the Secretary in a community wildfire protection plan; or
>
> (B) in the case of any area for which a community wildfire protection plan is not in effect—
>
> (i) an area extending 1⁄2-mile from the boundary of an at-risk community;
>
> (ii) an area within 1 1⁄2 miles of the boundary of an at-risk community, including any land that—
>
> (I) has a sustained steep slope that creates the potential for wildfire behavior endangering the at-risk community;
>
> (II) has a geographic feature that aids in creating an effective fire break, such as a road or ridge top; or
>
> (III) is in condition class 3, as documented by the Secretary in the project-specific environmental analysis; and
>
> (iii) an area that is adjacent to an evacuation route for an at-risk community that the Secretary determines, in cooperation with the at-risk community, requires hazardous fuel reduction to provide safer evacuation from the at-risk community.

wildlife security The protection inherent in any situation that allows animals to remain in a defined area despite an increase in stress or disturbance associated with human activities

windthrow a tree or stand of trees that have been blown over by the wind.

winter range the portion of the overall area a species inhabits where the majority of individuals are found from the first heavy snowfall to spring green-up, or during a specific period of winter. In the Rocky Mountains, winter range areas tend to have a relatively low amount of snow cover.

yarding the operation of hauling timber from the stump to a collecting point.

xeric (of an environment or habitat) containing little moisture; very dry.