



United States
Department of
Agriculture

Forest
Service

December 2011



Draft Land Management Plan

Kootenai National Forest



Cover Art: Frank Kujawa

Draft Land Management Plan

Kootenai National Forest

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Chapter 1. Introduction

Purpose of this Land Management Plan

The purpose of a Land Management Plan (hereinafter referred to as the “Plan” or “Land Management Plan”) is to provide direction for land management for the Kootenai National Forest by guiding programs, practices, uses and projects. For ease of discussion throughout this document, the Kootenai National Forest will be referred to as the KNF or Forest when referencing the single administrative unit, the staff that administers the unit, or the National Forest System (NFS) lands within the unit.

On December 18, 2009 the Department reinstated the 2000 planning rule in the Federal Register (Federal Register, Volume 74, No. 242, Friday, December 18, 2009, pages 67059 through 67075). The transition provisions of the 2000 rule (36 CFR 219.35 and Appendices A and B) allow use of the provisions of the NFS land and resource management planning rule in effect prior to the effective date of the 2000 Rule (November 9, 2000), commonly called the 1982 planning rule, to amend or revise plans. The KNF elected to use the provisions of the 1982 planning rule for the plan revisions. References in this plan to sections of 36 CFR are to the 1982 planning rule.

The Plan provides guidance for project and activity decision-making on the KNF for approximately the next 15 years. It does so by establishing:

- Forestwide multiple-use goals and objectives, including a description of the desired condition of the KNF and an identification of the quantities of goods and services that are expected to be produced during the planning period, as required by 36 CFR 219.11(b);
- Forestwide standards and guidelines as required by 36 CFR 219.13 through 219.27;
- Multiple-use prescriptions and associated standards and guidelines for each Management Area (MA), including proposed and probable management practices (see Appendix A), as required by 36 CFR 219.11(c);
- Monitoring and evaluation requirements that provide a basis for a periodic determination and evaluation of the effects of management practices, as required by 36 CFR 219.11(d);
- Recommendation of wilderness to Congress, as required by 36 CFR 219.17(a); and recommendation of rivers eligible for inclusion in the Wild and Scenic River System as described by 16 United States Code (USC) 1271-1287, 36 CFR 297, and 47 FR 39454; and
- Determination of suitability and potential capability of lands for resource production (timber and grazing), as required by 36 CFR 219.14 and 219.20.

Key Plan Elements

The important elements of the Plan are:

Goals: Concise statements that describe an overall desired condition the Forest will strive to achieve. It is normally expressed in broad, general terms and is timeless in that it has no specific date by which it is to be accomplished. Goal statements form the principal basis

from which objectives are developed (36 CFR 219.3). Goals will only be found in the section of the Plan labeled “Goals.”

Desired Conditions: Social, economic, and ecological attributes that will be used to guide management of the land and resources of the plan area. Desired conditions are not commitments or final decisions approving projects and activities and some may only be achievable over a long time period. Desired Conditions will only be found in the section of the Plan labeled “Desired Conditions.”

Objectives: A concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals (36 CFR 219.3). The ability to achieve objectives is based on several factors including annual budgets. Objectives will only be found in the section of the Plan labeled “Objectives.”

Guidelines: Operational practice and procedure that is applied to project and activity decision making to achieve goals, desired conditions, and objectives. Guidelines can be developed for forest-wide application or for specific areas and may be applied to all management activities or selected activities. Guidelines will only be found in the section of the Plan labeled “Guidelines.”

Standards: Limitation or requirement that is applied to project and activity decision making to help achieve goals and objectives. Standards can be developed for forest-wide application or for specific areas and may be applied to all management activities or selected activities. Standards will only be found in the section of the Plan labeled “Standards.”

Implementing the Forest Plan

The KNF Plan provides a framework and text that guides day-to-day resource management options. It is a strategic, programmatic document and does not make project-level decisions or irreversible or irretrievable commitments of resources. Those kinds of commitments are made after more detailed, site specific analysis and further public comment as part of the site-specific National Environmental Policy Act (NEPA) process.

The National Forest Management Act (NFMA) requires that permits, contracts, and other instruments for use and occupancy of NFS lands be consistent with the Forest Plan.

The Forest Service will also follow laws, regulations, and policies that relate to managing NFS land. The Plan is designed to supplement, not replace, direction from these sources. The Final Environmental Impact Statement (EIS) lists this direction for each of the topics but does not try to restate it in Plan content. The EIS should be reviewed concurrently with the Revised Plan to provide overall program direction.

Consistency with the Forest Plan

As required by NFMA and the planning rule, subject to valid existing rights, all projects and activities authorized by the Forest Service must be consistent with the Plan (16 U.S.C. 1604(i); 36 CFR 219.10(e)).

Ensuring Project or Activity Consistency with the Plan—where a proposed project or activity would not be consistent with plan direction, the responsible official has the following options:

1. To modify the proposal so that the project or activity will be consistent;
2. To reject the proposal; or

3. To amend the Plan so that the project or activity is consistent with the Plan as amended. The amendment may be limited to apply only to the project or activity, and may be adopted at the same time as the approval of the project or activity (36 CFR 219.10(f)).

The following paragraphs describe how a project or activity is consistent with Plan elements and the requirements for documenting consistency.

Goals and Desired Conditions: Because of the many types of projects and activities that can occur over the life of a plan, it is not likely that a project or activity can maintain or contribute to the attainment of all goals and desired conditions, nor are all desired conditions relevant to every activity (e.g. 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 a plan. It should not be expected that each project or activity will contribute to all desired conditions in a plan, but usually to one or a subset.

To be consistent with the goals and desired conditions of the plan, a project or activity, must be designed to meet one or more of the following conditions:

1. Maintain or make progress toward one or more of the desired conditions of a plan without adversely affecting progress toward, or maintenance of other desired conditions; or
2. Be neutral with regard to progress toward plan desired conditions; or
3. Maintain or make progress toward one or more of the desired conditions over the long-term, even if the project or activity would adversely affect progress toward or maintenance of one or more desired conditions in the short-term; or
4. Maintain or make progress toward one or more of the desired conditions over the long-term, even if the project or activity would adversely affect progress toward other desired conditions in a minor way over the long-term.

The project documentation should identify which of these four criteria are being met and how they are being met.

Objectives: A project or activity is consistent with the objectives of the Plan if it contributes to or does not prevent the attainment of any other applicable objectives. The project documentation should identify any applicable objective(s) to which the project contributes. If there are no applicable objectives, project documentation should state that fact.

Guidelines: A project or activity must be consistent with all guidelines applicable to the type of project or activity and its location in the Plan area. A project or activity is consistent with a guideline in either of two ways:

1. The project or activity is designed in accord with the guideline, or;
2. A project or activity design varies from the guideline but is as effective in meeting the intent or achieving the purpose of that guideline.

The project documentation will describe how the project is consistent with the relevant guideline(s). When the project design varies from the exact wording of a guideline, project documentation must specifically explain how the project design is as effective in contributing to the maintenance or attainment of the guideline. Under this circumstance, a plan amendment is

not required. However, if a project or activity is not designed to comply with the intent or purpose of a guideline, an amendment to the forest plan is required.

Standards: A project or activity is consistent with a standard if the project or activity is designed in exact accord with the standard. The project documentation must confirm that the project is consistent with applicable standards. Deviation from standards requires an amendment to the forest plan.

Substantive changes to the Plan direction (and retained existing Forest Plan direction, described below) require a plan amendment.

Retained Existing Forest Plan Direction

Plan direction (see the plan amendments below) to remain in place for the KNF is located in Appendix B. Projects and activities must be consistent, with the direction outlined in this plan, including the direction carried forward from the following decisions:

- Inland Native Fish Strategy - Decision Notice and Finding of No Significant Impact (USDA Forest Service, July 1995)
- Forest Plan Amendments for Motorized Access Management Within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones - Record of Decision (USDA Forest Service)
- Northern Rockies Lynx Management Direction - Record of Decision (USDA Forest Service, March 2007)

Plan Structure

An Analysis of Management Situation (AMS) and AMS Technical Report were completed to describe the historic and current conditions for the Kootenai and Idaho Panhandle Planning Zone (KIPZ) and establish the need for revising management direction. Revision topics were identified in the AMS and include: Vegetation, Fire Risk, Timber Production, Wildlife, Watersheds and Aquatic Species, Inventoried Roadless Areas, Recommended Wilderness Areas, and Access and Recreation. These topics are addressed in the Plan and a summary of the AMS and Benchmark Analysis is included in Appendix C.

This Plan is organized into several major divisions:

- Chapter 1: Introduction
- Chapter 2: Forestwide Direction
- Chapter 3: Management Area Direction
- Chapter 4: Geographic Area Direction
- Chapter 5: Monitoring and Evaluation
- Acronyms and Glossary
- Appendices

Maintaining the Land Management Plan and Adapting to New Information

The Land Management Plan is an integral part of an adaptive management cycle that guides future management decisions and actions. Adaptive management includes:

- Defining measurable management objectives;
- Monitoring management outcomes and changing circumstances; and
- Revising management strategies accordingly.

This adaptive management cycle enables the Forest to identify and respond to changing conditions, changing public desires, and new information, such as that obtained through research and scientific findings. The Forest's monitoring program is an integral part of this adaptive management cycle, consisting of monitoring questions and performance measures.

Relationship to Other Strategic Guidance

The KNF contributes to the accomplishment of national strategic guidance in accordance with its own unique combination of social, economic and ecologic conditions. This Land Management Plan helps define the Forest's role in advancing the agency's national strategy and reflects the national goals, which are based on the Government Performance and Results Act (GPRA 1993).

This Land Management Plan is reflective of the mission of the Forest Service, which is "to sustain the health, diversity, and productivity of the nation's forests and grasslands to meet the needs of present and future generations." The mission statement is captured by the phrase, "Caring for the land and serving people."

Rights and Interests

A land management plan provides a strategic framework that guides future management decisions and actions. As such, a plan does not create, authorize, or execute any ground-disturbing activity. A plan does not grant, withhold or modify any contract, permit, or other legal instrument, does not subject anyone to civil or criminal liability and creates no legal rights. This Plan does not change existing permits and authorized uses.

About the Kootenai National Forest

The Kootenai National Forest (KNF) is located in the northwest corner of Montana (Figure 1) and includes about 2.2 million acres of public land. The Forest administers the entire proclaimed Kootenai and a portion of the Kaniksu National Forest. The KNF is divided into five ranger districts: Rexford, Fortine, Three Rivers, Libby, and Cabinet.

Two major rivers, the Kootenai and the Clark Fork, along with several smaller rivers and their tributaries, dominate the Forest. The Whitefish Range, Purcell Mountains, Bitterroot Range, Salish Mountains, and Cabinet Mountains are all part of the rugged terrain radiating from the river valleys. In the north-central part of the Forest, the land is more open with gently rolling forested hills lying in the shadows of the Whitefish Range.

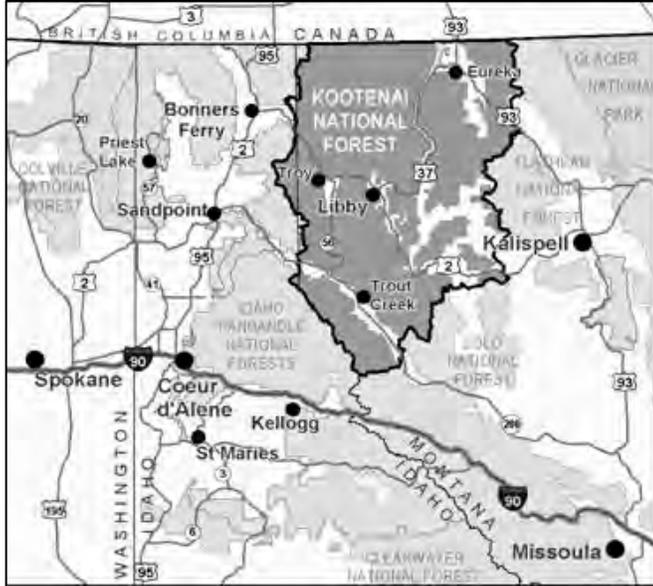


Figure 1. Vicinity map

The KNF contains some of the most diverse and productive forests in the Northern Region of the Forest Service. It is the home of many rare plant and animal species, and it provides a diversity of aquatic and terrestrial habitat. Grizzly bear, Canada lynx, gray wolf and bull trout are examples of some of these species.

The principal population centers within the KNF are Libby, Troy, Eureka, and Trout Creek, Montana. Smaller communities that have social, economic, and historic ties to the KNF include Fortine, Trego, Stryker, the Yaak community, Rexford, and Noxon. The nearest large urban areas, Spokane, Washington, and the Flathead Valley in Montana, have a social and economic influence on the local communities. The majority of land administered by the KNF is located in Lincoln and Sanders counties in Montana. Smaller portions of land are also found in Flathead County in Montana, and Boundary and Bonner counties in Idaho.

Abundant recreation opportunities exist in the KNF. Visitors come from across the nation, as well as Spokane and local communities, to fish and boat the numerous rivers and lakes. Other popular recreation activities include hiking, biking, sightseeing, hunting, Off-Highway Vehicle (OHV) use, recreational prospecting, snowmobiling, skiing, and gathering forest products. This visitation and recreation is important to the local economy and is a major reason people choose to live in this area.

The KNF has productive forest lands that contribute to the local and regional supply of forest products and are an important contributor to the local economy. Managing vegetation and fuels, as well as resources for mining and grazing contribute to people's livelihoods and remains one of the cornerstones of this Forest.

The landownership pattern in and near the KNF provides many opportunities for collaborative planning and partnership opportunities. The Forest is within and/or encompasses portions of the wildland urban interface, private, state, county, or other federal land, as well as rural communities and populations centers. This ownership pattern provides opportunities for people with different interests and values to come together to work toward managing the resources in ways that consider all values and uses of the Forest.

Distinctive Features of the Kootenai National Forest

The KNF considers people to be an integral part of the forest environment. It is committed to balancing the need to conserve and sustain natural resources while providing for people's demands for products and services, now and in the future.

The KNF also provides key ecosystem services, or benefits people obtain from ecosystems. These benefits include provisioning services, such as the delivery of wood fiber, botanical products, and fresh water; regulating services such as carbon sequestration, erosion control, and water purification and pollination; cultural services, such as recreation, educational, and spiritual values; and supporting services, such as soil formation and nutrient cycling. These services are vital to human health and livelihood.

The unique qualities of the Forest and its ability to provide ecosystem services characterize the roles and contributions of the area. Understanding these helps to set realistic and achievable desired conditions which are the basis for management direction over the next 15 years (the life of the Plan).

In addition to the multitude of resource outputs and ecological, social and economic outcomes, described in Chapter 2 of this Plan, the KNF has some important and distinctive roles and responsibilities including:

Wildland Urban Interface: Approximately thirty percent of the KNF is within the wildland urban interface. This provides the Forest significant opportunities to partner with landowners and other jurisdictions to improve forest health conditions and reduce the risk of wildfire. Recognizing community wildfire protection plans and working in cooperation with counties is an important part of public safety and the Forest's fuels reduction program.

Wildlife, Fisheries, and Plants: The KNF is the home of several plants and animals listed under the Endangered Species Act as threatened and endangered. Grizzly bear, Canada lynx, bull trout, white sturgeon, and water howellia, are examples of some of these listed species. In addition, the KNF consists of a diversity of vegetative communities that provide habitat for a wide array of other wildlife species. Coordination and cooperation with the U.S. Fish and Wildlife Service and Montana Fish, Wildlife and Parks is an important part of management activities. Information from the Montana Comprehensive Fish and Wildlife Conservation Strategy was used and incorporated into supporting analysis for this Plan.

Shared Border with Canada: The KNF shares an international boundary with Canada. Following statutory mandates, the U.S. Border Patrol has an active role in patrolling NFS lands adjacent to Canada. The U.S. Border Patrol performs law enforcement activities on the KNF to prevent illegal entry into the United States and provide for national security. To perform these functions, the U.S. Border Patrol requires access to remote areas on the Forest. The KNF has an important role in working with the Border Patrol on issues associated with access for law enforcement activities.

Tribal and Cultural Interests: The Confederated Salish and Kootenai Tribes and the Kootenai Tribe of Idaho are very involved in consultation regarding the management of the KNF, and the Forest enjoys productive working relationships with these Tribes. These Tribes have reserved treaty rights, which entitle them to hunt, fish, gather, and graze livestock in the Forest. In addition, Tribes having aboriginal territory on the Forest (including the Coeur d'Alene, Kalispel, and Spokane Tribes) also have consultation opportunities.

Percentage of NFS land in the Counties: The KNF has a distinctive role with its counties, particularly Lincoln County, because of the preponderance of NFS lands. Approximately 72 percent of Lincoln County is public land administered by the KNF (small portions of the county are administered by neighboring National Forests, comprising an additional three percent of NFS management). Because of the large percentage of KNF lands, there is a distinct relationship between forest management and local communities within Lincoln County. This presents the KNF with a responsibility for management of the resources while addressing effects to local communities.

Kootenai River: The Kootenai River is a prominent feature on the KNF. This river basin extends from the north in Canada, through the KNF, and west into Idaho. The construction of Libby Dam created a 90-mile long reservoir, of which 60 miles is on the KNF. The Kootenai River white sturgeon, an endangered species, is found in this river basin, below the dam. There is a community-interest-based watershed group, consisting of individuals from Montana, Idaho, and British Columbia, that has an interest in the management of the Kootenai River Basin. Their mission is to involve stakeholders in the protection and restoration of the chemical, physical, and biological integrity of the Kootenai River Basin waters. With such a large percentage of NFS lands in the Kootenai River Basin, the KNF has an important role in working with this community group.

Minerals: The KNF is home to world-class minerals deposits. These mineral resources are regionally and nationally important, contributing to supplies in response to worldwide demands while generating local jobs and income. The Forest has one operating silver mine (the Troy Mine near Troy, Montana) and two copper and silver mines in planning stages (the Rock Creek and Montanore Mines).

Unique Areas: The KNF provides a broad range of recreational opportunities, some of which are associated with special or unique areas. A few of these areas include: the Cabinet Mountains Wilderness Area, the Ten Lakes Scenic Area and Wilderness Study Area, and the Turner Mountain Ski Area. Lake Koocanusa and the surrounding area provide a wide array of lake based recreation activities. Many smaller areas provide unique opportunities for forest visitors, from viewing large trees (Ross Creek Cedars Scenic Area) to panning for gold (Libby Creek Gold Panning Area).

Chapter 2. Forestwide Direction

Access and Recreation

Goals

Goal-01. Manage large areas on the Forest that accommodate opportunities for solitude, and self-reliance, and provide traditional recreation such as hunting, fishing, gathering products and hiking. Water-based activities are provided at easily accessed destinations and accommodate concentrations of day use as well as overnight camping opportunities. Maintain a road and trail system that provides access to the Kootenai National Forest.

Desired Condition

FW-DC-AR-01. Quality, well-maintained recreation facilities exist at key locations to accommodate concentrations of use, enhance the visitor's experience, and protect the natural resources of the area. Day use access is available for viewing scenery and wildlife and for water and snow-based play and relaxation. Recreation rental cabins and lookouts provide safe, comfortable, overnight facilities that allow visitors to experience and learn about the rich history of the area. Dispersed camping opportunities are available for a wide variety of users while considering resource concerns, activity conflicts, or over-use. Food and garbage storage do not contribute to recreation user/wildlife conflicts.

FW-DC-AR-02. The scenic resources of the KNF compliment the recreation settings and experiences while reflecting healthy and sustainable ecosystem conditions.

FW-DC-AR-03. Opportunities for outdoor recreation, such as hunting, fishing, wildlife viewing, berry picking, firewood gathering, and bird watching are available for a wide variety of users. Interpretation and education opportunities enrich the visitors experience and promote a land ethic that preserves the cultural and natural resources of the Forest for future generations.

FW-DC-AR-04. Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the Recreation Opportunity Spectrum (ROS). The desired distribution of forestwide ROS settings are displayed in Table 1.

Table 1. Desired distribution of forestwide Recreation Opportunity Spectrum settings.

	Primitive		Semi-Primitive Non-Motorized		Semi-Primitive Motorized		Roaded Natural		Rural		Urban	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Summer	230,494	10	1,270,318	57	211,361	10	506,009	23	862	0	0	0
Winter	3,192	0	99,930	5	1,939,190	87	145,059	7	30,178	1	0	0

FW-DC-AR-05. A variety of motorized and non-motorized winter and summer recreation opportunities are available. Well-designed and maintained trailheads exist with adequate parking and turnaround areas. Trails are designed and maintained for the given users (saddle stock, snowmobiles, OHV users, hikers, mountain bikers, etc.).

FW-DC-AR-06. Solitude and non-motorized experiences are available in remote settings. Non-motorized areas are of sufficient size and configuration to minimize disturbance from other uses. Non-motorized use is available in more developed areas, but provides less opportunity for solitude and challenge than in the more remote settings. A well-maintained non-motorized trail network accesses locations of interest for a variety of users.

FW-DC-AR-07. A transportation system is in place that provides safe and efficient public and administrative access to the Forest for recreation, special uses, other forest resource management, and fire management activities. It is efficiently maintained, environmentally compatible, and responsive to public needs and desires. The transportation system and its use have minimal impacts on resources including threatened and endangered species, sensitive species, heritage and cultural sites, watersheds, and aquatic species. Newly constructed or reconstructed roads do not encroach into streams and riparian areas in ways that impact channel function, geometry or sediment delivery. Roads in intermittent stored service pose minimal risks to water quality and aquatic ecosystems. Drainage structures have a minimal risk of failure, and provide adequate drainage that prevents accelerated runoff, erosion, and sediment delivery to streams. In addition, stream crossings provide for passage of aquatic organisms. Unauthorized roads and trails are no longer created.

FW-DC-AR-08. Motor vehicle use designations are complete, accurate signing is in place, and motorized vehicle use maps are available. User conflicts are reduced. Loop opportunities are a part of both the road and trail systems. Community involvement is promoted and user awareness programs (educational and informational) enhance the recreational experience. Partnerships are developed with various interest and user groups to participate in evaluation, planning, and maintenance programs for both roads and trails. Easements are obtained to help provide access to NFS lands.

FW-DC-AR-09. The transportation system is interconnected to state, county, local public, and other federal roads and trails. The transportation system provides reasonable access to facilities, private in-holdings, and infrastructure (i.e. buildings, recreation facilities, municipal water systems, dams, reservoirs, range improvements, electronic and communication sites, and utility lines).

Objectives

FW-OBJ-AR-01. Dispersed Recreation Sites (development scale 2 or less) – The outcome is:

- Improve conditions by implementing three Interpretation and Education (I&E) programs (e.g., brochures, public contact, signing) focused on two heavily used areas (e.g., Vermilion River corridor, Koocanusa Reservoir) over the life of the Plan.
- Improve conditions at 50 to 75 dispersed sites over the life of the Plan.

FW-OBJ-AR-02. Developed Recreation Sites (development scale 3 to 5) – The outcome is:

- 5 to 10 percent reduction of deferred maintenance at cabin and lookout rental sites and at water-based sites over the life of the Plan.

FW-OBJ-AR-03. National Forest System Road Maintenance – The outcome is:

- Meet maintenance level requirements on 20 to 30 percent of Operational Maintenance Level 3, 4, and 5 roads (roads that are drivable by passenger vehicles and provide primary access to many recreation opportunities) annually.

- Meet maintenance level requirements on 10 to 20 percent of Operational Maintenance Level 2 roads (roads that are drivable by high clearance vehicles and provide additional access to recreation opportunities) annually.
- Decommissioning or placing into intermittent stored service 150 to 350 miles of road over the life of the Plan.

FW-OBJ-AR-04. Winter trails – Annually, access is available on:

- 125 to 200 miles of motorized trails.
- 25 to 45 miles of non-motorized trails.

FW-OBJ-AR-05. Summer trails – Annually, maintenance is performed on:

- 10 to 20 miles of motorized trails
- 250 to 750 miles of non-motorized trails

Guidelines

FW-GDL-AR-01. Management activities should be consistent with the Scenic Integrity Objective of High to Very High for scenic travel routes, including the Pacific Northwest National Scenic Trail, designated Scenic Byways, and National Recreation Trails.

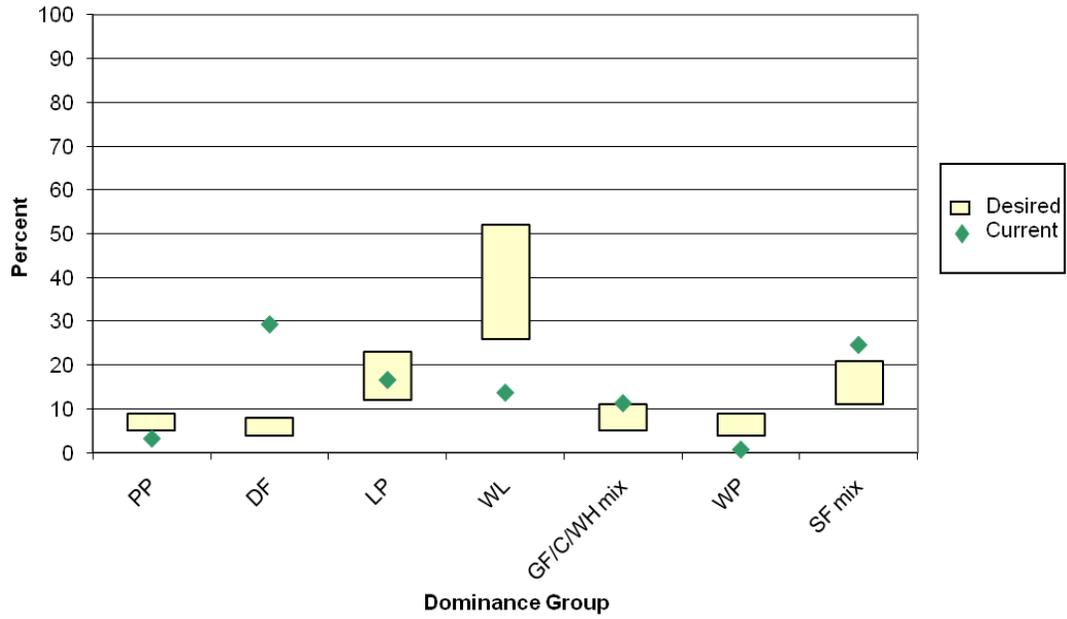
Vegetation

Goals

Goal-01. Forest, grassland, shrubland, and riparian plant communities are trending toward the desired range for composition, structure, patterns and processes. The ecological integrity of these communities is high and they exhibit resiliency to natural and man-caused disturbances, including climate change.

Desired Condition

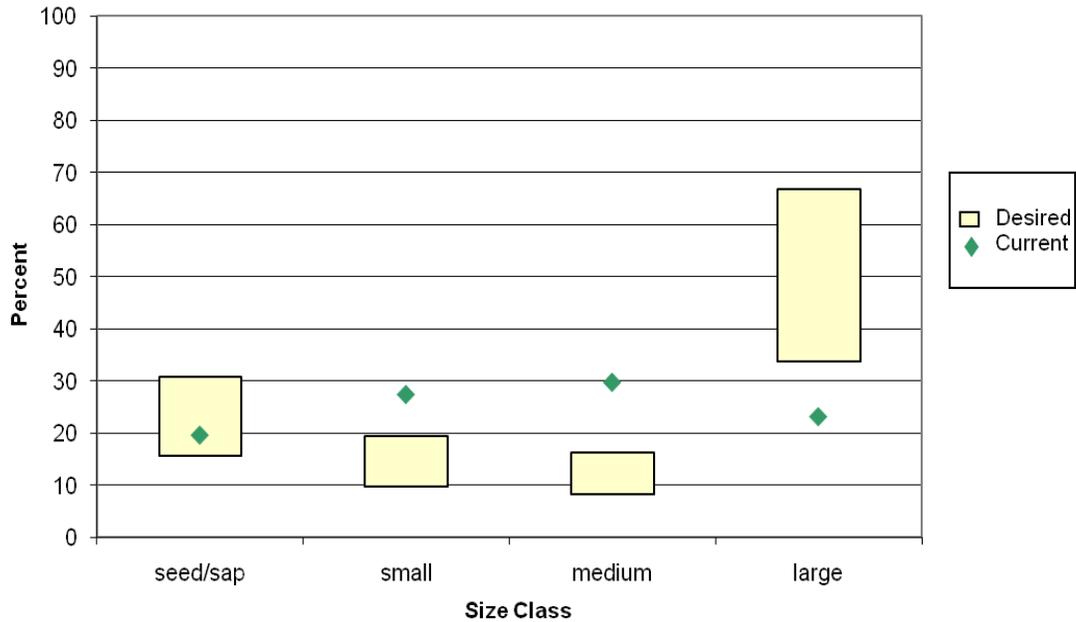
FW-DC-VEG-01. The composition of the forest is trending toward the mid-point of the desired range for each of the dominance groups that are illustrated in Figure 2. More of the Forest is dominated by western white pine, ponderosa pine, western larch and whitebark pine. More early-seral hardwood trees occur over the Forest (e.g., quaking aspen, black cottonwood, and paper birch). Conversely, less of the Forest is dominated by shade-tolerant, fire-sensitive, and drought-intolerant tree species (i.e., grand fir, western hemlock, and western redcedar), and less is dominated by shorter-lived tree species that are highly susceptible to root diseases (i.e., Douglas-fir and grand fir) and drought-intolerant tree species (i.e., Douglas-fir and grand fir).



PP = ponderosa pine; DF = Douglas-fir; LP = lodgepole pine; WL = western larch; GF/CWH mix = grand fir/cedar/western hemlock mix; WP = white pine; and SF mix = subalpine fir mix.

Figure 2. Desired and current forest composition by dominance group at the Forestwide scale.

FW-DC-VEG-02. The structure of the forest is trending toward the mid-point of the desired ranges that are illustrated in Figure 3 for size classes. More of the forest is dominated by stands occurring in the seedling/sapling size class and there are more areas dominated by the large size class. Less of the forest is dominated by stands that occur in the small and medium size classes.



Seed/sap = 0-5" DBH trees, small = 5-10" DBH trees, medium = 10-15" DBH trees, and large = greater than 15" DBH trees.

Figure 3. Desired and current forest structure by size classes at the Forestwide scale.

FW-DC-VEG-03. Old-growth stands and other lands managed for old growth are more resistant and resilient to disturbance events such as wildfires, droughts, insects and disease, and potential climate change effects. A larger percentage of these stands are dominated by species and structures than would be expected given the biophysical settings where they occur and the historical disturbance regimes. Relative to the other species, there is an increase in old-growth stands dominated by ponderosa pine, western larch, western white pine, and whitebark pine. Over the long term, the percentage of old growth and other lands managed for old growth increases.

FW-DC-VEG-04. Tree densities and the number of canopy layers within stands are decreased.

FW-DC-VEG-05. The pattern of forest conditions across the landscapes consists of a range of patch sizes that have a diversity of successional stages, densities and compositions within and between patches. Extensive, homogenous patches of forests that are dominated by species and size classes that are very susceptible to disturbance agents have been diversified. Generally there is an increase in the size of forest patches that are dominated by trees in the seedling/sapling size class, as well as in the large size class (including the old growth structures). There is a decrease in the size of the patches that are dominated by trees in the small as well as medium size classes.

FW-DC-VEG-06. Root disease fungi, such as *Armillaria* and *Phellinus*, are killing fewer trees as the composition of the forests trends toward less susceptible tree species. Tree species (e.g., western larch, ponderosa pine and white pine) that are more resistant to these fungi dominate the sites. Forest insects, such as Douglas-fir bark beetle, mountain and western pine beetles, fir engraver beetle, and the western spruce budworm, are generally causing less tree mortality. Impacts from the nonnative fungi that cause the white pine blister rust disease are reduced as the abundance of rust-resistant western white pine and whitebark pine increases.

FW-DC-VEG-07. Snags occur throughout the forest in an uneven pattern and provide a diversity of habitats for wildlife species and contribute to the sustainability of snag dependant species. Snag numbers, sizes and species vary by biophysical setting. Table 2 displays the desired range of snag densities. Over time, the number of large-diameter snags (20 inches in DBH or greater) increases in all biophysical settings.

Table 2. Desired snags per acre by diameter class.

		Range for snags per acre by diameter class	
Dominance Group	Biophysical setting	Greater than 15 inches DBH	Greater than 20 inches DBH
All except lodgepole pine	Warm/Dry	1.0 to 6.1	0.3 to 2.2
	Warm/ Moist	2.4 to 7.2	0.5 to 2.6
	Subalpine	2.9 to 6.5	0.5 to 2.1
Lodgepole pine	All	0.5 to 4.3	0.1 to 1.1

FW-DC-VEG-08. Down wood (fine and coarse woody debris and logs) occurs throughout the forest in various amounts, sizes and types (species and decay stages). In areas of vegetation management, coarse woody debris and logs are retained in amounts approximate to those in Table 3.

Table 3. Recommended levels of coarse woody debris and logs to retain after vegetation management activities.

<i>Biophysical Setting</i>	<i>Tons/acre (TA) >3" in diameter</i>	<i>Log numbers and sizes to retain where they occur</i>		
		<i>Number of pieces/acre (PA)</i>	<i>Minimum diameter</i>	<i>Average length (feet)</i>
Warm/Dry (VRUs 1-3)	VRUs 1-2: 7 to 12 TA VRU 3: 10 to 20 TA	6-14 PA	10 in. with at least 2 pieces greater than 20 in.	20 feet - with minimum 12 feet
Warm/Moist (VRUs 4-6)	17 to 33 TA	20-30 PA	12 in. with at least 10 pieces greater than 20 in.	35 feet - with minimum 12 feet
Subalpine (VRUs 7-11)	VRUs 7-8: 12 to 25 TA VRUs 9-11: 7 to 15 TA (except Subalpine fir/ beargrass: 11 to 23 TA)	VRU 7: 20 to 30 PA VRU 8-11: 15-20 PA	VRU 7: 12 in. with at least 10 pieces greater than 20 in. VRU 8-11: 10 in.	VRU 7: 35 feet with minimum 12 feet VRUs 8-11: 30 feet with minimum 12 feet

FW-DC-VEG-09. Habitat for plant species listed under the Endangered Species Act (ESA) is maintained or restored on NFS lands, thus contributing to species recovery or delisting. Ecological conditions and processes that sustain the habitats for these species currently or potentially occupied by sensitive plant species are retained or restored. The geographic distributions of sensitive plant species in the plan area are maintained.

FW-DC-VEG-10. New invasive plant species are treated and populations are contained or eradicated. Integrated pest management approaches are used, including best management practices that limit introduction, intensification and spread due to management activities. Areas requiring revegetation use locally adapted, native plant species where feasible and appropriate. Agreements with cooperative weed management areas assist in noxious weed and invasive plants control across jurisdictional boundaries.

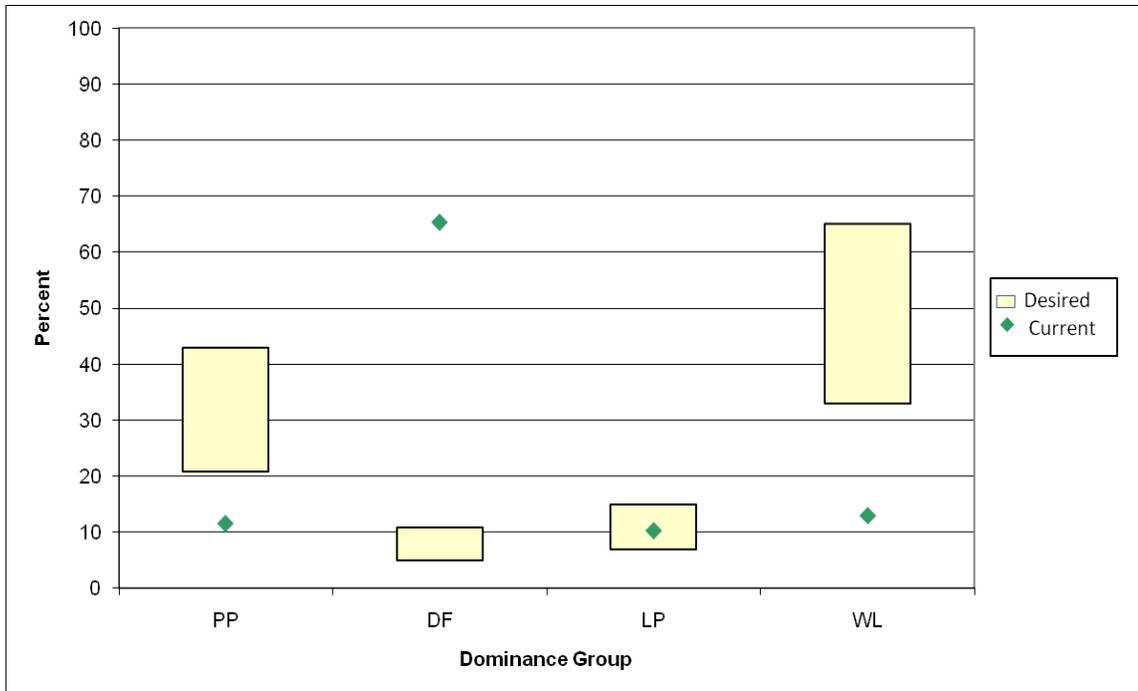
FW-DC-VEG-11. The desired forest composition, structure and pattern for each biophysical setting are described below:

Warm/Dry – This biophysical setting includes the warmest and driest forest sites that support forest vegetation. The desired and current condition for dominance groups and size classes are displayed in Figure 4 and Figure 5 respectively. The desired condition is to move toward the middle of the desired condition range.

On the driest sites in this setting (VRU 1 and the south and west aspects of VRU 2), the stands are generally open-grown, park-like stands that contain abundant large-diameter ponderosa pine and lesser amounts of large-diameter Douglas-fir. Openings are generally less than five acres and occur within 20-200 acre patches. Stands are usually multi-aged and have a low tree density of 5-30 large mature trees per acre that are irregularly spaced in the stand.

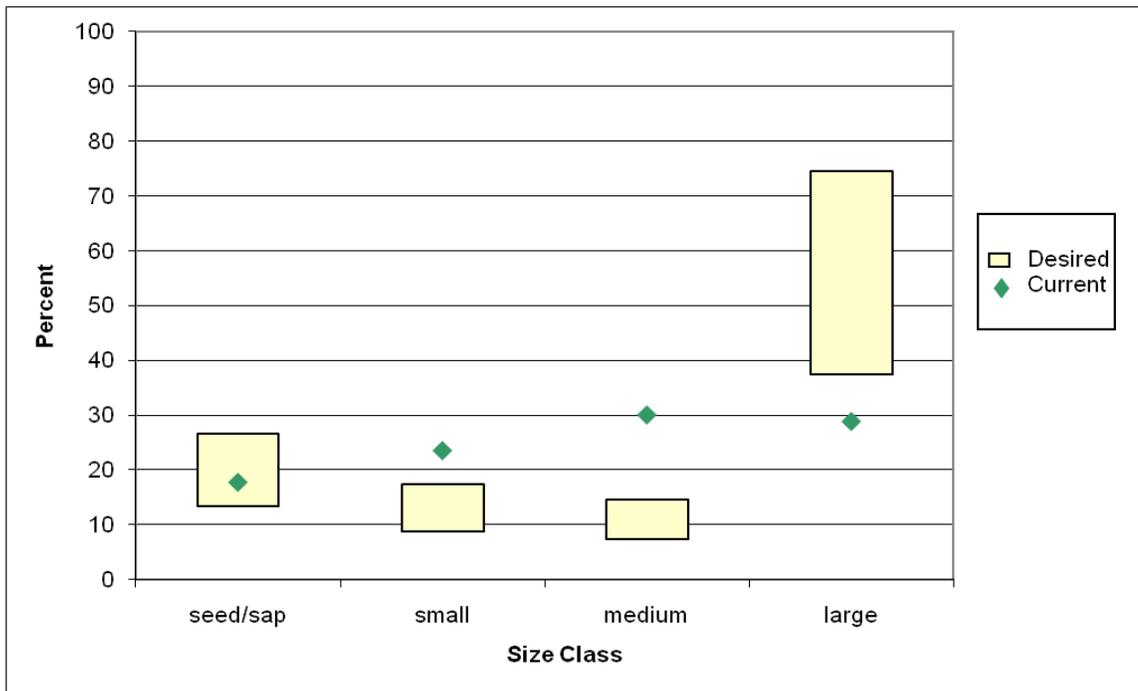
On the moister sites within this setting (VRU 3 and north and east aspects of VRU 2), species composition varies with mixed Douglas-fir-western larch-ponderosa pine stands more prevalent on the moist end, and mixed ponderosa pine-Douglas-fir stands occurring on drier sites. At maturity, densities of trees generally vary from 15-60 trees per acre. However, on the moister sites, the tree density can exceed 100 trees per acre. The pattern for these landscapes is a mosaic with small to moderate size openings (less than 5 acres up to 10 acres) within larger patches (50-200 acres).

The pattern of successional stages in this warm/dry setting is such that fire or insects and diseases do not dominate the landscape at any one time.



PP = ponderosa pine; DF = Douglas-fir; LP = lodgepole pine; WL = western larch

Figure 4. Desired and current forest composition by dominance group for the warm/dry biophysical setting



(seed/sap = 0-5" DBH trees, small = 5-10" DBH trees, medium = 10-15" DBH trees, and large = greater than 15" DBH trees.)

Figure 5. Desired and current forest structure by size classes for the warm/dry biophysical setting.

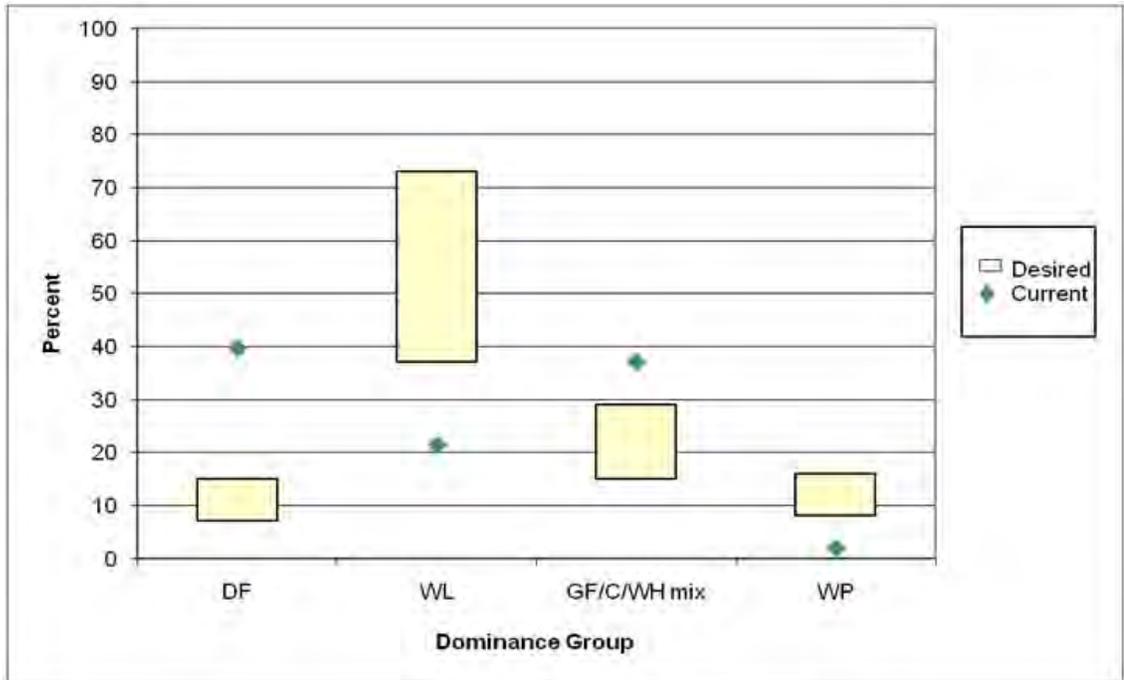
Warm/Moist – This biophysical setting includes moist forest sites that are relatively warm. This setting includes low-elevation upland sites with deeper soils on north and east aspects, extensive mid-elevation moist upland sites, and most low and mid-elevation wet stream bottoms and riparian benches and toe-slopes. The desired and current condition for dominance groups and size class are displayed in Figure 6 and Figure 7, respectively. The desired condition is to move towards the middle of the range.

On the drier aspects, early-seral tree species such as western larch and western white pine, and in some cases Douglas-fir (where root disease risk is low), dominate throughout all successional structural stages. On the dry end, on warm exposures and/or well-drained soils, ponderosa pine is a seral component. Stands generally have either a single age-class or have two age-classes. Stands having two-aged classes resemble mixed-severity fire conditions, usually with fire-tolerant western larch and Douglas-fir in the overstory. At maturity, stands have approximately 100 trees per acre and have canopy coverage of 60 percent or more. Stands dominated by western larch have a lower density, with 40 to 70 trees per acre and canopy coverage of 30 to 40 percent.

In the moderately cool and moist uplands, forests include a mixture dominated by early-seral shade intolerants (i.e., western larch, western white pine, lodgepole pine, Douglas-fir), with seral shade tolerant species (i.e., grand fir, Engelmann spruce) and climax species forming a smaller proportion of the Forest. Single and two-age class forests are desirable during early, middle, and late-successional structural stages. Multi-storied forests increase in desirability when forests reach maturity. Desired stand density and canopy coverage are similar to desired conditions described above for the drier sites in the setting.

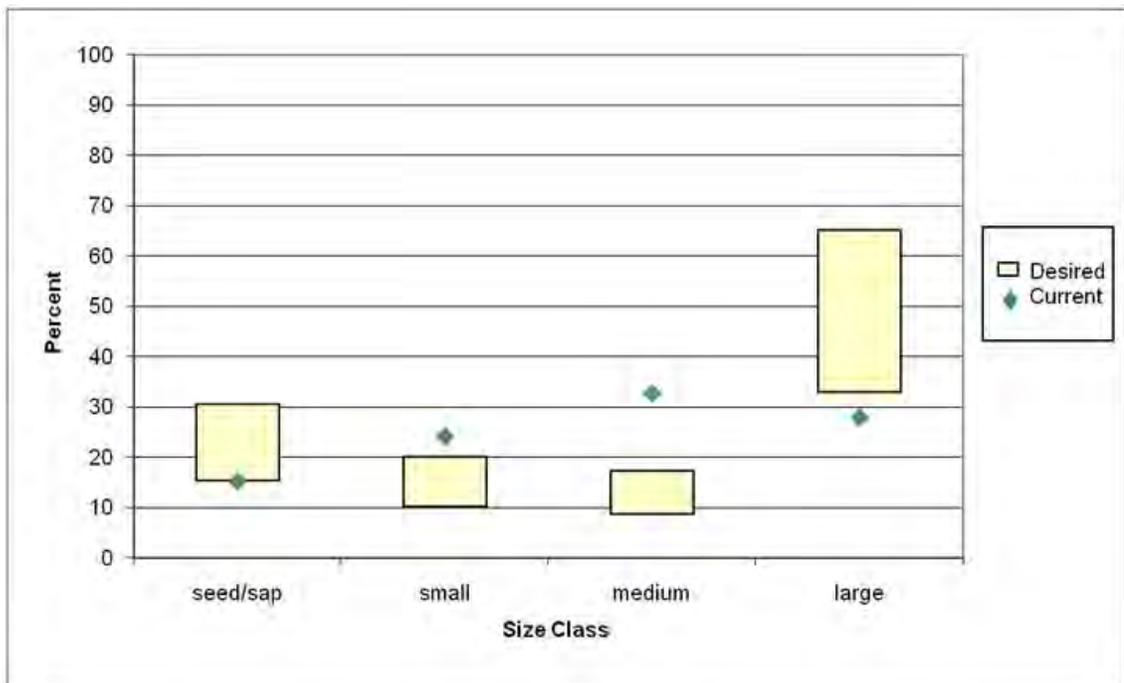
On wet sites, an abundance of large, old, mature forests occur and are often dominated by the climax western hemlock and western red cedar. High tree densities and canopy coverage of 70 percent or more exist through most successional structural stages. Mature stands support very large trees (often 30 to 50 inches in diameter), are open-grown and occasionally park-like in appearance, and are generally two- or multi-storied.

The resulting pattern for these landscapes is a coarse pattern, including large, distinguishable patches, with residual structural diversity and heterogeneity both within and between patches.



DF = Douglas-fir; WL = western larch; GF/C/WH mix = grand fir/cedar/western hemlock mix; WP = white pine.

Figure 6. Desired and current forest composition by dominance group for the warm/moist biophysical setting.



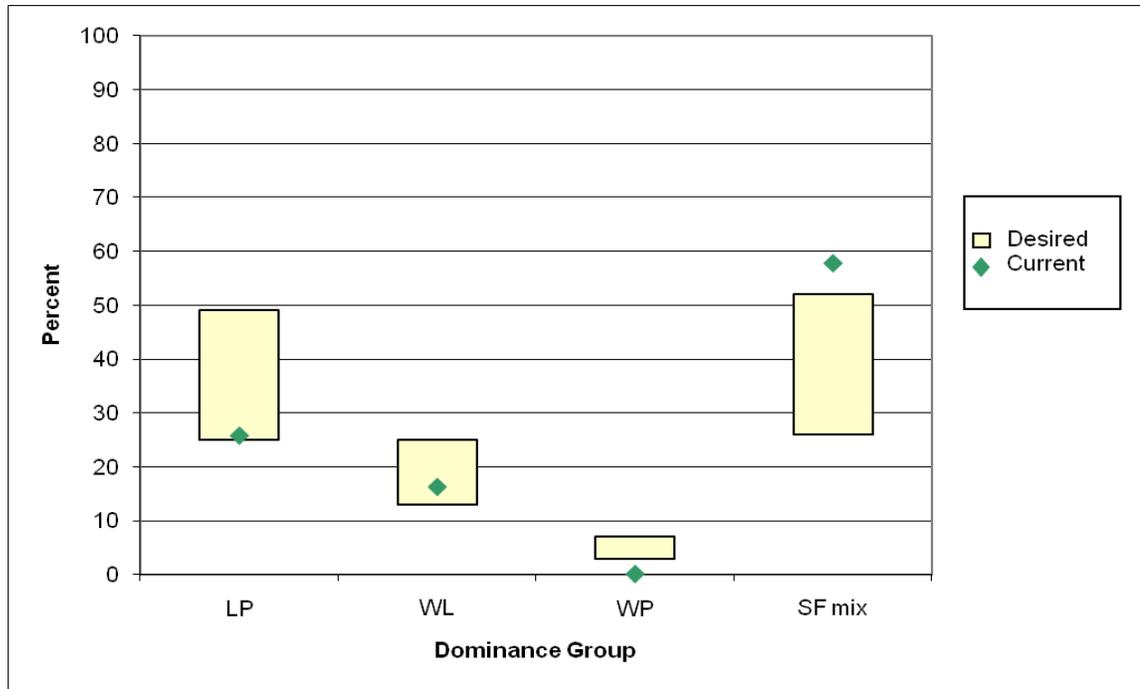
(seed/sap= 0-5" DBH trees, small=5-10" DBH trees, medium=10-15" DBH trees, and large= greater than15" DBH trees.)

Figure 7. Desired and current forest structure by size classes for the warm/moist biophysical setting.

Subalpine –This biophysical setting occupies the higher elevations of the Forest. This setting ranges from the cool and moist lower subalpine sites, up to the cold and dry high elevation sites that have more open forests. The desired and current conditions for dominance type and size classes are displayed in Figure 8 and Figure 9 respectively. The desired condition is to move towards the middle of the desired condition range. Western larch, western white pine, Engelmann spruce, and Douglas-fir are seral dominants, while lodgepole pine dominates areas less often in colder locations. Grand fir occurs on the warmer sites. Climax species, subalpine fir, and mountain hemlock also occur on colder sites where fire-free intervals exceed the life span of lodgepole pine. Forests consists of two-aged forests (usually western larch/Douglas-fir in the overstory), and single-aged forests (seral mixed conifers, lodgepole or spruce-dominated stands). Multi-aged stands are less common, but do exist with discrete age groups in older forests where several canopy layers exist. There are approximately 80 to 120 trees per acre at maturity and canopy coverage is 60 percent or more.

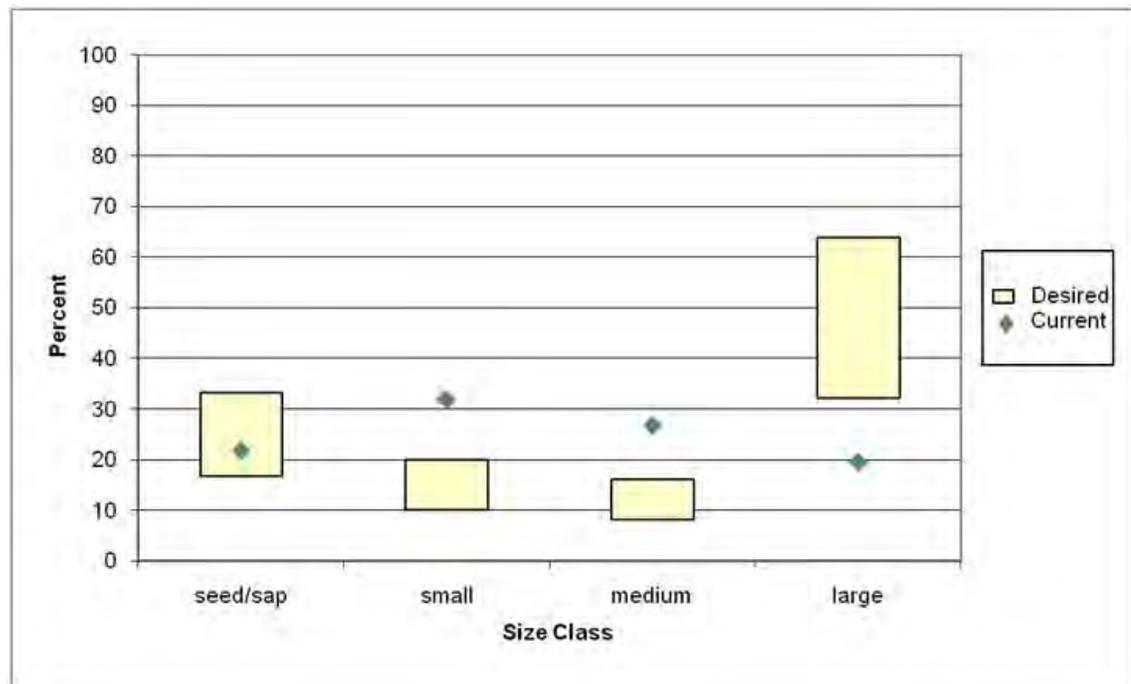
Forests are low to moderate in density, and have conditions that would have been supported by mixed-severity fires. Other species include lodgepole pine, mountain hemlock, subalpine fir, and Engelmann spruce. Canopy coverage is generally less than 80 percent at maturity, much less at timberline sites. Forest conditions include numerous small openings (one-half to three acres in size) that are available for whitebark pine regeneration. Multi-aged stands are desirable, predominately occurring in discrete age-class groups. At the seedling stage, the desirable numbers include at least 100 trees per acre of whitebark pine that have some blister rust resistance, with 30 to 80 trees per acre at maturity. At the extreme timberline sites, trees grow in clusters.

The resulting pattern for these landscapes includes a variety of patch sizes, with residual structural diversity and heterogeneity both within and between patches. In some locations in this subalpine setting, there are existing homogenous patches of extensive lodgepole pine dominated forests in the medium and large size classes. The desired condition is that the pattern of these areas be diversified. The pattern of successional stages is such that fire, insect or diseases do not dominate the landscape at any one time.



LP = lodgepole pine; WL = western larch; WP = white pine; SFmix = subalpine fir mix

Figure 8. Desired and current forest composition by dominance group for the subalpine biophysical setting.



(seed/sap = 0-5" DBH trees, small = 5-10" DBH trees, medium = 10-15" DBH trees, and large = greater than 15" DBH trees.)

Figure 9. Desired and current forest structure by size classes for the subalpine biophysical setting.

Objectives

FW-OBJ-VEG-01. Forest Resilience - Over the life of the Plan, the outcome is:

- Increased relative representation of early seral, shade-intolerant, drought and fire tolerant, insect/disease resistant species dominance types (e.g., ponderosa pine, white pine, western larch, whitebark pine, and hardwoods) on approximately 120,000 to 150,000 acres (these acres are also included in those listed in the following bullet).
- Treatment of approximately 250,000 acres to maintain and/or improve forest resilience, natural diversity, and productivity and to reduce negative impacts of non-native organisms. Treatments may include timber harvest, planting, thinning, management of wildland fire including planned ignitions (prescribed burning) and unplanned ignitions (wildfire), mechanical fuel treatments, revegetation with native species, blister rust pruning, noxious weed treatments, and other integrated pest management activities including forest health protection suppression and prevention activities.

FW-OBJ-VEG-02. Noxious Weeds and Invasive Plant Species - Over the life of the Plan, the outcome is:

- All sites that are discovered with new invader species are treated.
- The treatment of approximately 30,000 to 75,000 acres to reduce noxious weed and invasive plant density, infestation size, and/or occurrence (these areas are also included in FW-OBJ-VEG-01).

Standards

FW-STD-VEG-01. Within old-growth stands, timber harvest or other vegetation management activities shall not be authorized if the activities would likely modify the characteristics of the stand to the extent that the stand would no longer meet the minimum old growth criteria as defined by Green and others 1992, errata corrected 10/2008.

FW-STD-VEG-02. Within the ancient cedar groves, timber harvest or other vegetation management activities shall not be authorized (exceptions may occur for noxious weed treatments, activities needed to address human health and safety issues such as the removal of hazard trees adjacent to a recreation site, or in the circumstance where a wildfire is allowed to burn into a grove under a low intensity).

Guidelines

FW-GDL-VEG-01. Timber harvest or other vegetation management activities may occur within old growth stands if the activities are designed to increase the resistance and/or resiliency of the stand to disturbances, while meeting the minimum old growth criteria as defined by Green and others 1992, errata corrected 10/2008.

FW-GDL-VEG-02. Road construction (permanent or temporary) or other developments should generally be avoided in old growth stands unless access is needed to implement vegetation management activities for the purpose of increasing the resistance and/or resilience of the stands to disturbances.

FW-GDL-VEG-03. Vegetation management activities should retain amounts of coarse woody debris and logs, as displayed in Table 3, and should retain a variety of species, sizes, and decay classes. Exceptions may occur in areas where a site-specific analysis indicates that leaving the quantities listed in the table would create an unacceptable fire hazard to private

property, people, or sensitive natural or historical resources. In addition, exceptions may occur where the minimum quantities listed in the table are not available for retention.

FW-GDL-VEG-04. Vegetation management activities should generally retain all snags greater than 20" DBH, and at least the minimum number of snags and live trees (for future snags) that are displayed in Table 4. Exceptions occur for issues such as human safety, permitted firewood cutting and in instances where the minimum numbers are not present prior to the management activities.

Table 4. Recommended snag and snag recruitment levels to retain (where they exist) after vegetation management activities (including post harvest activities), by harvest type.

Dominance Group	Biophysical setting	Snags > 15"+ DBH	Live trees > 15.0" DBH
<i>Ranges per acre where treatments result in a seed/sap size class (regeneration harvest)</i>			
All except lodgepole pine	Warm/Dry	1.5 – 3.5	1.5 – 4.0
	Warm/ Moist	3.5 – 8.5	1.5 – 4.5
	Subalpine	4.0 – 5.5	1.5 – 2.5
Lodgepole pine	All	0.5 – 1.5	0.5 – 1.0
<i>Ranges per acre where treatments result in a small or medium size class (e.g. commercial thin)</i>			
All except lodgepole pine	Warm/Dry	0.5 – 2.5	9.5 – 16.5
	Warm/Moist	3.0 – 7.5	10.0 – 20.5
	Subalpine	3.0 – 4.5	10.0 – 13.0
Lodgepole pine	All	0.5 – 1.5	4.0 – 7.0
<i>Ranges per acre for treatments in the large size class (e.g. restoration)</i>			
All except lodgepole pine	Warm/Dry	2.0 – 5.0	22.0 – 30.5
	Warm/Moist	3.5 – 13.0	31.0 – 54.0
	Subalpine	5.5 – 8.5	29.5 – 36.5

FW-GDL-VEG-05. Where vegetation management activities occur and snags (or live trees for future snags) are retained, the following direction should be followed:

- Group snags where possible
- Retain snags far enough away from roads or other areas open to public access to reduce the potential for removal (generally more than 150 feet).
- Emphasize retention of the largest snags and live trees as well as those species that tend to be the most persistent, such as ponderosa pine, larch, cedar and cottonwood.
- Favor snags or live trees with existing cavities or evidence of use by woodpeckers or other wildlife.
- Retain the number of snags and live trees as identified in Table 4 and calculated as an average for the total treatment unit acreage in a project area. (This calculation allows for variability among treatment units, which produces a more natural clumpy distribution).

FW-GDL-VEG-06. During vegetation management activities (e.g., timber harvest), in the event that retained snags (or live trees being retained for future snags) fall over or are felled (for safety concerns), they should generally be left to provide coarse woody debris.

FW-GDL-VEG-07. Evaluate proposed management activities and project areas for the presence of occupied or suitable habitat for any plant species listed under the Endangered Species Act or on the regional sensitive species list. If needed, conduct field review and provide mitigation or protection to maintain high-quality occurrences (those in intact, sustainable habitats) over time.

FW-GDL-VEG-08. All silvicultural practices may be used to manage forest vegetation. This includes silvicultural systems (i.e. even-aged, two-aged or uneven-aged), regeneration methods (i.e. clearcutting, seed-tree, shelterwood, group or single-tree selection, coppice) as well as other practices such as commercial or pre-commercial thinning, use of prescribed fire or wildfire, planting, pruning, noxious weed control, cone collection, tree improvement, insect or disease control, site-preparation and fuel reduction. Appropriate practices for a given situation depend on numerous factors, some of which include the current and desired forest vegetation conditions at both the stand and landscape scales, the biophysical setting and the management direction and emphasis for the area. Silvicultural practices should generally trend the forest vegetation towards conditions that are more resistant and resilient towards disturbances and stressors, including climate change.

The specific practices that are chosen for a site and circumstance shall be selected and implemented with the involvement and consultation of a certified silviculturist. A silvicultural prescription shall be prepared or approved by a certified silviculturist for all practices that involve a new or revised timber sale proposal, reforestation project, timber stand improvement project, or prescribed burn project within forested ecosystems.

Timber

Goals

Goal-01. Provide a sustainable level of timber products for current and future generations. Production of timber from NFS lands contributes to an economically viable forest products industry.

Desired Condition

FW-DC-TBR-01. Production of timber contributes to ecological, social, and/or economic sustainability and associated desired conditions. A sustainable mix of timber products (including both sawtimber and non-sawtimber) is offered under a variety of harvest and contract methods in response to market demand. Salvage of dead and dying trees captures as much of the economic value of the wood as possible while retaining the amount needed for wildlife habitat, soil productivity, and ecosystem functions.

FW-DC-TBR-02. Lands identified as suitable for timber production have a regularly scheduled timber harvest program. Where appropriate, precommercial thinning or other types of stand treatments are used to increase tree growth and create additional growing space for the desirable tree species, while reducing mortality and fuel loading. Lands are adequately restocked within five years of final regeneration harvest, following a site-specific silvicultural prescription.

FW-DC-TBR-03. Timber cutting on other than suitable for timber production lands occurs for such purposes as salvage, fuels management, insect and disease mitigation, protection or enhancement of biodiversity or wildlife habitat, or to perform research or administrative studies, or recreational and scenic-resource management consistent with other management direction. Restocking of these lands varies, based on the purpose and need for the project, and is determined through the project level interdisciplinary process and the silvicultural prescription. Based on the site-specific silvicultural prescription and desired conditions, lands may be restocked within five years. In some instances, such as when lands are harvested to create openings for fuel breaks and vistas or to prevent encroaching trees, these lands may not be restocked.

FW-DC-TRB-04. The Allowable Sale Quantity (ASQ) is 760 MMBF over the first decade the Plan is implemented. Timber harvest will not exceed this amount over the first decade of implementation. The long-term sustained yield capacity (LTSYC) for the Forest is approximately 16.7 MMCF (approximately 91.3 MMBF).

Objectives

FW-OBJ-TBR-01. Over the life of the plan, the outcome is to annually offer timber for sale at the estimated predicted volume sold of 47.5 MMBF

Standards

FW-STD-TBR-01. Regulated timber harvest activities shall occur only on those lands classified as suitable for timber production.

FW-STD-TBR-02. If individual harvest openings created by even-aged silvicultural practices are proposed that would exceed 40 acres, then NFMA requirements regarding public notification and approval shall be followed. These requirements do not apply to the size of areas harvested because of catastrophes such as, but not limited to, fire, insect and disease attacks, or wind storms.

FW-STD-TBR-03. Timber harvest activities shall only be used when there is reasonable assurance of restocking within five years after final regeneration harvest. Restocking level is prescribed in a site specific silviculture prescription for a project treatment unit and is determined to be adequate depending on the objectives and desired conditions for the plan area. In some instances, such as when lands are harvested to create openings for fuel breaks and vistas or to prevent encroaching trees, it is adequate not to restock.

FW-STD-TBR-04. Even-aged stands shall generally have reached or surpassed culmination of mean annual increment (95 percent of CMAI, as measured by cubic volume) prior to regeneration harvest, unless the following conditions have been identified during project development:

- When such harvesting would assist in reducing fire risk within the Wildland Urban Interface (WUI).
- When harvesting of stands will trend landscapes toward vegetation desired conditions.

FW-STD-TBR-05. Harvesting systems shall be selected based on their ability to meet desired conditions and not strictly on their ability to provide the greatest dollar return.

FW-STD-TBR-06. Clearcutting shall be used only where it is the optimum method for meeting Forest Plan direction.

FW-STD-TBR-07. Even-aged prescriptions other than clearcutting (seed tree, shelterwood, etc.) shall be used when appropriate to meet Forest Plan direction.

FW-STD-TBR-08. Timber harvest activities shall be reviewed by an interdisciplinary team, including the potential environmental, biological, aesthetic, engineering, and economic impacts on the sale area, as well as the consistency of the sale meeting Forest Plan direction.

Guidelines

FW-GDL-TBR-01. Timber harvest on other than suitable lands may occur for such purposes as salvage, fuels management, insect and disease mitigation, protection or enhancement of biodiversity or wildlife habitat, or to perform research or administrative studies, or recreation and scenic-resource management consistent with other management direction.

Fire

Desired Condition

FW-DC-FIRE-01. Public and firefighter safety is always recognized as the first priority for all fire management activities.

FW-DC-FIRE-02. Hazardous fuels are reduced within the WUI and other areas where values are at risk. Fire behavior characteristics and fuel conditions exist in these areas that allow for safe and effective fire management, as defined and characterized in county wildland fire mitigation plans. Fire behavior is characterized by low-intensity surface fires with limited crown fire potential. Forest conditions, and the pattern of conditions across the landscape, exist in these areas such that the risk is low for epidemic levels of bark beetles, high levels of root disease, and large scale, stand replacement fires.

FW-DC-FIRE-03. The use of wildland fire (both prescribed fire and where appropriate, wildfire), increases in many areas across the Forest. Fire plays an increased role in helping to trend the vegetation towards the desired conditions while serving other important ecosystem functions. However, undesirable wildfires continue to be suppressed where necessary to protect life, property and key resources.

Objectives

FW-OBJ-FIRE-01. The outcome is the treatment of fuels on approximately 5,000 to 15,000 acres annually on NFS lands, primarily through planned ignitions (prescribed fire), mechanical vegetation treatments (these acres are also included in FW-OBJ-VEG-01), and unplanned ignitions (wildfire). NFS lands within the WUI are the highest priority for fuel treatment activities.

FW-OBJ-FIRE-02. Manage lightning-caused wildfires for resource benefits on at least 10 percent of the ignitions over the life of the plan.

Wildlife

Goals

Goal-01. The KNF contributes to the diversity of desired native and non-native plant and animal communities and contributes toward the recovery of threatened and endangered terrestrial wildlife species.

Goal-02. The KNF manages activities to avoid disturbance to sensitive species that would result in a trend towards federal listing.

Desired Condition

FW-DC-WL-01. Lands that surround nest and den sites and other birthing and rearing areas for terrestrial threatened, endangered, proposed or sensitive species are relatively free of human disturbance during the period they are active at these sites.

FW-DC-WL-02. A forestwide system of large remote areas to accommodate species associated with large home ranges (such as: grizzly bear and wolverine) and low disturbance areas exists.

FW-DC-WL-03. Recovery of the terrestrial threatened and endangered species is the long-term desired condition. Foraging, denning, rearing and security habitat is available for occupation. Populations trend toward recovery through cooperation and coordination with USFWS, state agencies, other federal agencies, tribes, and interested groups.

FW-DC-WL-04. Low levels of disturbance exist in all grizzly bear management units (BMUs) to facilitate denning activities, spring use, limit displacement, and reduce human/bear conflicts and potential bear mortality. Spring, summer, and fall forage is available for grizzly bear.

FWDC-WL-05. Motorized access management within the KNF portion of the Northern Continental Divide Ecosystem (NCDE) and Cabinet-Yaak recovery zones promotes recovery of the grizzly bear.

FW-DC-WL-06. Bald eagles find large-diameter trees within potential nesting habitat adjacent to large lakes and major rivers. Forested stands are retained within eagle nesting territories, especially in the area between the nest site and the adjacent water body.

FW-DC-WL-07. A low level of disturbance exists around peregrine falcon nests during periods of use. Peregrine find an abundance of forest land birds and small mammals to support the current and expanding population on the forest.

FW-DC-WL-08. Wolves find an abundance of big game. A low level of disturbance exists around active wolf denning and rendezvous sites.

FW-DC-WL-09. Neotropical and other migratory birds find productive plant communities with a mosaic of successional stages, structures, and species that support nesting activities or use during their migration across the forest.

FW-DC-WL-10. Aquatic and riparian-associated species find a mosaic of aquatic and riparian habitats and a low level of disturbance exists in these areas.

FW-DC-WL-11. Old growth or stands with old forest structures exists for terrestrial species associated with these habitats (refers to FW-DC-VEG-03, FW-STD-VEG-01, FW-STD-VEG-02, FW-GDL-VEG-01, and FW-GDL-VEG-02).

FW-DC-WL-12. Large diameter trees and snags (> 20 inch DBH) are available throughout the forest. Wildlife species associated with the warm dry biophysical setting find large-diameter ponderosa pine, Douglas-fir and other species of snags for nesting (see also FW-DC-VEG-07, FW-GDL-VEG-04, and FW-GDL-VEG-05).

FW-DC-WL-13. Down wood, especially down logs, are available throughout the forest for terrestrial mollusks, reptiles, small mammals and other species whose habitat requirements includes this component (refers to FW-DC-VEG-08, FW-GDL-VEG-03, FW-GDL-VEG-06,

FW-DC-WTR-03, FW-DC-SOIL-01, FW-DC-SOIL-02, FW-DC-SOIL-03, FW-DC-RIP-05, FW-DC-AQH-05, FW-GDL-SOIL-02, FW-GDL-SOIL-03).

FW-DC-WL-14. A diversity of patch sizes of fire-killed trees (either natural or prescribed burned, and where not a safety concern) exists to provide primary habitat for population expansions for species whose habitat requirements include this structural component (refers to FW-DC-VEG-05, FW-DC-TBR-01, FW-DC-FIRE-03).

FW-DC-WL-15. Caves, mines, and snags with loose bark provide areas for roosting, hibernation or maternity sites for various species of bats (refer to FW-DC-VEG-07, FW-GDL-VEG-04, and FW-GDL-VEG-05).

FW-DC-WL-16. Habitat for native ungulates (elk, deer, moose, bighorn, and mountain goat) is managed in coordination with state agencies. Cover is managed according to FWDC-VEG-01, FWDC-VEG-02, FWDC-VEG-04, FWDC-VEG-05 and FWDC-VEG-11.

FW-DC-WL-17. Forest management contributes to wildlife movement within and between national forest parcels. Movement between those parcels separated by other ownerships is facilitated by management of the NFS portions of linkage areas identified through interagency coordination. Federal ownership is consolidated at these approach areas to highway and road crossings to facilitate wildlife movement.

Objectives

FW-OBJ-WL-01. The outcome is the maintenance or restoration of wildlife habitat on 1,000 to 5,000 acres of NFS lands, emphasizing restoration of habitats for threatened and endangered listed species and sensitive species, annually.

FW-OBJ-WL-02. Elk. Over the life of the plan, increase the number of landscape analysis units that provide elk security so that at least 80% of the landscape subunits provide >30% security on NFS lands during the non-winter period.

FW-OBJ-WL-03. Landbird assemblage (insectivores). Manage lightning-caused wildfires for resource benefits on at least 10 percent of the ignitions over the life of the plan.

Standards

FW-STD-WL-01. The Northern Rockies Lynx Management Direction (2007) and ROD is included in Appendix B, and shall be applied.

FW-STD-WL-02. The Motorized Access Management within the Selkirk and Cabinet Yaak Grizzly Bear Recovery Zone Management Direction and ROD is included in Appendix B, and shall be applied.

FW-STD-WL-03. Within the Kootenai portion of the NCDE recovery zone, BMU subunits shall maintain or improve the access and habitat parameters as shown in Table 5. Site-specific motorized access densities and security core habitat are developed at the project level in consultation with the USFWS and through appropriate public involvement and NEPA procedures.

Table 5. NCDE Recovery Zone Bear Management Units (BMU's).

Bear Mgmt Subunit	Open Motorized Route Density (OMRD)	Total Motorized Route Density(TMRD)	Security Core Area
Krinklehorn BMU	18	11	75
Therriault BMU	23	10	71

FW-STD-WL-04. Permits and operating plans (e.g., special use, grazing, mining) shall specify sanitation measures to reduce human/wildlife conflicts and mortality by making wildlife attractants (ex: garbage, food, livestock carcasses) inaccessible through proper storage or disposal.

FW-STD-WL-05. No grooming of snowmobile routes in grizzly bear core habitat in the spring after April 1 of each year.

Guidelines

FW-GDL-WL-01. Management activities on NFS lands should avoid/minimize disturbance at known active nesting or denning sites for the species in Table 6. Other Sensitive species not listed in the following table should have disturbance avoided/minimized during a timeframe and within a distance around active nests or dens based on the best available information.

Table 6. Species for which management activities should avoid or minimize disturbance at known active nesting or denning sites.

Species	Location	Time	Distance
Wolverine	Predicted denning	2/15 through 5/15	Areas with persistent spring snow through 5/15 in an average of 5 out of 7 years.
Grizzly Bear	Spring emergence	4/1 through 5/1	Areas of predicted denning habitat
Bald eagle	Known active nest site	2/1 through 7/14	½ mile
	Known active communal night roost areas (winter habitat)	11/1 through 2/15	¼ mile
Gray wolf	Known active occupied den	2/1 through 5/30	½ mile
	Known rendezvous sites	5/15 through 7/15	½ mile
Peregrine falcon	Known active nest	3/1 through 8/31	½ mile
Harlequin duck	Known active nesting and rearing	4/15 through 8/15	300 feet
Common loon	Known active nesting	4/15 through 7/15	500 feet
Northern goshawk	Known active nesting area	4/1 through 8/15	¼ mile from post fledging area (PFA)
Townsend's big-eared bat	Known active roosts and, hibernacula	year-round	Minimize activities in caves, abandoned mines, or rock outcrops
Mountain goat	Known active winter habitat use	12/1 through 4/1	Minimize disturbance (over-snow vehicle use, other winter recreation activities, and helicopter flights)
Flammulated Owl	Known active owl nesting	5/1 through 7/31	¼ mile

FW-GDL-WL-02. Bald Eagle. Management activities should avoid impacts to bald eagles on known occupied roost sites, including known winter communal night roost areas.

FW-GDL-WL-03. Bald Eagle. Management activities should not result in the loss of existing nest trees or established roost sites.

FW-GDL-WL-04. Bald Eagle. Management activities should maintain or enhance nest site habitat suitability within existing nest territories. (refer to FW-DC-VEG-03, FW-DC-VEG-07, FW-STD-VEG-01, FW-GDL-VEG-01, FW-GDL-VEG-02, FW-GDL-VEG-04, FW-GDL-VEG-05, FW-DC-WL-13).

FW-GDL-WL-05. Maintain unlogged conditions in some portions of burned areas for 5 years post-fire. A well distributed diversity of patch sizes and burned conditions, based on fire characteristics and pre-fire forest conditions, should be left to provide habitat for species whose habitat requirements include recently burned forests (black-backed woodpecker, etc.).

FW-GDL-WL-06. Townsends big-eared Bat. When bats are found, bat gates or similar structures should be installed on abandoned mines with known bat use, for human health and safety and bat protection.

FW-GDL-WL-07. Townsends big-eared Bat. Buildings should be inspected prior to removal or demolition to identify bat use. If bats are present, avoid disturbance until they have left for the season or been removed. (Refer to FW-DC-VEG-07, FW-GDL-VEG-04, FW-GDL-VEG-05, and FW-DC-WL-12).

FW-GDL-WL-08. Big Game. Management activities should avoid or minimize disturbance to big game on winter range between December 1 and April 30, with the exception of through routes. Management activities that occur on winter range during the winter period should concentrate activities to reduce impacts to big game.

FW-GDL-WL-09. Big Game. Management activities should be avoided on winter range areas during the critical mid-winter period (January and February) when snow depths most likely influence movement and availability of forage.

FW-GDL-WL-10. Big Game. Management activities in areas of elk use should maintain a minimum of 30 percent security on NFS land during the non-winter season (where it exists). Higher levels of security should be provided where management for elk is a high priority as determined through coordination with state agencies (greater than 50 percent, as determined at the project level). Security areas are generally timbered stands at least 250 acres in size greater than 0.5 mile away from motorized routes. Security is calculated for area (such as a landscape analysis area or elk management unit) and determined at the project level.

FW-GDL-WL-11. Big Game. Management activities should avoid disturbance to native ungulates during the fawning/calving/kidding/lambing period.

FW-GDL-WL-12. During the construction or reconstruction of highways that cross National Forest lands, or high use Forest roads, wildlife crossing features should be included in the design where necessary to contribute to connectivity of wildlife populations.

FW-GDL-WL-13. Management activities within one-quarter mile of existing crossing features, and future crossing features developed through interagency coordination, should not prevent wildlife from using the crossing features. The vegetative and structural components of connectivity, including snags and downed wood, would be managed according to the desired conditions for vegetation.

FW-GDL-WL-14. In wildlife linkage areas identified through interagency coordination, federal ownership should be maintained.

FW-GDL-WL-15. Elements contained in the most recent “Interagency Grizzly Bear Guidelines,” or a conservation assessment once a grizzly bear population is delisted, would be applied to all Management Areas which contain identified grizzly bear habitat situations 1, 2, or 3.

Watershed, Soil, Riparian, and Aquatic Resources

Goals

Goal-01 (Watershed): Restore, maintain, and protect watershed conditions, in order to provide the water quality and quantity, and soil productivity necessary to support ecological functions and intended beneficial uses.

Goal-02 (Soil): Reduce detrimental impacts to soils and maintain or improve soil conditions.

Goal-03 (Riparian Habitat): Maintain or improve the vegetation associated with hydrologic features, in order to support the ecological function of riparian habitats.

Goal-04 (Aquatic Habitat): Restore aquatic habitats where past management activities have affected stream channel morphology or wetland function.

Goal-05 (Aquatic Species): Maintain or improve the distribution of native aquatic and riparian dependent species and contribute to the recovery of threatened and endangered aquatic species.

Desired Conditions

Watersheds and Water Quality

FW-DC-WTR-01. Watersheds, riparian areas, and hydrologic systems, such as streams, lakes, and wetlands, including peatlands, have characteristics, processes, and features consistent with their natural potential condition. These features and their related ecosystems retain their inherent resilience to disturbance, by responding and adjusting to perturbations without long term, adverse changes to their physical or biological integrity.

FW-DC-WTR-02. All management activities will emphasize protection of water quality. Water quality meets applicable State water quality standards and fully supports beneficial uses. Flow conditions occur in watersheds, streams, lakes, springs, wetlands (including peatlands), and groundwater aquifers to fully support beneficial uses, and meet the ecological needs of native and desirable non-native aquatic species and maintain the physical integrity of their habitats.

FW-DC-WTR-03. Stream channels and floodplains transport water, sediment, and woody material over time, while maintaining their proper dimension, pattern, and profile, for a given landscape and climatic setting. Instream flows provide channel and floodplain dimensions that allow for natural water and sediment conveyance, and overall channel maintenance. Sediment deposits from over-bank floods allow floodplain development and the propagation of flood-dependent riparian plant species. Seasonal flows recharge riparian aquifers and provide late season stream flows and cold water temperatures. Groundwater flows sustain the function of surface and subsurface aquatic ecosystems.

FW-DC-WTR-04. Lands that contribute to municipal watersheds and public water systems (source water protection areas) are in a condition that contributes to consistent delivery of clean water.

FW-DC-WTR-05. Water rights for consumptive and non-consumptive water uses obtained in the name of the U.S. Forest Service, 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.

Soils

FW-DC-SOIL-01. Soil organic matter, soil physical conditions, and fine and coarse woody debris maintain soil productivity and hydrologic function. Physical, biological, and chemical properties of soil are within the natural range of variability; enhance nutrient cycling, maintain the role of carbon storage, and support soil microbial and biochemical processes. Areas with sensitive and highly erodible soils or landtypes with mass failure potential are not impacted or destabilized as a result of management activities.

FW-DC-SOIL-02. Soil impacts are minimized, and managed areas that have incurred detrimental soil disturbance recover through natural processes and/or restoration treatments. Organic matter and woody debris, including tops, limbs, and fine woody debris, remain on site after vegetation treatments in sufficient quantities to maintain soil quality and to enhance soil development and fertility by periodic release of nutrients as they decompose (see also FW-DC-VEG-08 and FW-GDL-VEG-03).

FW-DC-SOIL-03. Organic matter and fine woody debris support healthy mycorrhizal populations, protect soil from erosion due to surface runoff, and retain soil moisture. Volcanic ash-influenced soils that occur on most of the Forest are uncompacted and retain unique properties, such as low bulk density and high water holding capacity, to support desired vegetative growth. In areas where geologic rock types develop into potassium deficient soils, fine woody debris remains on site, following harvest procedures and are allowed to leach out.

Riparian Habitat

FW-DC-RIP-01. Riparian Conservation Areas (RCA's), as defined in the glossary, have healthy, functioning riparian systems and associated habitats that support well-distributed native and desired non-native plant, vertebrate, and invertebrate communities.

FW-DC-RIP-02. Riparian and aquatic ecosystems, including stream channel integrity, channel processes, and sediment regimes, function characteristically for a given landscape and climatic setting. In turn, stream channels provide the structure for desired stream habitat features such as pool frequency, residual pool depth, large woody material, bank stability, lower bank angle, and width-to-depth ratios (see also FW-DC-AQH-05).

FW-DC-RIP-03. Water quality provides stable and productive riparian and aquatic ecosystems. Stream water temperatures are within the requirements for salmonid spawning and cold water biota (see also FW-DC-AQH-05). Streams and lakes are free of chemical contaminants and do not contain excess nutrients. Sediment levels are within natural condition, supporting salmonid spawning and rearing, and cold water biota requirements.

FW-DC-RIP-04. Composition, structure, and function of riparian vegetation is appropriate for a given landscape and climatic setting. Riparian vegetation adjacent to larger streams with lower gradients and wide valley bottoms is dominated by conifer stands in late-seral stages. These stands have multiple canopy layers with shrub, forb and ferns underneath stands dominated by large trees. Native hardwoods such as black cottonwood, paper birch and/or quaking aspen are found in areas along these larger streams. The narrower riparian zones along smaller, higher gradient streams have vegetation with a wide diversity of seral stages present, from relatively young stands of trees to fairly old stands, with a greater

composition of early-seral, shade intolerant trees species present than found in larger, lower gradient rivers. Natural disturbance regimes occur at intervals that maintain these conditions.

FW-DC-RIP-05. Vegetation in RCAs is characteristic of natural aquatic and riparian ecosystems and provides: amounts and distribution of large woody debris; vertical structure and habitat for riparian-associated bird, mammal, amphibian, fish, and invertebrate species; natural summer and winter thermal regulation; ground cover and bank stability to maintain natural rates of surface erosion, bank erosion, and channel migration characteristic of those under which aquatic and riparian ecosystems developed; the capture and storage of sediment; and for recovery of RCAs after watershed disturbances.

FW-DC-RIP-06. Peatlands support natural unique plant and animal communities, and provide habitat for rare plant and animal species. Peatland waterflows, water quality, water chemistry, soil, organic substrate, and plant communities function under conditions characteristic of how they evolved. Upland areas surrounding peatlands that have the most direct influence on peatland characteristics, and stream segments that flow directly into peatlands are managed to sustain the natural characteristics and diversity of those peatlands.

Aquatic Habitat

FW-DC-AQH-01. Waterbodies, riparian vegetation, and adjacent uplands provide habitats that support self-sustaining native and desirable non-native aquatic communities, which include fish, amphibians, invertebrates, plants, and other aquatic-associated species. Aquatic habitats are diverse, with channel lacustrine, and wetland characteristics and water quality reflective of the climate, geology, and natural vegetation of the area. Water quality supports native amphibians and diverse invertebrate communities. 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.

FW-DC-AQH-02. Connectivity between waterbodies provides for life history functions (e.g., fish migration to spawning areas, amphibian migration between seasonal breeding, foraging, and overwintering habitats) and for processes such as recolonization of historic habitats.

FW-DC-AQH-03. Conservation watersheds provide habitats that can support population strongholds of federally listed and sensitive species. Conditions in restoration watersheds (see glossary) improve to support population strongholds.

FW-DC-AQH-04. Rare and unique aquatic habitats, such as waterfalls and rock outcrops are available and provide for plant and animal communities.

FW-DC-AQH-05. Stream channels supply the required structure for desired stream habitat features such as pools, pool tails, banks, large woody material, backwaters, and riffles that provide aquatic species the necessary niches for holding, overwintering, spawning, cover, rearing, and feeding. The following criteria generally describe desired stream habitat conditions:

Stream water temperatures are within the State water quality requirements for salmonid spawning, cold water biota and bull trout.

EPA Bull Trout Criteria: This rule establishes a maximum weekly mean temperature (MWMT) criterion of 10° C for the months of June, July August and September for the protection of Bull trout spawning and rearing in natal streams, expressed as an average of daily maximum temperatures over a consecutive 7-day period.

State Water Quality Standards: The following is excerpted from the Montana Water Quality Standards (ARM 17.30.6 - Surface Water Quality Standards and Procedures). The EPA bull trout criteria listed above also applies.

17.30.609 WATER-USE CLASSIFICATIONS--KOOTENAI RIVER DRAINAGE

All waters B-1, except those listed below;

- Deep Creek drainage (tributary to the Tobacco River) to the Fortine water supply intake - **A-1**
- Rainy Creek drainage to the W.R. Grace Company water supply - **A-1**
- Rainy Creek (mainstem) from W.R. Grace Co. water supply intake to the Kootenai River - **C-1**
- Flower Creek drainage to the Libby water supply intake (lat 48.356, lon - 115.5676) - **A-1**

A-1 (17.30.622):

- 1°F max increase above naturally occurring water temperature is allowed within the range of 32°F to 66°F; within the naturally occurring range of 66°F to 66.5°F, no discharge is allowed which will cause the water temperature to exceed 67°F; and where the naturally occurring water temperature is 66.5°F or greater, the max allowable increase in temperature is 0.5°F.
- 2°F-per-hour maximum decrease below naturally occurring water temperature is allowed when the water temperature is above 55°F. A 2°F maximum decrease below naturally occurring water temperature is allowed within the range of 55°F to 32°F.

B-1 (17.30.623):

- 1°F max increase above naturally occurring water temperature is allowed within the range of 32°F to 66°F; within the naturally occurring range of 66°F to 66.5°F, no discharge is allowed which will cause the water temperature to exceed 67°F; and where the naturally occurring water temperature is 66.5°F or greater, the max allowable increase in temperature is 0.5°F.
- 2°F per-hour maximum decrease below naturally occurring water temperature is allowed when the water temperature is above 55°F. A 2°F maximum decrease below naturally occurring water temperature is allowed within the range of 55°F to 32°F.

C-1 (17.30.626):

- 1°F max increase above naturally occurring water temperature is allowed within the range of 32°F to 66°F; within the naturally occurring range of 66°F to 66.5°F, no discharge is allowed which will cause the water temperature to exceed 67°F; and where the naturally occurring water temperature is 66.5°F or greater, the max allowable increase in temperature is 0.5°F.
- 2°F per-hour maximum decrease below naturally occurring water temperature is allowed when the water temperature is above 55°F. A 2°F maximum decrease below naturally occurring water temperature is allowed within the range of 55°F to 32°F.

Large woody debris occurs in near natural patterns of size and amount in channel, stream banks, and floodplain. Adequate sources of large woody debris are available for both long and short term recruitment based on riparian stocking densities.

Pool frequency varies by reach type:

- 1 per 5 to 7 channel widths in pool-riffle stream reaches;
- 1 per 2 to 4 channel widths in step-pool stream reaches.

Large pools for adult holding, juvenile rearing, and overwintering are common. Large pools are considered to have a residual pool depth greater than one meter, in streams with a wetted width greater than three meters (9.84 feet) wetted width.

Channel substrate is appropriate in size and distribution, based on geology, gradient, and topography, and supports spawning, macroinvertebrate production, and juvenile rearing.

Bankfull width-to-depth ratios are appropriate to channel type (see glossary):

- less than or equal to 12 in A, E, G channel types;
- greater than or equal to 12 in B, C, F channel types;
- greater than 40 in D channel types.

Bank stability in forested stream reaches:

- greater than or equal to 90 percent stable in C channel types;
- greater than or equal to 95 percent stable in A, B, and E channel types.

Habitat features at smaller scales are influenced by stream gradient, channel and floodplain width, elevation, geology, water quality, riparian vegetation, and other factors. Therefore, while these criteria generally describe desired habitat conditions, these values may not be achievable in all stream channel types.

Aquatic Species

FW-DC-AQS-01. Over the long term, habitat contributes to the support of well-distributed self-sustaining populations of native and desired non-native aquatic species (fish, amphibians, invertebrates, plants and other aquatic-associated species). In the short term, stronghold populations (see glossary) of native fish, especially bull trout, westslope cutthroat trout and interior redband trout, continue to thrive and expand into neighboring unoccupied habitats, and depressed populations increase in numbers. Available habitat supports genetic integrity and life history strategies of native fish and amphibian populations. Macroinvertebrate communities have densities, species richness, and evenness comparable to communities found in reference conditions.

FW-DC-AQS-02. Non-native fish species (e.g. brook trout, rainbow trout, and brown trout) are not expanding into tributary streams on NFS Lands. Impacts of non-native fish species on native salmonids, such as hybridization or displacement, are minimal. Aquatic ecosystems are free of undesirable invasive species such as zebra mussels, New Zealand mud snails, quagga mussels, bullfrogs, and Eurasian milfoil.

FW-DC-AQS-03. Cooperation and coordination with state agencies, federal agencies, tribes, and other groups leads to an upward trend of native species and desired non-native aquatic species; and contributes to State and Tribal population goals for native and desirable non-native fishes. An increased understanding of many non-game species (e.g., amphibians, invertebrates, and fishes) and plants, including their habitat requirements and effects from human activities, aids in this upward trend.

FW-DC-AQS-04. Bull trout – Recovery and delisting of bull trout is the long-term desired condition. Spawning, rearing, and migratory habitat is widely available and inhabited. Bull trout have access to historic habitat, and appropriate life history strategies (e.g., resident, fluvial, and adfluvial) are supported. Recovery is supported through accomplishment of Bull Trout recovery plan tasks under USFS jurisdiction. Bull trout population trends toward recovery through cooperation and coordination with USFWS, state agencies, other federal agencies, and interested groups.

FW-DC-AQS-05. Bull trout - Habitat conditions improve in occupied bull trout streams and connected historically occupied streams, resulting in an increase in the overall number of stronghold populations. Bull trout habitat and populations continue to be protected through the application of standards and guidelines for aquatic habitat and species.

FW-DC-AQS-06. Kootenai River white sturgeon - Kootenai River white sturgeon are found within limited portions of the Forest boundaries; however, the major risks and threats to this species are associated with the Libby Dam and are outside Forest Service jurisdiction. The recovery of Kootenai River white sturgeon is the long-term desired condition and coordination with stakeholders, such as tribes, state and other federal agencies, and adjacent landowners, is emphasized. Habitat features at smaller scales are influenced by stream gradient, channel and floodplain width, elevation, geology, water quality, riparian vegetation, and other factors. Therefore, while these criteria generally describe desired habitat conditions, these values may not be achievable in all stream channel types.

Objectives

Watersheds and Water Quality

FW-OBJ-WTR-01. Over the life of the plan, trend 15 percent of watersheds which are rated as “Moderate” or “High” (see glossary) toward a better watershed condition through the removal or mitigation of risk factors within reasonable control of Forest Service management. Watersheds rated “Moderate” and “High” may have degraded habitat conditions, water quality limitations, depressed populations of native fish species, or a combination of the above, but have a high potential for improvement. The emphasis in these watersheds may include passive or active restoration efforts, depending on opportunities.

FW-OBJ-WTR-02. Improve aquatic ecosystem function and processes across 100 to 500 acres of watersheds which are rated as “Moderate” or “High,” emphasizing activities in 303(d)-listed watersheds and water bodies with approved Total Maximum Daily Loads (TMDLs), annually.

Soils

FW-OBJ-SOIL-01. Over the life of the plan, restore soil productivity on 75 to 150 acres not meeting soil quality criteria and maintain long-term soil productivity in actively managed areas.

Aquatic Habitat

FW-OBJ-AQH-01. Enhance or restore 15 to 50 miles of habitat to maintain or restore structure, composition, and function of habitat for fisheries and other aquatic species, annually.

FW- OBJ-AQH-02. Macroinvertebrates. Over the life of the Plan, a representative assemblage of macroinvertebrates is present across the planning area and observed taxa

maintain a score of 0.78 or greater using the River Invertebrate Prediction and Classification System (RIVPACS) analysis model.

FW-OBJ-AQH-03. Over the life of the plan, reconnect 30 to 55 miles of fragmented habitat in streams where aquatic and riparian-associated species' migratory needs are limiting distribution of those species.

Aquatic Species

FW-OBJ-AQS-01. Over the life of the plan, improve 5 percent of "Moderate" or "High" rated watersheds that contain populations of sensitive or threatened and endangered species. Improvements in condition ratings may also be accounted for in the trend described in FW-OBJ-WTR-01.

Standards

Watersheds and Water Quality

FW-STD-WTR-01. Ground-disturbing activities in source water areas (designated special or public water supply watersheds) shall prevent risks and threats to public uses of the water. Limited short-term effects from activities in source water areas may be acceptable when they support long-term benefits to the RCAs and aquatic resources.

Riparian

FW-STD-RIP-01. When RCAs are intact and functioning at desired condition, then management activities shall maintain or improve that condition. Limited short-term effects from activities in the RCAs may be acceptable when they support long-term benefits to the RCAs and aquatic resources.

FW-STD-RIP-02. When RCAs are not intact and not functioning at desired condition, management activities shall include restoration components that compensate for project effects to promote a trend toward desired conditions. Large-scale restoration plans or projects that address other cumulative effects within the same watershed may be considered as compensatory components and shall be described during site specific project analyses.

FW-STD-RIP-03. The Inland Native Fish Strategy (INFISH) direction in the Decision Notice (USDA Forest Service, 1995) and terms and conditions in the Biological Opinion (US Fish & Wildlife Service, 1998) are included in Appendix B, and shall be applied.

FW-STD-RIP-04. Unless necessary for reclamation of a site, mine waste (waste rock, spent ore, tailings) and mining facilities shall be located outside of RCAs and managed to prevent impacts to RCAs and aquatic resources. Mine waste shall be stabilized to prevent sedimentation and release of acid or toxic materials to aquatic and riparian environments.

Guidelines

Watersheds and Water Quality

FW-GDL-WTR-01. Ground-disturbing activities in impaired watersheds (listed by the State under Section 5 of the Integrated 303(d)/305(b) Report) where an adopted TMDL is not available, should not cause a decline in water quality or further impair beneficial uses of water. A short-term or incidental departure from State water quality standards may occur where there is no long-term threat or impairment to the beneficial uses of water and when the State concurs.

FW-GDL-WTR-02. To avoid future risks to watershed condition, when decommissioning or storing roads or trails those features should be treated to ensure hydrologic stability.

Soils

FW-GDL-SOIL-01. Ground-based equipment should only operate on slopes less than 40 percent, in order to avoid detrimental soil disturbance. Where slopes within an activity area contain short pitches greater than 40 percent, but less than 150 feet in length, ground-based equipment may be allowed, as designated by the Timber Sale Administrator.

FW-GDL-SOIL-02. Outside WUI areas and based on what is currently available and the type of harvest activity, residual levels of coarse woody debris and organic matter and fines should remain on site when implementing timber harvest or prescribed burning (see also downed wood FW-DC-VEG-08).

FW-GDL-SOIL-03. In order to provide for leaching of nutrients and maintenance of long-term soil productivity, tops, limbs, and needles (i.e. fine woody debris), should be distributed throughout harvest units when conducting vegetation management activities located on nutrient limited rock types (see glossary) and should remain on site for at least 6 months, during one winter (wet/rainy) season, prior to any subsequent activities such as intermediate harvest, prescribed burning, mechanical site preparation, or other treatments. Exceptions may occur in areas where a site-specific analysis indicates threats to human health or safety or property as a result of leaving an accumulation of fuel material.

FW-GDL-SOIL-04. Ground-disturbing management activities on landslide prone areas should be avoided. If activities cannot be avoided, they should be designed to maintain soil and slope stability.

Riparian Habitat

Riparian guidelines apply to all RCAs and to projects and activities in areas outside RCAs that may potentially degrade these areas.

FW-GDL-RIP-01. Soil and snow should not be side-cast into surface water during road maintenance operations.

FW-GDL-RIP-02. Grazing management should prevent trampling of native fish redds (nests) by livestock.

FW-GDL-RIP-03. Minimum Impact Suppression Tactics should be used within RCAs.

FW-GDL-RIP-04. When drafting water from streams, pumps should be screened to prevent entrainment of fish and aquatic organisms. During the spawning season for native fish pumping sites should be located away from spawning gravels.

FW-GDL-RIP-05. Peatlands should be buffered from management activities that disturb soil, vegetation, above and below groundwater flows, and/or water chemistry by 600 feet (200 meters) unless site-specific information, such as topography, drainage features, and rare plant associations, supports smaller or larger buffers.

FW-GDL-RIP-06. If necessary for the attainment of RCA desired conditions, ground-based logging equipment should only enter an RCA at designated locations.

Aquatic Species

FW-GDL-AQS-01. Management activities that may disturb native salmonids, or have the potential to directly deliver sediment to their habitats, should be limited to times outside of spawning and incubation seasons for those species, as identified in Table 7.

Table 7. Spawning and incubation seasons for spring and fall spawners.

Species	Activity	Inoperable Activity Period*
Spring spawners	Known occupied streams	Prior to July 15
Fall spawners	Known occupied streams	September 1 through March 15

*Dates can be modified when site-specific information on staging and spawning of native fishes supports changes.

FW-GDL-AQS-02. When conducting management activities, equipment (e.g., boots, waders, boats, surveying equipment, machinery) used in water should be treated by acceptable methods, such as freezing, drying, or chemical treatments in order to prevent the introduction of aquatic invasive species and aquatic borne diseases.

Other Revision Topics

Air Quality

Desired Condition

FW-DC-AQ-01. The Forest meets air quality standards set by Federal and State agencies. Prescribed burning is planned to meet those standards, including areas classified as Class 1 airsheds (e.g., Cabinet Mountains Wilderness) and nonattainment areas (e.g., presently Libby, Montana).

Guidelines

FW-GDL-AQ-01. The Forest should cooperate with the States in meeting the requirements of the State Implementation Plans (SIPs) and the Smoke Management Plans (SMPs).

American Indian Rights and Interests

Desired Condition

FW-DC-AI-01. The Forest recognizes and maintains culturally significant species and the habitat necessary to support healthy, sustainable, and harvestable plant and animal populations to ensure that rights reserved by Tribes in the Hellgate Treaty of 1855 are not significantly impacted or diminished.

FW-DC-AI-02. The Forest recognizes, ensures, and accommodates tribal member access to the Forest for the exercise of treaty rights and cultural uses consistent with laws, policies, and regulations.

FW-DC-AI-03. The Forest recognizes and protects traditional cultural areas as associated with the traditional beliefs of a Tribe about its cultural history.

Objectives

FW-OBJ-AI-01. The outcome is continued habitat management for traditional use areas, as they relate to MA3, through development of 6 to 25 management plans, in consultation with the tribes, over the life of the Plan.

FW-OBJ-AI-02. The outcome is continued access and acquisition of forest products for each federal recognized Indian Tribe with historical or treaty interests in KNF lands for traditional cultural uses by tribal members, through a cooperatively established policy, over the life of the Plan.

FW-OBJ-AI-03. The outcome is continued traditional cultural areas, through the development of 6 to 25 management plans, in consultation with the tribes, over the life of the Plan.

FW-OBJ-AI-04. The outcome is ongoing government-to-government and staff consultation for each federally recognized Indian Tribe with historical or treaty interests in KNF lands, through a cooperatively established communication policy, over life of the Plan.

Guidelines

FW-GDL-AI-01. Consult with Tribes when management activities may impact treaty rights and/or cultural sites and cultural use, according to the Consultation Protocol.

Cooperation and Community Involvement

Desired Condition

FW-DC-CCI-01. Cooperative programs, such as agreements, activities, grants, volunteers, and partnerships, are occurring with federal, state, and county agencies; other nongovernmental organizations; and individuals to help achieve Forest goals and improve overall resource management. Information, interpretation, and education programs are provided that communicates forest resource conditions and opportunities.

FW-DC-CCI-02. Coordinate with U.S. Border Patrol on issues relating to national security along the northern international border of the United States and Canada.

Cultural Resources

Desired Condition

FW-DC-CR-01. Cultural resources are inventoried, evaluated for inclusion on the National Register of Historic Places, and managed according to their allocation category, including preservation, enhancement-public use, or scientific investigation. National Register ineligible cultural resources may be released from active management. Until evaluated, cultural resources are treated as National Register eligible. Historically and archaeologically important cultural resources and traditional cultural properties (TCP) are nominated to the National Register.

FW-DC-CR-02. Cultural resources are safeguarded from vandalism, looting, and environmental damage through monitoring, condition assessment, protection, and law enforcement measures. Interpretation and adaptive use of cultural resources provide public benefits and enhance understanding and appreciation of KNF prehistory and history. Cultural resource studies provide relevant knowledge and perspectives to KNF land management. Artifacts and records are stored in appropriate curation facilities and are available for academic research, interpretation, and public education.

Objectives

FW-OBJ-CR-01. Inventory 50 to 100 acres (annually) containing, or predicted to contain, highly valuable, threatened, or vulnerable cultural resources (non-project acres)

FW-OBJ-CR-02. Evaluate and nominate 5 to 10 significant cultural resources (over the life of the Plan) to the National Register of Historic Places.

FW-OBJ-CR-03. Develop five historic contexts, overviews, thematic studies, or cultural resources property preservation plans (over the life of the Plan) to help guide management and use of National Register eligible or listed properties, districts, TCPs, and cultural landscapes.

FW-OBJ-CR-04. Complete one public outreach or interpretive project annually that enhances public understanding and awareness of cultural resources and/or history of the area.

Guidelines

FW-GDL-CR-01. Include cultural resource protection provisions in applicable contracts, agreements, and special use permits for National Register-listed or eligible properties.

FW-GDL-CR-02. Leave historic human remains undisturbed unless there is an urgent reason (e.g., human health and safety, natural event, etc.) for their disturbance.

Grazing

Desired Condition

FW-DC-GRZ-01. Grazing occurs at sustainable levels while protecting vulnerable resources.

FW-DC-GRZ-02. Transitory range in or adjacent to existing allotments is used where compatible with the management area suitability.

FW-DC-GRZ-03. Vacant allotments are evaluated and closed when there is either a lack of demand for forage, a shortage of forage for a viable allotment, or the likelihood of a significant resource conflict.

Objectives

FW-OBJ-GRZ-01. The outcome is the permitting of 4,000 to 5,000 head months (5,100 to 6,300 animal unit months) annually.

Lands and Special Uses

Desired Condition

FW-DC-LND-01. Land ownership is adjusted (acquired or conveyed) to provide reasonable access or improve efficiency of NFS land management. Boundaries are surveyed and clearly posted and occupancy trespass is reduced. Rights-of-way and strategic easements are acquired to provide reasonable public and administrative access. Clear titles to NFS lands are retained. Special use authorizations meet forest management and public needs.

Guideline

FW-GDL-LND-01. New electrical distribution (33 kilovolts (kv) or less) and telephone lines should be buried unless one or more of the following applies:

- Burial is not feasible due to geologic hazard or unfavorable geologic conditions.
- Greater long-term site disturbance would result.

FW-GDL-LND-02. Proposals for utility and communication facilities outside designated communication sites or utility corridors should be considered only after improvement of existing facilities to accommodate expanded use is analyzed and determined to be infeasible. (Refer to Appendix D for listings and display of designated communication sites and utility corridors.)

Minerals

Desired Condition

FW-DC-MIN-01. The Forest continues to contribute to the economic strength and demands of the nation by supplying mineral and energy resources while assuring the land's capability to sustain ecosystems. Mineral materials are made available based upon public interest, material availability, in-service needs, and protection of other resource values. Geologic features are conserved for their intrinsic values and characteristics. Reclamation of abandoned mine sites occurs where human health risks exist.

Objectives

FW-OBJ-MIN-01. The outcome is the reclamation of one abandoned mine site, annually.

Standards

FW-STD-MIN-01. Locatable mineral development is not allowed in areas withdrawn from mineral entry. (Refer to Appendix D for areas withdrawn from mineral entry.)

Special Forest and Botanical Products

Desired Condition

FW-DC-SFP-01. Special forest and botanical products are harvested in a sustainable manner, providing products for current and future generations. Vegetation management activities augment the firewood program providing opportunities for collecting firewood.

Social and Economic Systems

Goal

Goal-01. Contribute to the social and economic well-being of local communities by promoting sustainable use of renewable natural resources. Provide timber for commercial harvest, forage for livestock grazing, exploration and development opportunities for mineral resources, and settings for recreation consistent with goals for watershed health, sustainable ecosystems, biodiversity and viability, and scenic/recreation opportunities.

Desired Condition

FW-DC-SES-01. Outputs and values generated by the Forest contribute to sustaining social and economic systems.

FW-DC-SES-02. The outputs and values provided by the KNF contribute to the local economy through the generation of jobs and income while creating products for use, both nationally and locally. Jobs and income generated by the activities and outputs from National Forest management remain stable, contributing to the functional economy surrounding the KNF.

FW-DC-SES-03. The outputs and values provided by the KNF contribute to community stability or growth and the quality of lifestyles in the Plan area.

FW-DC-SES-04. To the extent possible, the Forest contributes to the protection of communities and individuals from wildfire within the limits of firefighter safety and budgets.

Objectives

FW-OBJ-SES-01. Based on achievement of projected outputs, all resource sections in this Plan contribute to local economies by supporting approximately 2,800 local jobs (primary and secondary) and \$80,600,000 in labor income within the counties surrounding the KNF (Lincoln, Sanders, and Flathead Counties in Montana and Boundary and Bonner Counties in Idaho), annually. In addition, see other objectives in this Plan for output levels associated with management activities on the Forest, which provide uses, values, benefits, products, services, and visitor opportunities.

Chapter 3. Management Area Direction

Introduction

Management Area (MA) allocations are specific to areas across the Forest that have similar management needs and desired conditions. They help clarify the allowed uses on various parts of the Forest (see “Allowed Uses” Table 16 on page 70). For example, in an area allowing motorized use, the desired condition might be to maintain motorized recreation opportunities. Desired conditions help clarify what outcomes might be expected in land areas with the same allocations. Each MA has a description, a set of desired conditions, standards, and guidelines.

MAs are grouped into seven major categories (Table 8). Within each category are different MA descriptions, desired conditions, standards, and guidelines.

Table 8. KNF Management Areas and Acreages.

MA	Management Area Name	Acres	Percent
1a	Wilderness	93,700	4.2
1b	Recommended Wilderness	110,200	5.0
1c	Wilderness Study Areas	34,100	1.5
2	Eligible Wild and Scenic Rivers	43,700	2.1
3	Botanical, Geological, Historical, Recreational, Scenic or Zoological Areas	31,600	1.4
4	Established and Recommended Research Natural Areas	8,400	0.4
5a	Backcountry – Non-motorized summer and winter	227,600	10.3
5b	Backcountry – Motorized summer and winter	163,800	7.4
5c	Backcountry – Non-motorized summer, motorized winter	86,100	3.9
6	General Forest	1,403,900	63.3
7	Primary Recreation Areas	12,400	0.6
	Total NFS lands	2,219,100	

Some MAs overlap (e.g., MA1b - Recommended Wilderness may have an overlapping MA4 - Research Natural Area).

The acres in Table 8 are based on a single management area designation and where MAs overlap, the following hierarchy was used for map display and calculating non-overlapping acres:

1. Wilderness (MA1a)
2. Research Natural Areas (MA4)
3. Recommended Wilderness (MA1b)
4. Wilderness Study Areas (MA1c)
5. Eligible Wild and Scenic Rivers (MA2)
6. Botanical, Geological, Historical, Recreational, Scenic or Zoological Areas (MA3)
7. Primary Recreation Areas (MA7).

Because of overlapping management areas, the acre figures reported in Table 8 may not match those listed in the tables within each MA section. The acre figures in those tables are total acres for that area within all MAs.

MA1a – Wilderness

Description

The KNF manages one congressionally designated wilderness area, the Cabinet Mountains Wilderness, which totals 93,700 acres and is part of the National Wilderness Preservation System.

Desired Condition

Access and Recreation

MA1a-DC-AR-01. Designated Wilderness areas provide non-motorized and non-mechanized opportunities for exploration, solitude, risk, challenge, and primitive recreation.

MA1a-DC-AR-02. Summer and winter recreation opportunities and experiences are consistent with the Recreation Opportunity Spectrum (ROS) classification of Primitive.

MA1a-DC-AR-03. Opportunities for solitude are moderate to high on the existing trail system with few human encounters expected. Opportunities for solitude are high when traveling cross-country with almost no human encounters expected.

MA1a-DC-AR-04. Campsites may be visible at popular destinations and at major trail junctions. These sites accommodate moderate use and have minimal impacts to wilderness characteristics.

MA1a-DC-AR-05. Directional and regulatory signs are primarily found at trailheads outside of this MA but some signs may be present within these areas.

MA1a-DC-AR-06. Preservation of historic properties is common, although buildings and other structures are rare.

Vegetation

MA1a-DC-VEG-01. 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

MA1a-DC-FIRE-01. Fire plays an increased role as a natural disturbance agent.

Wildlife

MA1a-DC-WL-01. Large remote areas with little human disturbance such as those found in this MA (in conjunction with MAs 1b, 1c, and 5a, 5b, 5c) are retained and contribute habitats for species with large home ranges such as grizzly bear and wolverine and species found only in these habitats such as mountain goat. Habitat conditions within these management areas contribute to wildlife movement within and across the forest.

Watersheds and Water Quality

MA1a-DC-WTR-01. Water bodies and riparian areas provide quality habitat for fish, amphibians, and other aquatic-associated species.

Air Quality

MA1a-DC-AQ-01. Air quality is good and the Air Quality Resource Values (scenery, aquatic ecosystems, vegetation, and wildlife) are protected.

Standards and Guidelines

Access and Recreation

MA1a-STD-AR-01. Motor vehicle use is not allowed.

MA1a-STD-AR-02. Mechanized use is not allowed (e.g. mountain bikes and other wheeled equipment)

MA1a-STD-AR-03. Road construction and/or reconstruction is not allowed.

MA1a-STD-AR-04. Party size shall not exceed eight people and eight head of stock (maximum of 1.5 head per person).

MA1a-GDL-AR-01. Management activities should be consistent with the Scenic Integrity Objective of Very High.

Vegetation

MA1a-GDL-VEG-01. Non-native invasive plant species may be treated where significant values inside or outside wilderness are clearly at risk, including recovery of TES Species.

Timber

MA1a-STD-TBR-01. Timber harvest is not allowed.

MA1a-GDL -TBR-01. Cutting of trees is allowed for such things as trail maintenance or hazard tree mitigation.

Fire

MA1a-GDL-FIRE-01. Natural (lightning caused), unplanned fire ignitions may be managed for resource benefits.

MA1a-GDL-FIRE-02. Prescribed fire may be used when necessary to contribute to the survival of a threatened and endangered species or, if necessary to allow fire to play its natural role in wilderness.

Grazing

MA1a-STD-GRZ-01. Grazing is not allowed.

Minerals

MA1a-STD-MIN-01. Mineral leasing is legally unavailable.

MA1a-STD-MIN-02. The removal of mineral materials is not allowed.

Special Forest Products and Firewood

MA1a-STD-SFP-01. Use for commercial purposes is not allowed.

MA1a-GDL-SFP-01. Use for personal purposes is allowed, but without the aid of motorized equipment (i.e., chainsaws).

MA1b – Recommended Wilderness

Description

These areas (Table 9) are recommended as additions to the National Wilderness Preservation System. For each recommended wilderness, the wilderness character and potential for the area to be included in the National Wilderness Preservation System remain intact until Congressional action is taken.

Table 9. Recommended Additions to the National Wilderness Preservation System.

Recommended Wilderness	Recommended Acres
Cabinet Mountains (additions)	29,900
Roderick	23,500
Scotchman Peaks	35,900
Whitefish Divide	23,500
TOTAL ACRES¹	112,800

¹ Total acres are more than those shown in Table 8 because of overlapping management areas. As noted with Table 8, RNAs (MA4) are higher in the hierarchy than recommended wilderness (MA1b), resulting in acres of RNA being totaled prior to recommended wilderness. RNA acres overlapping with recommended wilderness total 2,500 acres.

Desired Condition

Access and Recreation

MA1b-DC-AR-01. These areas provide non-motorized and non-mechanized opportunities for exploration, solitude, risk, challenge, and primitive recreation. Opportunities for solitude are moderate to high on existing trails with few human encounters expected.

MA1b-DC-AR-02. Summer and winter recreation opportunities and experiences are consistent with the ROS classification of Semi-Primitive Non-Motorized.

MA1b-DC-AR-03. Opportunities for solitude are high when traveling cross-country with almost no human encounters expected.

MA1b-DC-AR-04. Campsites may be visible at popular destinations and at major trail junctions. These sites accommodate moderate use.

MA1b-DC-AR-05. Directional and regulatory signs are primarily found at trailheads outside of this MA but some signs may be present within these areas.

MA1b-DC-AR-06. Preservation of historic properties is common, although buildings and other structures are rare.

Vegetation

MA1b-DC-VEG-01. 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

MA1b-DC-FIRE-01. Fire plays an increased role as a natural disturbance agent.

Wildlife

MA1b-DC-WL-01. Large remote areas with little human disturbance such as those found in this MA (in conjunction with MAs 1a, 1c, and 5a, 5b, 5c) are retained and contribute habitats for species with large home ranges such as grizzly bear and wolverine and species found only in these habitats such as mountain goat. Habitat conditions within these management areas contribute to wildlife movement within and across the forest.

Watersheds and Water Quality

MA1b-DC-WTR-01. Water bodies and riparian areas provide quality habitat for fish, amphibians, and other aquatic-associated species.

Standards and Guidelines

Access and Recreation

MA1b-STD-AR-01. Motor vehicle use is not allowed.

MA1b-STD-AR-02. Mechanized use is not allowed. (e.g. mountain bikes and other wheeled equipment)

MA1b-STD-AR-03. Road construction is not allowed.

MA1b-STD-AR-04. Reconstruction of existing roads is not allowed.

MA1b-GDL-AR-01. Only non-motorized equipment and hand-held motorized equipment is allowed for management activities.

MA1b-GDL-AR-02. Management activities should be consistent with the Scenic Integrity Objective of Very High.

Vegetation

MA1b-GDL-VEG-01. Non-native invasive plant species may be treated.

Timber

MA1b-STD-TBR-01. Timber harvest is not allowed.

MA1b-GDL-TBR-01. Cutting of trees is allowed for such things as trail maintenance or hazard tree mitigation.

Fire

MA1b-GDL-FIRE-01. Natural (lightning caused), unplanned fire ignitions may be managed for resource benefits.

MA1b-GDL-FIRE-02. Prescribed fire may be used as a tool for ecosystem restoration purposes where the need is linked to human-induced changes caused by factors such as fire suppression and/or the introduction of non-native species.

Grazing

MA1b-STD-GRZ-01. Grazing is not allowed.

Minerals

MA1b-STD-MIN-01. The removal of mineral materials is not allowed.

MA1b-GDL-MIN-01. Mineral leasing is available.

Special Forest Products and Firewood

MA1b-STD-SFP-01. Use for commercial purposes is not allowed.

MA1b-GDL-SFP-01. Use for personal purposes is allowed, but without the aid of motorized equipment (i.e., chainsaws).

MA1c –Wilderness Study Areas

Description

The KNF manages one wilderness study area (WSA) – the Ten Lakes WSA. Ten Lakes (34,100 acres) was congressionally designated as a WSA in the Montana Wilderness Study Act of 1977 (Public Law 95-150). It is administered to maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977 when the Act was passed. Some uses that existed prior to the 1977 Act continue to occur.

Desired Condition

Access and Recreation

MA1c-DC-AR-01. This area primarily offers opportunities for primitive recreation although uses established and allowed prior to the legislation are retained if they maintain the wilderness character and the potential for inclusion in the National Wilderness Preservation System that existed in 1977.

MA1c-DC-AR-02. Preservation of historical properties is common, although buildings and other structures are rare.

MA1c-DC-AR-03. Summer recreation opportunities and experiences are consistent with the Recreation Opportunity Spectrum (ROS) classification of Semi Primitive Non-motorized. Winter recreation opportunities and experiences are consistent with the Recreation Opportunity Spectrum (ROS) classification of Semi Primitive motorized.

Vegetation

MA1c-DC-VEG-01. 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

MA1c-DC-FIRE-01. Fire plays an increased role as a natural disturbance agent.

Wildlife

MA1c-DC-WL-01. Large remote areas with little human disturbance such as those found in this MA (in conjunction with MAs 1a, 1b, and 5a, 5b, 5c) are retained and contribute habitats for species with large home ranges. Habitat conditions within these management areas contribute to wildlife movement within and across the forest.

Watersheds and Water Quality

MA1c-DC-WTR-01. Water bodies and riparian areas provide quality habitat for fish, amphibians, and other aquatic-associated species.

Standards and Guidelines

Access and Recreation

MA1c-STD-AR-01. Motor vehicle use is not allowed except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System.

MA1c-STD-AR-02. Mechanized use is not allowed (e.g. mountain bikes and other wheeled equipment) except where it maintains the wilderness character as it existed at the time of designation (1977) and the potential for inclusion in the National Wilderness Preservation System.

MA1c-STD-AR-03. Road construction is not allowed.

MA1c-STD-AR-04. Reconstruction of existing roads is not allowed.

MA1c-GDL-AR-01. Only non-motorized equipment and hand-held motorized equipment is allowed for management activities.

MA1c-GDL-AR-02. Management activities should be consistent with the Scenic Integrity Objective of Very High.

Vegetation

MA1c-GDL-VEG-01. Non-native invasive plant species may be treated and other vegetation restoration projects may occur if the need is linked to human-induced changes and is necessary for the recovery of threatened and endangered species or native ecological communities.

Timber

MA1c-STD-TBR-01. Timber harvest is not allowed.

MA1c-GDL-TBR-01. Cutting of trees is allowed for such things as trail maintenance or hazard tree mitigation.

Fire

MA1c-GDL-FIRE-01. Natural (lightning caused), unplanned fire ignitions may be managed for resource benefits.

MA1c-GDL-FIRE-02. Prescribed fire may be used as a tool for ecosystem restoration purposes where the need is linked to human-induced changes caused by factors such as fire suppression and/or the introduction of non-native species.

Grazing

MA1c-STD-GRZ-01: Grazing is not allowed.

Minerals

MA1c-STD-MIN-01. Mineral leasing is legally unavailable.

MA1c-STD-MIN-02. The removal of mineral materials is not allowed.

Special Forest Products and Firewood

MA1c-STD-SFP-01. Use for commercial purposes is not allowed.

MA1c-GDL-SFP-01. Use for personal purposes is allowed.

MA2 – Eligible Wild and Scenic Rivers

Description

This MA applies to river segments that have been identified as eligible for inclusion as part of the Wild and Scenic Rivers System (W&SR) under the authority granted by the Wild and Scenic Rivers Act of 1968, as amended. Eligible rivers and adjacent areas are managed to protect the free-flowing nature of these rivers, and outstandingly remarkable scenic, recreational, geologic, fish, wildlife, historic, cultural, or other similar values for the benefit and enjoyment of present and future generations. Congressional action designates these areas. Eligible rivers are classified as:

- **Wild Rivers:** Those rivers or sections of rivers that are free of impoundments and generally inaccessible except by trail, with watersheds or shorelines essentially primitive and waters unpolluted. These represent vestiges of primitive America.
- **Scenic Rivers:** Those rivers or sections of rivers that are free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.
- **Recreational Rivers:** Those rivers or sections of rivers readily accessible by road or railroad that may have some development along their shorelines, and that may have undergone some impoundment or diversion in the past.

A total of 249 miles of river have been identified as eligible in this Plan (Table 10).

Table 10. Eligible Wild and Scenic Rivers.

River / Outstandingly Remarkable Value	District	Status	Preliminary Classification	Miles	NFS Acres
Quartz Creek System / Scenery					
Quartz Creek / Seg. 1	Libby	Eligible	Recreational	9.5	2,572
West Fork Quartz Creek / Seg. 2	Libby	Eligible	Wild	2.8	892
West Fork Quartz Creek / Seg. 3	Libby	Eligible	Recreational	3.1	904
Kootenai River / Scenery, Fisheries, and History					
Seg. 1	Libby	Eligible	Recreational	8.9	737
Seg. 2	Libby	Eligible	Recreational	10.1	362
Seg. 3	3 Rivers/ Libby	Eligible	Recreational	8.8	2,299
Seg. 4	3 Rivers	Eligible	Recreational	10.2	235
Seg. 5	3 Rivers	Eligible	Recreational	8.7	2,309
Yaak River / Scenery and History					
Seg. 1	3 Rivers	Eligible	Recreational	19.1	1,842
Seg. 2	3 Rivers	Eligible	Recreational	9.8	2,734
Seg. 3	3 Rivers	Eligible	Recreational	11.4	2,069
Seg. 4	3 Rivers	Eligible	Wild	9.3	2,586
West Fork Yaak River / Scenery and History					
Seg. 1	3 Rivers	Eligible	Wild	4.3	1,329
Seg. 2	3 Rivers	Eligible	Recreational	5.6	1,428
Vinal Creek System / Scenery and Recreation					
Vinal Creek / Seg. 1	3 Rivers	Eligible	Scenic	4.1	1,074
Turner Creek / Seg. 2	3 Rivers	Eligible	Scenic	1.0	386
Vermilion River / Scenery and History					
Seg. 1	Cabinet	Eligible	Recreational	13.2	3,599
Bull River System / Scenery					
Bull River / Seg. 1	Cabinet	Eligible	Recreational	11.3	1,911
Bull River / Seg. 2	Cabinet	Eligible	Recreational	9.1	1,622
North Fork and Middle Fork Bull River / Seg.3	Cabinet	Eligible	Wild	17.4	4,135
East Fork Bull River / Seg. 4	Cabinet	Eligible	Recreational	4.5	1,118
East Fork Bull River / Seg. 5	Cabinet	Eligible	Wild	3.0	997
North Fork of the East Fork Bull River / Seg. 6	Cabinet	Eligible	Recreational	2.2	616
North Fork of the East Fork Bull River / Seg. 7	Cabinet	Eligible	Wild	1.4	497
Big Creek System / Scenery and Recreation					
Big Creek / Seg.1	Rexford	Eligible	Recreational	7.6	2,261
South Fork Big Creek / Seg. 2	Rexford	Eligible	Recreational	6.7	2,103
Little N. Fork Big Creek / Seg. 3	Rexford	Eligible	Wild	1.6	452
Good Creek / Seg. 4	Rexford	Eligible	Wild	2.4	717
North Fork Big Creek / Seg. 5	Rexford	Eligible	Wild	5.6	1,797

River / Outstandingly Remarkable Value	District	Status	Preliminary Classification	Miles	NFS Acres
Copeland Creek / Seg. 6	Rexford	Eligible	Wild	1.8	564
Lookout Creek / Seg. 7	Rexford	Eligible	Wild	2.4	725
East Fork Lookout Creek / Seg. 7	Rexford	Eligible	Wild	1.5	443
Unnamed Tributary to Lookout Creek / Seg. 7	Rexford	Eligible	Wild	1.7	515
Grave Creek System / Scenery and History					
Grave Creek / Seg. 1	Fortine	Eligible	Recreational	13.0	3,699
Stahl Creek / Seg. 2	Fortine	Eligible	Recreational	4.3	1,244
Clarence Creek / Seg. 3	Fortine	Eligible	Recreational	5.2	1,654
Blue Sky Creek / Seg. 4	Fortine	Eligible	Recreational	6.3	2,002
Total¹				249	56,429

¹ Total acres are more than those shown in Table 8 because of overlapping management areas. As noted with Table 8 several management areas are higher in the hierarchy than MA2. There are 4,200 acres of MA2 within MA1a, 3,900 acres in MA1b, and 1,000 acres in MA1c.

Desired Condition

Table 11. Desired Condition - Eligible Rivers.

	Eligible Wild River Segments	Eligible Scenic River Segments	Eligible Recreation River Segments
Access and Recreation			
MA2-DC-AR-01. Eligible Wild, Scenic, or Recreational Rivers and their adjacent areas retain their free-flowing status and preliminary classification, and conserve or enhance their outstandingly remarkable values.	X	X	X
MA2-DC-AR-02. Eligible wild river segments provide non-motorized opportunities for exploration, solitude, risk, challenge, and primitive recreation.	X		
MA2-DC-AR-03. Opportunities for solitude are moderate to high with few human encounters.	X		
MA2-DC-AR-04. Summer and winter recreation opportunities and experiences are consistent with the Recreation Opportunity Spectrum (ROS) classification of Primitive or Semi-Primitive Non-Motorized.	X		
MA2-DC-AR-05. Preservation of historic properties is common, although buildings and other structures are rare.	X		
MA2-DC-AR-06. Eligible scenic river segments provide primarily non-motorized and limited motorized recreation opportunities.		X	
MA2-DC-AR-07. Summer and winter recreation opportunities and experiences are consistent with the ROS classification of Semi-Primitive or Roaded Natural.		X	

	Eligible Wild River Segments	Eligible Scenic River Segments	Eligible Recreation River Segments
MA2-DC-AR-08. Preservation of historic properties is common.		X	X
MA2-DC-AR-09. Eligible recreational river segments provide a wide variety of motorized and non-motorized recreation opportunities. Development within river corridors is designed for recreational use by the forest visitor while protecting the environment and river-related resources.			X
MA2-DC-AR-10. Summer and winter recreation opportunities and experiences are consistent with the ROS classification of Semi-Primitive Motorized or Roaded Natural.			X
Vegetation			
MA2-DC-VEG-01. Natural ecological processes (e.g. plant succession) and disturbances (e.g. floods, fire, insects and disease) are the primary forces affecting the composition, structure and pattern of vegetation.	X	X	X
MA2-DC-VEG-02. Non-native invasive plants are rare.	X		
Fire			
MA2-DC-FIRE-01. Fire plays an increased role as a natural disturbance agent.	X	X	X

Standards and Guidelines

Table 12. Standards and Guidelines - Eligible Rivers.

	Eligible Wild River Segments	Eligible Scenic River Segments	Eligible Recreation River Segments
Access and Recreation			
MA2-GDL-AR-01. Motor Vehicle use should not occur.	X		
MA2-GDL-AR-02. Mechanized use (e.g. mountain bikes and other wheeled equipment) is allowed.	X	X	X
MA2-GDL-AR-03. Road construction should not occur.	X		
MA2-GDL-AR-04. Reconstruction of existing roads is allowed.	X	X	X
MA2-GDL-AR-05. Management activities should be consistent with the Scenic Integrity Objective of Very High.	X		
MA2-GDL-AR-06. Motor vehicle use is allowed.		X	X
MA2-GDL-AR-07. Road construction is allowed.		X	X
MA2-GDL-AR-08. Management activities should be consistent with the Scenic Integrity Objective of High.		X	
MA2-GDL-AR-09. Management activities should be consistent with the Scenic Integrity Objective of Moderate to High.			X
Vegetation			
MA2-GDL-VEG-01. Non-native invasive plant species may be treated and other vegetation restoration projects may occur if the need is linked to human-induced changes and is necessary for the recovery of TES species or native ecological communities.	X		
Timber			
MA2-STD-TBR-01: Timber harvest is not allowed.	X		
MA2-GDL-TBR-01: Cutting of timber is allowed for such things as trail maintenance or hazard tree mitigation.	X		
MA2-GDL-TBR-02. Timber harvest is allowed to maintain or restore the values for which the eligible scenic or recreational river was identified. Timber harvest is not scheduled and does not contribute towards the allowable sale quantity.		X	X
Fire			
MA2-GDL-FIRE-01. Natural (lightning-caused), unplanned fire ignitions may be managed for resource benefits.	X		
MA2-GDL-FIRE-02. Prescribed fire may be used as a tool for ecosystem restoration purposes where the need is linked to human-induced changes caused by factors such as fire suppression and/or the introduction of non-native species.	X		
MA2-GDL-FIRE-03. Natural (lightning-caused), unplanned fire ignitions, as well as prescribed fire, may be managed for resource benefits.		X	X
Grazing			
MA2-STD-GRZ-01: Grazing is not allowed.	X	X	X

	Eligible Wild River Segments	Eligible Scenic River Segments	Eligible Recreation River Segments
Minerals			
MA2-STD-MIN-01. Removal of mineral materials is not allowed.	X		
MA2-GDL-MIN-01. Mineral leasing is available.	X	X	X
MA2-GDL-MIN-02. Removal of mineral materials is allowed.		X	X
Special Forest Products and Firewood			
MA2-STD-SFP-01. Use for commercial purposes is not allowed.	X	X	X
MA2-GDL-SFP-01. Use for personal purposes is allowed.	X	X	X

MA3 – Botanical, Geological, Historical, Recreational, Scenic, or Zoological Areas

Description

Located across the Forest, these special places have unique, unusual, or important characteristics. They are administratively designated areas and managed for public use and enjoyment to protect and conserve the values for which they were identified. They are usually small (less than 1,000 acres) except for Scenic, Recreational, and Pioneer areas that are usually several thousand acres in size. Individual areas of like classification are managed similarly. Management activities may vary where there are multiple classifications, in which case the most restrictive guidance applies.

Table 13. Existing and Recommended Botanical, Geological, Pioneer, Recreational, or Scenic Areas.

Name	District	Existing (Acres)	Recommended (Acres)	Classification
Berray Cedars ¹	Cabinet	86		Botanical
Hidden Lake ¹	Fortine	607		Botanical
Kootenai Falls ^{1,5}	3 Rivers/ Libby	420		Historical
Lower West Fork Yaak Falls ^{1,4}	3 Rivers	274		Historical / Geological
Northwest Peak Scenic Area ^{1,4}	3 Rivers	4,714	8,533 ²	Scenic
Rexford Hoodoos ¹	Rexford	83		Geological
Ross Creek Scenic Area ^{1,4}	3 Rivers	101		Scenic / Historical
Star Canyon ¹	3 Rivers	81		Geological
Ten Lakes Scenic Area ¹	Fortine	6,542	8,403 ²	Scenic
Tenmile Talus ¹	Rexford	390		Geological
Upper Big Creek Riparian Ecosystem ¹	Rexford/ Libby	2,966		Botanical
Wood Creek Larch Scenic Area ¹	3 Rivers	115		Scenic
Yahk Mining District ¹	3 Rivers	456		Historical
Bad Medicine ⁴	3 Rivers		1,938	Zoological / Historical

Name	District	Existing (Acres)	Recommended (Acres)	Classification
Baree Creek ⁴	Libby		57	Historical
Barnum Wetland	Libby		227	Botanical
Barron Creek ⁵	Rexford		326	Historical
Big Creek Face ⁴	Rexford		327	Historical
Bitterroot Point	Libby		126	Botanical / Historical
Callahan Historic Mining & Logging District	3 Rivers		3,262	Historical
Chicago Peak	Cabinet		278	Historical
Cody Lakes	Libby		194	Botanical / Zoological
East Fork Pipe Creek	Libby		1,118	Geological
Falls Creek	3 Rivers		42	Scenic/Geological
Fivemile ⁴	Libby		80	Historical
Flower Lake	Libby		16	Botanical
French Creek Cedars	3 Rivers		131	Botanical
Gateway Prairie	Rexford		2,147	Botanical
Geiger Lakes ⁴	Libby		578	Historical
Halverson Face	3 Rivers		47	Botanical
Kelsey Creek	3 Rivers		53	Botanical
Kenelty Caves	Libby		87	Geological
Kootenai Mountain ⁴	3 Rivers		217	Historical
Little North Fork Falls ⁴	Rexford		6	Recreational / Historical
Lost Horse Fen	3 Rivers		308	Botanical
Lower Bristow ⁴	Libby		371	Historical
Lower Stone Hill ⁵	Rexford		81	Historical
Lower Sunday Creek Ecosystem	Fortine		150	Botanical/ Historical
Pete Creek	3 Rivers		320	Botanical
Pinkham Falls ⁴	Rexford		21	Historical / Geological
Rock Creek Meadows	Cabinet		186	Botanical
Rocky Fivemile Forest	Fortine		214	Botanical
Ross Falls ⁴	3 Rivers		44	Historical / Geological
Silver Butte Mountain ⁴	Libby		170	Historical
Spar Springs	3 Rivers		196	Geological
Spread Otis Creeks	3 Rivers		382	Botanical
Stone Hill	Rexford		760	Recreational / Geological
Sutton Falls ⁴	Rexford		113	Historical / Geological
Tenmile Falls ⁴	Rexford		187	Historical / Geological
Tepee Lake	Libby		46	Botanical
Terriault Pass	Fortine		493	Geological
Vermilion Falls	Cabinet		99	Recreational / Historical
Vinal Lake ⁴	3 Rivers		83	Historical/ Botanical

Name	District	Existing (Acres)	Recommended (Acres)	Classification
Yaak Falls ⁴	3 Rivers		44	Historical / Recreational
Total Acres³		16,835	32,459	

¹ Areas designated under the 1987 Forest Plan (as amended).

² Additional acres to those designated in the 1987 Forest Plan.

³ Total acres are more than those shown in Table 8 because of overlapping management areas. As noted with Table 8, several management areas are higher in the hierarchy than MA3. There are 900 acres of MA3 within MA1a, 100 acres in MA1b, 15,400 acres in MA1c, 1,200 acres in MA2, and 100 acres in MA4.

⁴ Traditional Cultural Properties

⁵ Traditional Cultural Properties and Historic Area

Desired Condition

Access and Recreation

MA3-DC-AR-01. These areas are maintained in a substantially natural condition for use by the public while protecting those special characteristics for which they are designated.

MA3-DC-AR-02. Summer and winter recreation opportunities and experiences are consistent with the Recreation Opportunity Spectrum (ROS) classification in the following areas:

- Botanical: Semi Primitive Non-Motorized
- Geological: Semi Primitive Non-Motorized
- Scenic: Primitive to Semi Primitive Non-Motorized
- Recreational: Semi Primitive Motorized to Rural
- Historical: Semi Primitive to Rural
- Zoological: Semi Primitive Non-Motorized

MA3-DC-AR-03. Interpretation of resources for public education or recreation are provided in some of these areas. Buildings are rare, however preservation of historic properties continues.

MA3-DC-AR-04. Botanical, historical, and zoological areas emphasize non-motorized recreation experiences and access. Recreational, geological, and scenic areas provide motorized and non-motorized recreational experiences and access. Motorized and mechanized use occurs only on designated routes.

Vegetation

MA3-DC-VEG-01. Natural ecological processes (e.g., plant succession) and disturbances (e.g. insects and disease) are the primary forces affecting the composition, structure and pattern of vegetation.

Fire

MA3-DC-FIRE-01. The role that wildfire plays is somewhat limited in most of these special areas due to the risk that fire could pose to the unique characteristics and values for which these areas were identified.

Wildlife

MA3-DC-WL-01. The Northwest Peak and Ten Lakes areas, in combination with MAs 1 and 5, contain large remote areas that contribute to movement across the Forest.

Standards and Guidelines

Access and Recreation

MA3-STD-AR-01. Road construction is not allowed in Botanical, Historical, and Zoological Areas.

MA3-GDL-AR-01. Motor vehicle use in Botanical, Historical, and Zoological areas should not occur.

MA3-GDL-AR-02. Motorized use is allowed in Geological, Recreational, and Scenic Areas.

MA3-GDL-AR-03. Mechanized use (e.g., mountain bikes and other wheeled equipment) is allowed in Botanical, Historic, and Zoological Areas on designated routes only.

MA3-GDL-AR-04. Mechanized use (e.g., mountain bikes and other wheel equipment) is allowed in Geological, Recreational and Scenic Areas.

MA3-GDL-AR-05. Road construction is allowed in Geological, Recreational and Scenic Areas.

MA3-GDL-AR-06. Reconstruction of existing roads is allowed.

MA3-GDL-AR-07. Management activities in the Northwest Peak, Ten Lakes, Ross Creek Cedars, and Wood Creek Larch Scenic Areas should be consistent with the Scenic Integrity Objective of High to Very High.

MA3-GDL-AR-08. Management activities in the other classifications should be consistent with the Scenic Integrity Objective of Moderate to High.

Timber

MA3-STD-TBR-01. Timber harvest is allowed to maintain or restore the values for which the Special Area was identified. Timber harvest is not scheduled and does not contribute towards the allowable sale quantity.

Fire

MA3-GDL-FIRE-01. Natural (lightning caused), unplanned ignitions are generally not allowed to be managed for resource benefits in these areas unless the values and unique characteristics for which the area was designated can be maintained or enhanced by the use of fire, and the risk of harm to those values is small. For each category of special area, Table 16 indicates whether or not the use of natural, unplanned ignitions is generally allowed.

MA3-GDL-FIRE-02. Prescribed fire may be used if the values and unique characteristics for which the area was designated can be maintained, enhanced or protected by the use of fire, and the risk of harm to those values is small.

Grazing

MA3-STD-GRZ-01. Grazing is not allowed.

Minerals

MA3-STD-MIN-01. Removal of mineral materials is not allowed.

MA3-GDL-MIN-01. Mineral leasing should be available.

Special Forest Products and Firewood

MA3-STD-SFP-01. Use for commercial purposes is not allowed.

MA3-STD-SFP-02. Use for personal purposes is not allowed in Botanical, Historical, and Zoological areas.

MA3-GDL-SFP-01. Use for personal purposes is allowed in Geological, Recreational, and Scenic areas.

MA4a – Research Natural Areas

Description

The KNF has eight established RNAs and three recommended RNAs (Table 14). They are established to provide for the study and protection of a full range of habitat types identified in the “Research Natural Areas of the Northern Region: Status and Needs Assessment” (1996). These areas form a long-term network of ecological reserves established as baseline areas for non-manipulative research, education, and the maintenance of biodiversity. Most of these areas protect late-seral or climax conditions. They are cooperatively managed with the Rocky Mountain Research Station (RMRS). The recommended areas are designated by the Regional Forester with Station Director concurrence. These RNAs contain undisturbed conditions that are valuable in monitoring the effects of climate change to ecosystems in a late-seral or climax condition.

Table 14. Established and Recommended Research Natural Areas (RNAs).

RNA Name	GA Name	District	Established Acres	Recommended Acres
Big Creek	Koocanusa	Rexford	178	
Hoskins Lake	Yaak	Three Rivers	376	
LeBeau	Tobacco	Fortine	411	
Lower Ross Creek	Bull	Three Rivers	1,874	
Norman Parmenter	Libby	Libby	1,289	
Pete Creek Meadows	Yaak	Three Rivers	153	
Ulm Peak	Clark	Cabinet	689	
Wolf Weigel	Fisher	Libby	240	
Doonan Peak	Bull	Three Rivers		504
Huson Peak	Yaak / Libby	Libby		731
Seven Point Genetical	Clark	Cabinet		1,991
Total RNA Acres			5,210	3,226

Desired Condition

Access and Recreation

MA4-DC-AR-01. Buildings are not present within these areas.

MA4-DC-AR-02. Summer and winter recreation opportunities and experiences are consistent with the Recreation Opportunity Spectrum (ROS) classification of Primitive.

MA4-DC-AR-03. Preservation of historic properties may take place if addressed in the Establishment Record or RNA management plan.

MA4-DC-AR-04. Existing trails are minimal, with non-motorized use and other recreational activities infrequent.

MA4-DC-AR-05. These areas are substantially free from human activities, although research and educational activities occur.

Vegetation

MA4-DC-VEG-01. Under special circumstances, deliberate manipulation may be used to maintain or reestablish ecological processes within a RNA (i.e., if approved in the RNA management plan or Establishment Record).

MA4-DC-VEG-02. Non-native invasive plants are rare.

MA4-DC-VEG-03. Non-manipulative research activities and projects are conducted with non-motorized equipment

Standards and Guidelines

Access and Recreation

MA4-STD-AR-01: Motor vehicle use is not allowed.

MA4-STD-AR-02. Mechanized use (e.g., mountain bikes and other wheeled vehicles) is not allowed except on designated routes.

MA4-STD-AR-03. Road construction is not allowed.

MA4-STD-AR-04. Reconstruction of existing roads is not allowed.

MA4-GDL-AR-01. Management activities should be consistent with the Scenic Integrity Objective of Very High.

Timber

MA4-STD-TBR-01. Timber harvest is not allowed.

MA4-GDL-TBR-01. Cutting of trees may only occur as identified in the RNA Establishment Record and/or approved RNA Management plan.

Fire

MA4-GLD-FIRE-01. Prescribed fire or the use of natural, unplanned ignitions is not allowed unless the RNA establishment record and/or approved RNA management plan indicates otherwise.

Grazing

MA4-STD-GRZ-01. Grazing is not allowed.

Minerals

MA4-STD-MIN-01. Removal of mineral materials is not allowed.

MA4-GDL-MIN-01. Mineral leasing is available.

Special Forest Products and Firewood

MA4-STD-SFP-01. Use for commercial purposes is not allowed.

MA4-STD-SFP-02. Use for personal purposes is not allowed.

MA5a, 5b, and 5c – Backcountry

Description

This MA is made up of relatively large areas (generally without roads) and provides a variety of motorized and non-motorized recreation opportunities.

Trails are the primary improvements constructed and maintained for recreation users. In some areas, lookouts, cabins, or other structures are present as well as some evidence of management activities. This Management Area, if within an Inventoried Roadless Area in Idaho, has additional management requirements as described in the Idaho Roadless Rule (see Appendix E – Idaho Roadless Rule).

Desired Condition – MA5a, MA5b, and MA5c

Access and Recreation

MA5a,b,c-DC-AR-01. These areas provide more remote and undeveloped recreation experiences largely through the management of the various trail systems (i.e., motorized and non-motorized).

MA5a,b,c-DC-AR-02. Summer and winter recreation opportunities and experiences are consistent with the Recreation Opportunity Spectrum (ROS) classifications of Semi-Primitive Motorized and Non-Motorized.

MA5a,b,c-DC-AR-03. Construction of new facilities is rare, with the possible exception of trails.

MA5a,b,c-DC-AR-04. Preservation of historical features is common, although buildings and other structures are rare.

Vegetation

MA5a,b,c-DC-VEG-01. 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

MA5a,b,c-DC-FIRE-01: The use of fire (both prescribed fire as well as natural, unplanned ignitions) serves as the primary tool for trending the vegetation towards the desired conditions as well as serving other important ecosystem functions.

Timber

MA5a,b,c-DC-TBR-01. Timber harvest and road construction are limited and roads would generally be temporary.

Wildlife

MA5a,b,c-DC-WL-01. Large remote areas with little human disturbance such as those found in these MAs (in conjunction with MAs 1a, 1b, and 1c) are retained and contribute habitats for species with large home ranges. Habitat conditions within these management areas contribute to wildlife movement within and across the forest.

Watersheds and Water Quality

MA5a,b,c-DC-WTR-01. Water bodies and riparian areas provide quality habitat for fish, amphibians, and other aquatic-associated species.

Desired Condition – MA5a

MA5a-DC-AR-01. MA 5a provides opportunities for year-round non-motorized use.

Desired Condition – MA5b

MA5b-DC-AR-01. MA 5b provides opportunities for year-round non-motorized use, wheeled motorized vehicle use on certain designated roads and trails, and over-snow vehicle use.

Desired Condition – MA5c

MA5c-DC-AR-01. MA 5c provides opportunities for year-round non-motorized use and over-snow vehicle use.

Standards and Guidelines – MA5a, MA5b, and MA5c

Access and Recreation

MA5a,b,c-STD-AR-01. A road may not be constructed or reconstructed in 5a, 5b, or 5c except where:

- a road is needed to protect public health and safety in cases where the threat of loss of life or property is imminent;
- a road is needed under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Section 311 of the Clean Water Act, or the Oil Pollution Act;
- a road is needed pursuant to reserved or outstanding rights, or as provided for by statute or treaty or other legal duty of the United States;
- road realignment is needed to prevent irreparable resource damage that arises from a authorized road and that cannot be mitigated by road maintenance. Road realignment may occur only if the road is deemed essential for public or private access, natural resource management, or public health and safety;
- road reconstruction is needed to implement a critical road safety improvement project on an authorized road;
- the Secretary of Agriculture determines that a Federal Aid Highway project is in the public interest and no other reasonable and prudent alternative exist; or
- a road is needed in conjunction with the continuation, extension, or renewal of a mineral lease on lands that are under lease by the Secretary of the Interior or for a new lease issued immediately upon expiration of an existing lease.

Timber

MA5a,b,c-STD-TBR-01. Timber harvest is limited, and may only occur to: improve habitat for listed or proposed threatened and endangered species to maintain or restore ecosystem composition and structure; to reduce the risk of uncharacteristic wildfires; or to address insect and disease or other forest health concerns. Timber harvest may also be allowed for administrative uses as defined in 36 CFR 223.2. Timber harvest is not scheduled and does not contribute towards the allowable sale quantity.

Fire

MA5a,b,c -GDL-FIRE-01. Natural (lightning caused), unplanned fire ignitions, as well as prescribed fire may be used for resource benefits.

Grazing

MA5a,b,c-STD-GRZ-01. Grazing is allowed in 5a, 5b, and 5c.

Minerals

MA5a,b,c-GDL-MIN-01. Mineral leasing is available in 5a, 5b, and 5c.

MA5a,b,c-GDL-MIN-02. Removal of mineral material should not occur in 5a, 5b, or 5c.

Special Forest Products and Firewood

MA5a,b,c-GDL-SFP-01. Use for commercial purposes is allowed in 5a, 5b, and 5c.

MA5a,b,c-GDL-SFP-02. Use for personal purposes is allowed in 5a, 5b, and 5c.

Standards and Guidelines – MA5a

Access and Recreation

MA5a-GDL-AR-01. Wheeled motor vehicle use should not occur except on designated routes.

MA5a-GDL-AR-02. Over-snow vehicle use should not occur.

MA5a-GDL-AR-03. Mechanized use is allowed (e.g. mountain bikes and other wheeled equipment.).

MA5a-GDL-AR-04. Management activities should be consistent with the Scenic Integrity Objective of Moderate to High.

Standards and Guidelines – MA5b

Access and Recreation

MA5b-GDL-AR-01. Motor vehicle use is allowed.

MA5b-GDL-AR-02. Mechanized use is allowed (e.g., mountain bikes and other wheeled equipment).

MA5b-GDL-AR-03. Management activities should be consistent with the Scenic Integrity Objective of Moderate to High.

Standards and Guidelines – MA5c

Access and Recreation

MA5c-GDL-AR-01. Wheeled motor vehicle use should not occur except on designated routes.

MA5c-GDL-AR-02. Over-snow vehicle use is allowed.

MA5c-GDL-AR-03. Management activities should be consistent with the Scenic Integrity Objective of Moderate to High.

MA6 – General Forest

Description

Most of this MA consists of relatively large areas with roads, trails, structures, and signs of forest management activities. This MA, if within an Idaho Roadless Area, has additional management requirements as described in the Idaho Roadless Rule (see Appendix E – Idaho Roadless Rule).

This MA contains lands generally suitable for timber production, with timber harvest contributing to regulated timber harvest estimates.

Desired Condition

Access and Recreation

MA6-DC-AR-01. Existing recreation facilities are managed to accommodate public use and provide safe recreation experiences.

MA6-DC-AR-02. Summer and winter recreation opportunities and experiences are consistent with the ROS classification of Roaded Natural or Rural.

MA6-DC-AR-03. A range of recreational opportunities (e.g. motorized and non-motorized) are provided within this MA while route conditions are maintained or improved.

Vegetation

MA6-DC-VEG-01. In much of this MA, vegetation management activities have a dominant role in affecting the composition, structure and pattern of vegetation. These management activities trend the vegetation towards the desired conditions. Although natural ecological processes and disturbances are still present, they are influenced more by human activity in this MA than in others.

Watersheds and Water Quality

MA6-DC-WTR-01. Watershed and vegetative restoration is achieved predominantly through restoration activities but also through natural ecological processes.

MA6-DC-WTR-02. Restoration activities in MA6 are designed to: improve watershed and aquatic resource conditions, improve vegetation conditions, reduce fuels, improve wildlife habitat, or for other resource benefits.

Standards and Guidelines

Access and Recreation

MA6-GDL-AR-01. Motor vehicle use is allowed.

MA6-GDL-AR-02. Mechanized use is allowed (e.g., mountain bikes and other wheeled equipment).

MA6-GDL-AR-03. Road construction is allowed.

MA6-GDL-AR-04. Reconstruction of existing roads is allowed.

MA6-GDL-AR-05. Management activities should be consistent with the Scenic Integrity Objective of Low to High.

Timber

MA6-STD-TBR-01. On lands suitable for timber production, timber harvest is allowed for the purpose of timber growth and yield while maintaining productive capacity. Timber harvest is scheduled and contributes to the allowable sale quantity.

MA6-STD-TBR-02. On lands not suitable for timber production, timber harvest is allowed to meet specific resource objectives other than timber growth and yield. Timber harvest is not scheduled and does not contribute towards the allowable sale quantity.

Fire

MA6-GDL-FIRE-01. Natural (lightning caused), unplanned fire ignitions, as well as prescribed fire may be used for resource benefits.

Grazing

MA6-STD-GRZ-01. Grazing is allowed.

Minerals

MA6-GDL-MIN-01. Mineral leasing is available.

MA6-GDL-MIN-02. Removal of mineral materials is allowed.

Special Forest Products and Firewood

MA6-GDL-SFP-01. Use for commercial purposes is allowed.

MA6-GDL-SFP-02. Use for personal purposes is allowed.

MA7 – Primary Recreation Areas

Description

This MA applies to two areas on the KNF: the Turner Mt. Ski area and the area around Lake Koocanusa (Table 15). Turner Mt. is a lift-served downhill ski area with approximately a four month operating season. Lake Koocanusa on the other hand offers year-round recreation opportunities with the 90 mile long lake as the main attraction. A variety of campgrounds and boat ramps provide an array of recreational opportunities and water related experiences in a forested environment. The lake is flanked on the east and west sides by the 67 mile long Lake Koocanusa Scenic Byway.

Lands adjacent to Lake Koocanusa are managed in conjunction with the Bonneville Power Administration (BPA) Wildlife Mitigation program and provide habitat for mule deer, bighorn sheep (Ural Tweed herd), and other big game.

Recreation use in these areas is high. The sounds of people are common and interaction between visitors is frequent. Past management activities both inside and outside these areas are easily noticeable to visitors.

Table 15. Primary Recreation Areas

Primary Recreation Areas	District	Acres
Lake Koocanusa	Libby and Rexford	14,904
Turner Mountain Ski Area	Libby	852
TOTAL ACRES¹		15,756

¹ Total acres are more than those shown in Table 8 because of overlapping management areas. As noted with Table 8, several management areas are higher in the hierarchy than MA7. There are 100 acres of MA2, 100 acres in MA3 and 200 acres in MA4a.

Desired Condition

Access and Recreation

MA7-DC-AR-01. These recreation areas and sites are maintained or improved to serve the forest visitor and provide a specific recreation experience. Major site modifications and facility installations (both private and public) are present in some of these areas. These installations and improvements appear individually or in a combination within recreational complexes.

MA7-DC-AR-02. Summer and winter recreation opportunities and experiences are consistent with the ROS classification of Roaded Natural and Rural.

MA7-DC-AR-03. Trails are developed and maintained to a high standard.

MA7-DC-AR-04. Natural environments within these areas are modified to provide specific recreation experiences.

MA7-DC-AR-05. Many facilities are designed for specific activities used by large numbers of people and are fully accessible. These facilities blend in with the forest surroundings and provide the necessary services for forest visitors. Buildings and structures serve administrative and historic preservation purposes.

MA7-DC-AR-06. Signage increases user safety and provides relevant information. Interpretive information is provided where appropriate.

Vegetation

MA7-DC-VEG-01. Vegetation alterations are made while considering the natural-appearing landscape and timber may be harvested to enhance recreational values, mitigate safety concerns (e.g. hazardous tree removal), or for fuel reduction.

MA7-DC-VEG-02. Vegetative manipulation provides for safety and accommodates both existing and new facilities. Vegetative manipulation within ski areas maintains and creates ski runs.

Standards and Guidelines

Access and Recreation

MA7-GDL-AR-01. Motor vehicle use is allowed.

MA7-GDL-AR-02. Mechanized use is allowed (e.g. mountain bikes and other wheeled equipment).

MA7-GDL-AR-03. Road construction is allowed.

MA7-GDL-AR-04. Reconstruction of existing roads is allowed.

MA7-GDL-AR-05. Management activities should be consistent with the Scenic Integrity Objective of Low to High.

MA7-GDL-AR-06. Management activities in the Lake Koocanusa Area should be consistent with the Scenic Integrity Objective of Moderate.

Timber

MA7-STD-TBR-01. Timber harvest is allowed to maintain or restore the resource values of the recreational area. Timber harvest is not scheduled and does not contribute toward the allowable sale quantity.

Fire

MA7-GDL-FIRE-01. Natural (lightning caused), unplanned fire ignitions, as well as prescribed fire may be used for resource benefits.

Grazing

MA7-GDL-GRZ-01. Grazing may continue to occur within the West Kootenai allotment.

Minerals

MA7-STD-MIN-01. Removal of mineral materials is not allowed at Turner Mountain Ski Area.

MA7-GDL-MIN-01. Mineral leasing is available.

MA7-GDL-MIN-02. Removal of mineral materials is allowed in the Lake Koocanusa Area.

Special Forest Products and Firewood

MA7-GDL-SFP-01. Use for commercial purposes is allowed.

MA7-GDL-SFP-02. Use for personal purposes is allowed.

Table 16. Allowable Uses, by Management Area.

Management Areas	Timber Harvest	Timber Production (scheduled on rotation basis)	Commercial Use – Special Forest Products & Firewood	Personal Use – Special Forest Products & Firewood	Prescribed Fire	Natural, Unplanned Wildfire	Grazing ¹¹	Wheeled Motor Vehicle	Over-snow Motor Vehicle	Mechanized (e.g. mountain bike)	Road Construction (permanent or temporary)	Road Reconstruction	Minerals - Leasable	Minerals - Mineral Materials
1a – Wilderness	N	N	N	Y ³	Y	Y	N	N	N	N	N	N	N	N
1b – Recommended Wilderness	N	N	N	Y ⁴	Y	Y	N	N	N	N	N	N	Y	N
1c – Wilderness Study Areas	N	N	N	Y	Y	Y	N	N	Y	Y	N	N	N	N
2 – Eligible Wild & Scenic Rivers (Wild)	N	N	N	Y	Y	Y	N	N ^{7,10}	N ¹⁰	Y	N	Y	Y	N
2 – Eligible Wild & Scenic Rivers (Scenic & Recreational)	Y	N	N	Y ⁵	Y	Y	N	Y ⁷	Y	Y	Y	Y	Y	Y
3 – Special Areas (Botanical & Zoological)	Y	N	N	N	Y ¹²	N ¹²	N	N ^{7,10}	N ¹⁰	Y ⁷	N	Y	Y	N
3 – Special Areas (Historic)	Y	N	N	N	Y ¹²	Y ¹²	N	N ^{7,10}	N ¹⁰	Y ⁷	N	Y	Y	N
3 – Special Areas (Recreational & Geological)	Y	N	N	Y	Y ¹²	N ¹²	N	Y ⁷	Y	Y	Y	Y	Y	N
3 – Special Areas (Scenic)	Y	N	N	Y	Y ¹²	Y ¹²	N	Y ⁷	Y	Y	Y	Y	Y	N
4 –Research Natural Areas	N ¹	N	N	N	N ¹³	N ¹³	N	N	N	N ⁷	N	N	Y	N
5a – Backcountry (nonmotorized year-round)	Y ²	N	Y	Y	Y	Y	Y	N ⁷	Y ¹⁰	Y	N ⁸	N ⁸	Y	N
5b – Backcountry (motorized and nonmotorized year-round)	Y ²	N	Y	Y	Y	Y	Y	Y ⁷	Y	Y	N ⁸	N ⁸	Y	N
5c – Backcountry (motorized winter, nonmotorized year round)	Y ²	N	Y	Y	Y	Y	Y	Y ⁷	Y	Y	N ⁸	N ⁸	Y	N
6 – General Forest	Y	Y	Y	Y	Y	Y	Y	Y ⁷	Y	Y	Y	Y	Y	Y
7 – Primary Recreation Areas	Y	N	Y	Y	Y	Y	Y ⁶	Y ⁷	Y	Y	Y	Y	Y	Y ⁹

Footnotes:

- ¹ Allowable uses are dependent on the RNA Establishment Record and the approved RNA Management Plan.
- ² See Backcountry Guidelines for when timber harvest is allowable.
- ³ No motorized equipment. (i.e., chainsaws)
- ⁴ No motorized equipment (i.e. chainsaws), except for administrative use (see Guidelines)
- ⁵ Firewood gathering would be prohibited except for campsite use.
- ⁶ Grazing is allowed to continue within the West Kootenai allotment.
- ⁷ Allowed on designated routes only.
- ⁸ For those lands within Idaho Roadless Areas refer to Appendix E. For those lands not in Idaho Roadless Areas refer to MA 5a, 5b, 5c Standard MA- STD-AR-01.
- ⁹ Only allowable in the Lake Kocanusa Primary Recreation Area.
- ¹⁰ Motorized use is generally not compatible but may be acceptable.
- ¹¹ As discussed in more detail in the glossary, the term Grazing refer to livestock grazing in permitted allotments only. It does not address uses such as the incidental grazing by pack-stock during recreational pursuits.
- ¹² Whether or not prescribed fire, or the use of natural unplanned ignitions for resource benefits are appropriate management tools to use within these special areas is dependent upon the risks and benefits to the values and characteristics for which the special area was designated. Regarding prescribed fire use, the "Y" indicates that some level of prescribed fire use is probably appropriate under certain circumstances in order to maintain and/or enhance the special values/characteristics. Concerning the use of natural, unplanned ignitions, the "N" indicates that under most foreseeable circumstances, it would probably not be appropriate due to the risk of harming the unique characteristics.
- ¹³ Unless the RNA Establishment Record or approved RNA Management Plan indicates otherwise, the use of fire is not appropriate

Chapter 4. Geographic Area Direction

Introduction

While the Forestwide desired conditions describe management direction for the entire Forest, individual places across the KNF have their own distinct characteristics and conditions. These areas, which are referred to as “Geographic Areas” (GAs), have desired conditions that are specific to a locale, such as a river basin or valley. They define a landscape that people associate with and reflect community values and local conditions within that area. The GA desired conditions are not designed to substitute for or repeat Forestwide desired conditions. Rather, they were developed to refine forestwide management to better respond to local conditions and situations that may occur within a specific GA. The KNF is divided into the following seven GAs (see Figure 10).

- Bull
- Clark
- Fisher
- Koocanusa
- Libby
- Tobacco
- Yaak

Geographic Areas

Each GA section on the following pages provides:

- GA map displaying locator features, campgrounds, and major roads and streams;
- General location, description and unique features providing a brief characterization of the area;
- Resource-specific description and desired conditions, describing a “place-based” picture of the Forestwide desired condition for applicable resources; and
- Management area composition table for each GA.

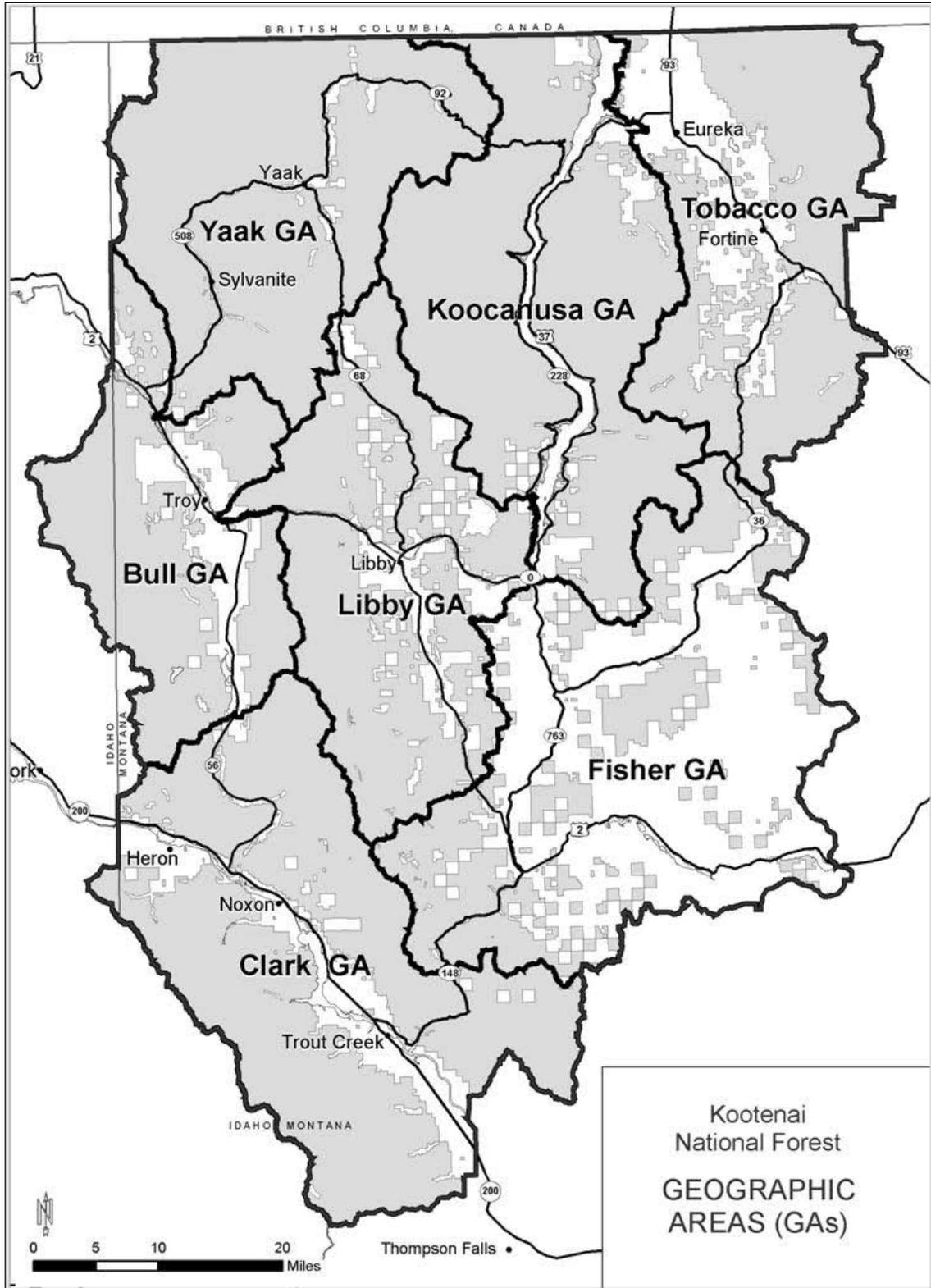


Figure 10. Geographic areas in the Kootenai National Forest.

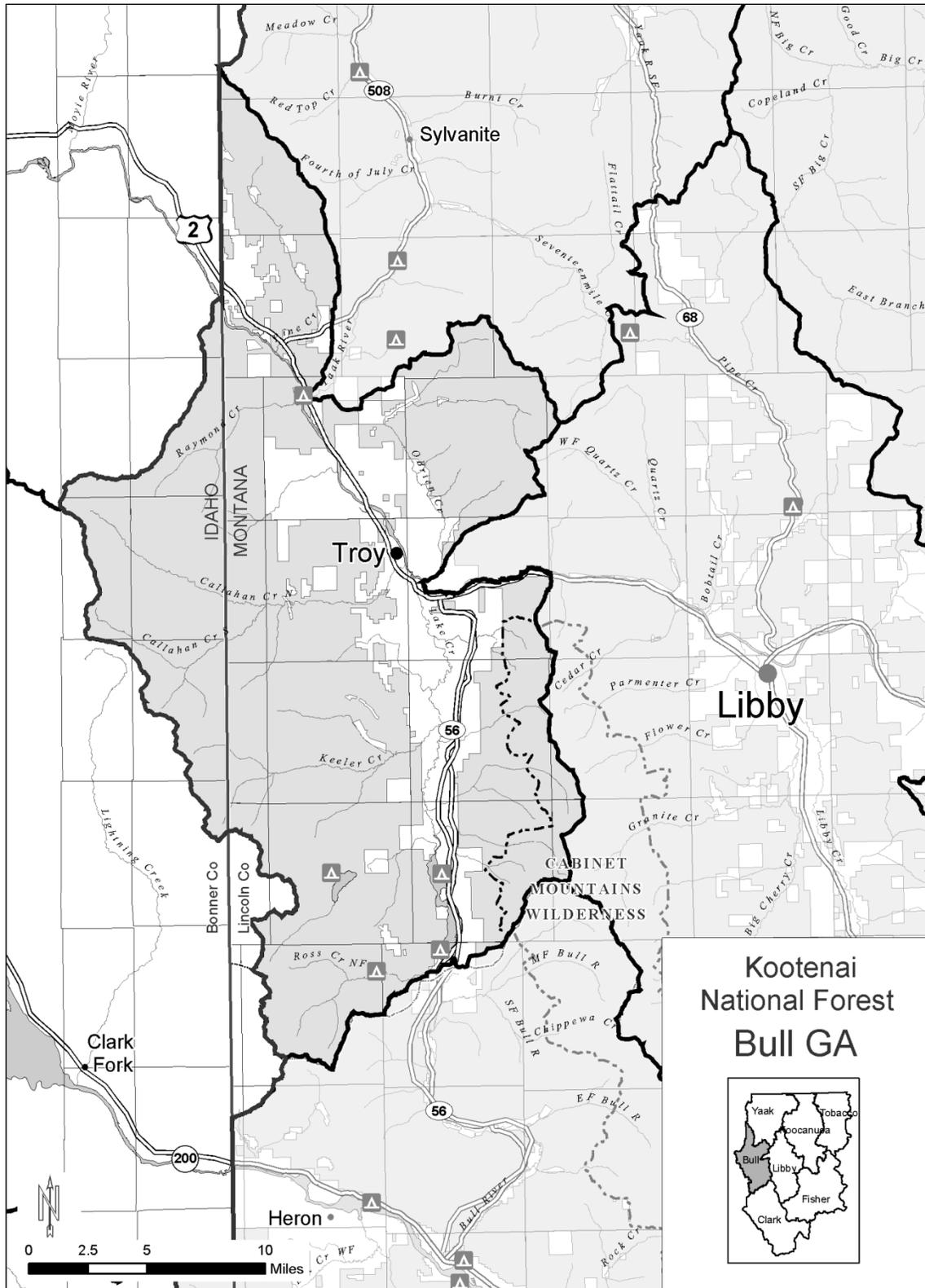


Figure 11. Bull Geographic Area.

Bull Geographic Area

General Location and Description

The Bull Geographic Area (Figure 11) lies predominantly in Lincoln County, Montana, with portions in Bonner and Boundary Counties of Idaho. Of the 294,600 acres within this GA, 233,840 acres (79 percent) are administered by the KNF. Communities include Troy, Montana and residential areas around several lakes. The Kootenai River flows northwesterly through the area and the lowest point in the state of Montana is where the river enters Idaho near Troy at just over 1,800 feet elevation. The area has a rich history of vegetative disturbance that includes major fires in 1880 and 1910, early timber harvest for railroad ties (1890s), mining (1884-1930) and associated harvest (1920-1929) in Callahan Creek drainage. There was past logging in Keeler Creek (1940s), and salvage of fire-killed timber following the 1958 Smith Mountain fire and salvage of beetle-killed spruce also occurred. This GA is experiencing rapid development of lands that were formerly corporate timberlands, creating new subdivisions and increasing the size of the wildland urban interface. Mining and logging have been important industries in this area since the 1800s. The Troy Mine is an active silver and copper mine in this GA and is operated by Troy Mine Incorporated, a subsidiary of Revett Silver Company.

Desired Condition

Access and Recreation

- GADC-AR-BUL-01.** Improvements are made to maintain or increase recreational opportunities, including the establishment of winter non-motorized trails in lower elevations.
- GADC-AR-BUL-02:** Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the Recreation Opportunity Spectrum (ROS). The desired distribution of ROS settings are displayed in Table 17.

Table 17. Recreation Opportunity Spectrum Desired Acreage and Percentage Ranges for the Bull GA.

	Primitive		Semi Primitive Non-Motorized		Semi Primitive Motorized		Roaded Natural		Rural		Urban	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Summer	56,626	24	131,753	56	11,089	5	34,343	15	0	0	0	0
Winter	2,446	1	16,926	7	203,988	87	10,288	5	0	0	0	0

Vegetation

- GADC-VEG-BUL-01.** Whitebark pine structure, composition, and function trend toward the desired vegetation condition within high elevation areas of the Cabinet Mountains.
- GADC-VEG-BUL-02.** The south-facing slopes adjacent to the Kootenai River provide habitat for concentrations of Geyer’s Biscuitroot that have adapted to low-intensity, frequent fire disturbance.

Fire

- GADC-FIRE-BUL-01.** Threats of wildfire are reduced for the town of Troy, Highways 2 and 56, and outlying communities and structures.

Wildlife

GADC-WL-BUL-01. The Forest provides for movement and genetic exchange of wide-ranging carnivores, particularly grizzly bear and lynx, through the Scotchman Peaks and McArthur Lake wildlife management area, (linking the Cabinet Mountains Wilderness and Selkirk Mountain across Highway 56 south of Bull Lake).

GADC-WL-BUL-02. The timing of use and location of over-snow motorized recreation use in the Scotchman Peaks area provides secure habitat conditions for mountain goat use of winter habitats, and grizzly bear and wolverine denning activities.

GADC-WL-BUL-03. Lands adjacent to Bull Lake provide nesting habitat for peregrine falcon with low levels of disturbance.

Watersheds (Water, Soil, and Riparian) and Aquatic Species

GADC-WTR-BUL-01. Habitat for native aquatic species, particularly bull trout, westslope cutthroat, and interior redband trout populations, respond to restoration activities in the O'Brien, Callahan, and Keeler Creek watersheds.

GADC-WTR-BUL-02. Source water protection is provided in O'Brien Creek for the town of Troy.

Management Area Composition

Table 18 displays the acres identified within each management area for the Bull GA.

Table 18. Bull GA Management Area Acres.

Management Area	Management Area Name	Acres	Percentage of GA Acres
1a	Wilderness	15,200	6.5
1b	Recommended Wilderness	15,200	6.5
2	Eligible Wild and Scenic Rivers	2,850	1.2
3	Botanical, Geological, Historical, Recreational, Scenic, or Zoological Areas	5,560	2.4
4	Established or Recommended Research Natural Area	2,380	1.0
5a	Backcountry - Non-motorized summer and winter	46,710	20.0
5b	Backcountry - Motorized summer and winter	480	0.2
5c	Backcountry - Non-motorized summer, motorized winter	26,010	11.1
6	General Forest	119,450	51.1
	Total NFS Lands	233,840	

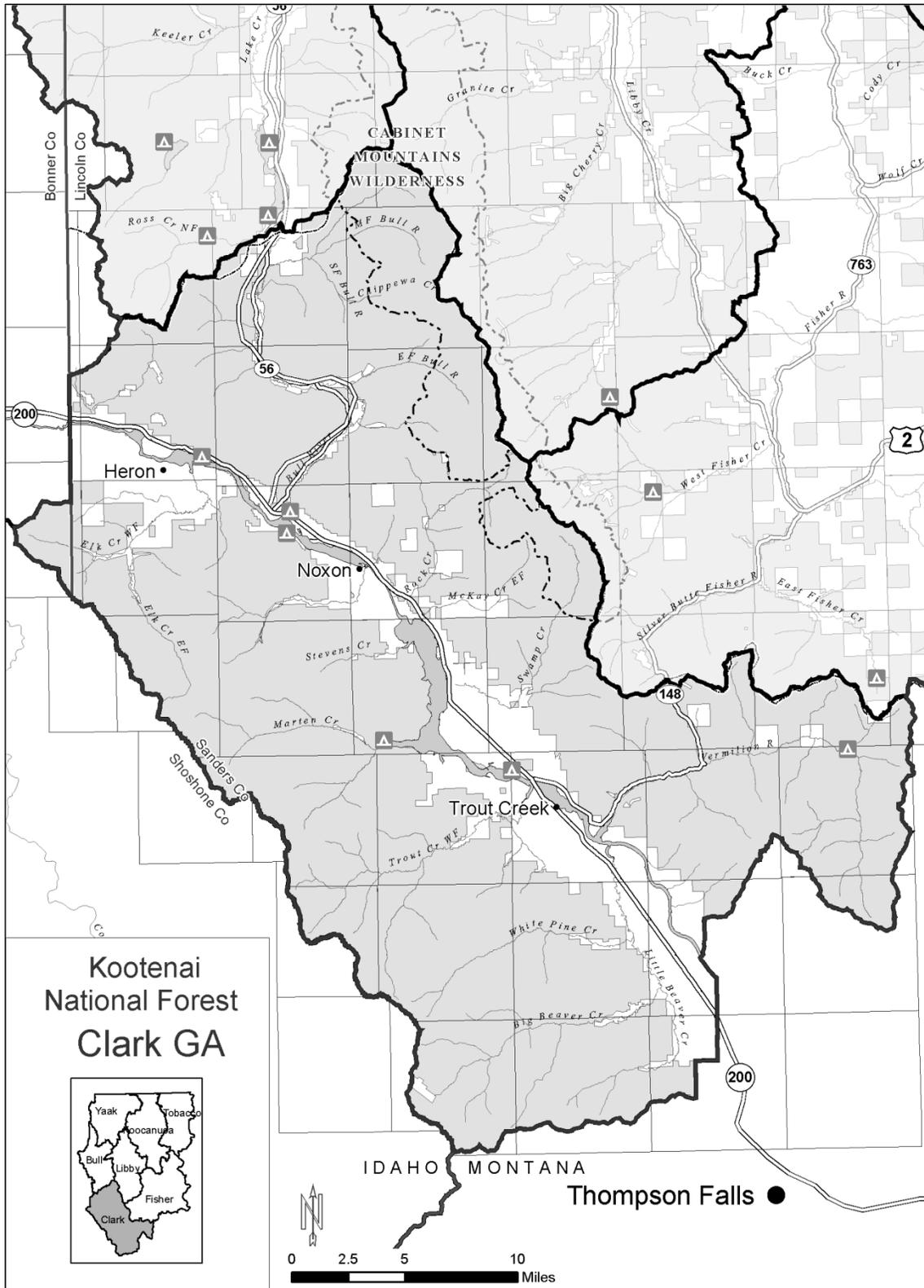


Figure 12. Clark Geographic Area.

Clark Geographic Area

General Location and Description

The Clark GA (Figure 12) lies primarily within Sanders County, with small portions in Bonner County, Idaho. There are 528,000 acres within this GA; 431,900 acres (82 percent) are administered by the KNF. Communities include Trout Creek, Noxon, and Heron. The Clark Fork River Valley has been used as a travel corridor since prehistoric times. Northern Pacific Railroad built the nation’s second transcontinental railway through this area and the first road built into northwest Montana was constructed near present-day Highway 200. The Cabinet Gorge and Noxon Reservoir lie within this GA.

Desired Condition

Access and Recreation

GADC-AR-CLK-01. Partnerships or cooperative agreements are pursued with local schools; Avista Corporation; Montana Fish, Wildlife & Parks; and other potential partners, in development and maintenance of access and recreational sites including the Adopt-A-Trail program.

GADC-AR-CLK-02: Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the Recreation Opportunity Spectrum (ROS). The desired distribution of ROS settings are displayed in the Table 19.

Table 19. Recreation Opportunity Spectrum Desired Acreage and Percentage Ranges for the Clark GA.

	Primitive		Semi Primitive Non-Motorized		Semi Primitive Motorized		Roaded Natural		Rural		Urban	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Summer	65,962	15	274,143	64	46,990	11	44,965	10	0	0	0	0
Winter	622	0	41,750	10	372,116	86	17,120	4	0	0	0	0

GADC-AR-CLK-03. Trails to Snowshoe Lake and Little Ibex Lake will be evaluated for long-term maintenance needs.

GADC-AR-CLK-04. Snowmobile use along the ridgeline corridor east of Taylor Saddle and south to Bloom Peak (and the Bloom Peak bowls) is retained.

Vegetation

GADC-VEG-CLK-01. Provide for increased diversity in areas of larges historic fires (1910, 1880s) for numerous plant and animal species. Vegetation trends toward the desired vegetation condition, with an increase in western larch and a decrease in Douglas-fir, as well as an increase in whitebark pine in high elevation areas of the Cabinet Mountains.

Fire

GADC-FIRE-CLK-01. Threats of wildfire are reduced for the towns of Noxon, Trout Creek, Heron, and outlying communities and structures.

Wildlife

GADC-WL-CLK-01. Habitat conditions on Berray Mountain for use by bighorn sheep, elk, and mule deer during the winter period is maintained or increased.

GADC-WL-CLK-02. NFS lands in the Trout Creek drainage, Government Mountain, and Scotchman Peaks areas, as well as the East Fork of Elk Creek and Miller Creek provide a high level of security (see glossary) during the big game hunting season.

GADC-WL-CLK-03. Wildlife move relatively freely between the Cabinet Mountains and the West Cabinets, and between these areas to NFS lands south of Highway 200.

Watersheds (Water, Soil, and Riparian) and Aquatic Species

GADC-WTR-CLK-01. Continue working with other agencies and utilities in facilitating native salmonid passage over Noxon and Cabinet Gorge Dams, and improving habitat conditions in tributaries.

GADC-WTR-CLK-02. Recovering watersheds such as Bull River and Marten Creek are improved and support designated beneficial uses.

Management Area Composition

Table 20 displays the acres identified within each management area for the Clark GA.

Table 20. Clark GA Management Area Acres.

Management Area	Management Area Name	Acres	Percentage of GA Acres
1a	Wilderness	39,510	9.1
1b	Recommended Wilderness	31,760	7.4
2	Eligible Wild and Scenic Rivers	9,300	2.2
3	Botanical, Geological, Historical, Recreational, Scenic, or Zoological Areas	180	<0.1
4	Established or Proposed Research Natural Area	2,680	0.6
5a	Backcountry - Non-motorized summer and winter	82,580	19.1
5b	Backcountry - Motorized summer and winter	75,590	17.5
5c	Backcountry - Non-motorized summer, motorized winter	7,220	1.7
6	General Forest	183,240	42.4
	Total NFS Lands	432,060	

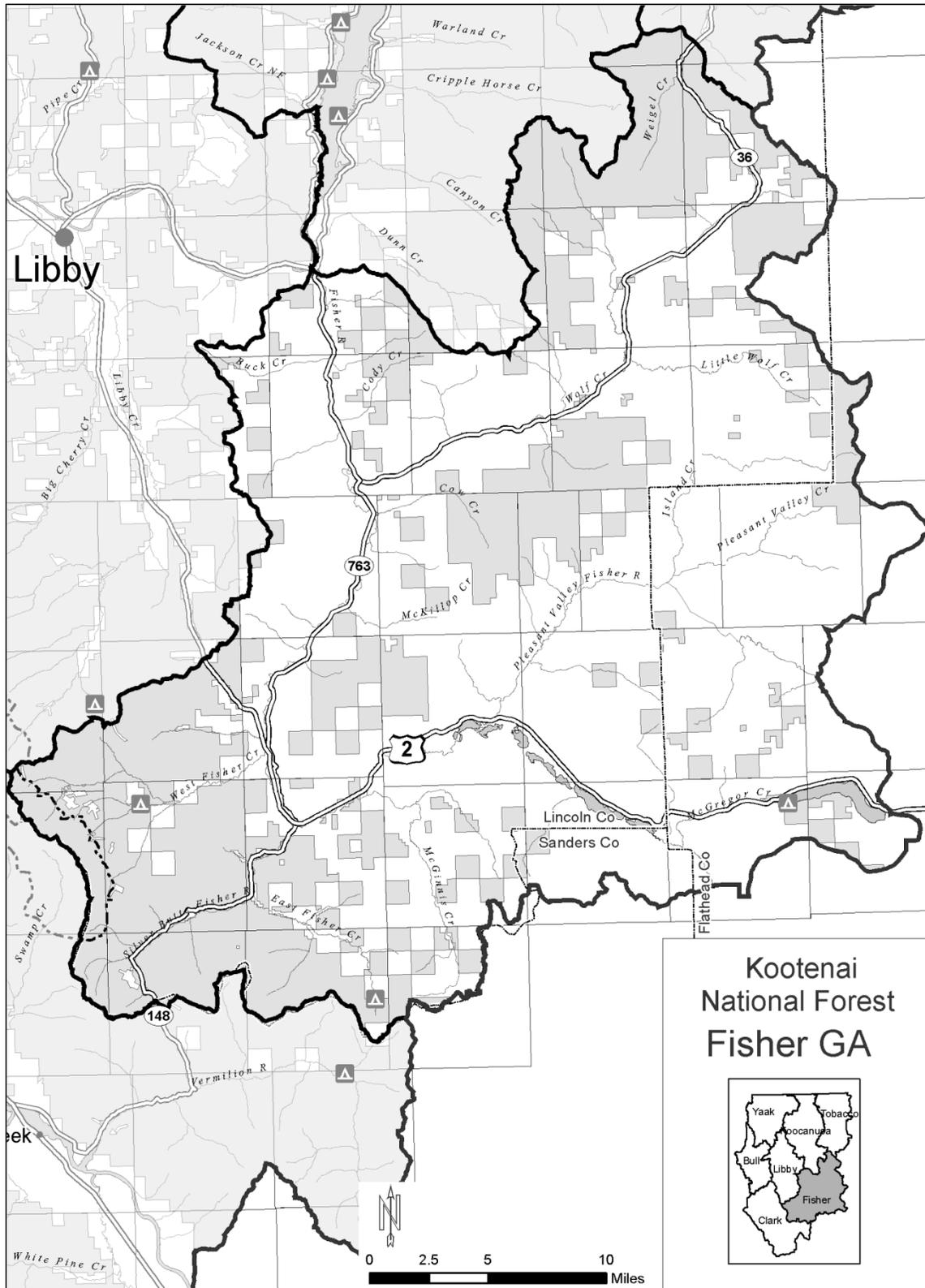


Figure 13. Fisher Geographic Area.

Fisher Geographic Area

General Location and Description

The Fisher GA (Figure 13) lies predominantly in Lincoln County, Montana, with portions in Flathead and Sanders Counties. Of the 579,000 acres within this GA, 206,400 acres (36 percent) are administered by the KNF. Over half of the land in this GA is corporate timberlands, some of which are in a “checkerboard” pattern with NFS land. Small communities in this GA include Happy’s Inn, Pleasant Valley and Silver Butte. As a result of large stand replacing fires in the late 1800s and 1910 and intermixed private ownership, late successional stands are limited.

Desired Condition

Access and Recreation

GADC-AR-FSH-01. Outfitter and guide agreements and partnership with Plum Creek are maintained.

GADC-AR-FSH-02: Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the Recreation Opportunity Spectrum (ROS). The desired distribution of ROS settings are displayed in Table 21.

Table 21. Recreation Opportunity Spectrum Desired Acreage and Percentage Ranges for the Fisher GA.

	Primitive		Semi Primitive Non-Motorized		Semi Primitive Motorized		Roaded Natural		Rural		Urban	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Summer	4,916	2	141,822	69	19,153	9	40,426	20	0	0	0	0
Winter	0	0	1,728	1	200,573	97	3,827	2	0	0	0	0

Vegetation

GADC-VEG-FSH-01. Noxious weed infestations are reduced and habitat conditions are improved for native grasses, forbs and shrubs in areas of large scale natural disturbance such as Houghton Creek, Wolf Mountain, Little Wolf and Elk Mountain, and key areas along the Cabinet Wilderness.

GADC-VEG-FSH-02. Whitebark pine structure, composition and function trend toward the desired condition within high elevation areas of the Cabinet Mountains.

Fire

GADC-FIRE-FSH-01. Threats of wildfire are reduced for dwellings, buildings, and structures within the Fisher River drainage and major tributaries.

Wildlife

GADC-WL-FSH-01. NFS lands, in particular those lands in the Miller Creek, Fritz Mountain, Calx Mountain and Syrup Redemption areas provide for wildlife movement between the larger blocks of forested lands in these areas and for movement between the Cabinet Yaak and Northern Continental Divide ecosystems.

GADC-WL-FSH-02. Habitat conditions for elk and mule deer are retained or enhanced in areas of intermixed ownership.

GADC-WL-FSH-03. Forage quality and quantity are improved on big game winter range as a result of restoration activities, such as reduction of noxious weeds.

Watersheds (Water, Soil, and Riparian) and Aquatic Species

GADC-WTR-FSH-01. Recovering aquatic systems such as Fisher River are improved and support designated beneficial uses.

Management Area Composition

Table 22 displays the acres identified within each management area for the Fisher GA.

Table 22. Fisher GA Management Area Acres.

Management Area	Management Area Name	Acres	Percentage of GA Acres
1a	Wilderness	5,570	2.7
3	Botanical, Geological, Historical, Recreational, Scenic, or Zoological Areas	730	0.4
4	Established or Proposed Research Natural Area	240	0.1
5b	Backcountry - Motorized summer and winter	43,860	21.3
6	General Forest	155,910	75.6
	Total NFS Lands	206,310	

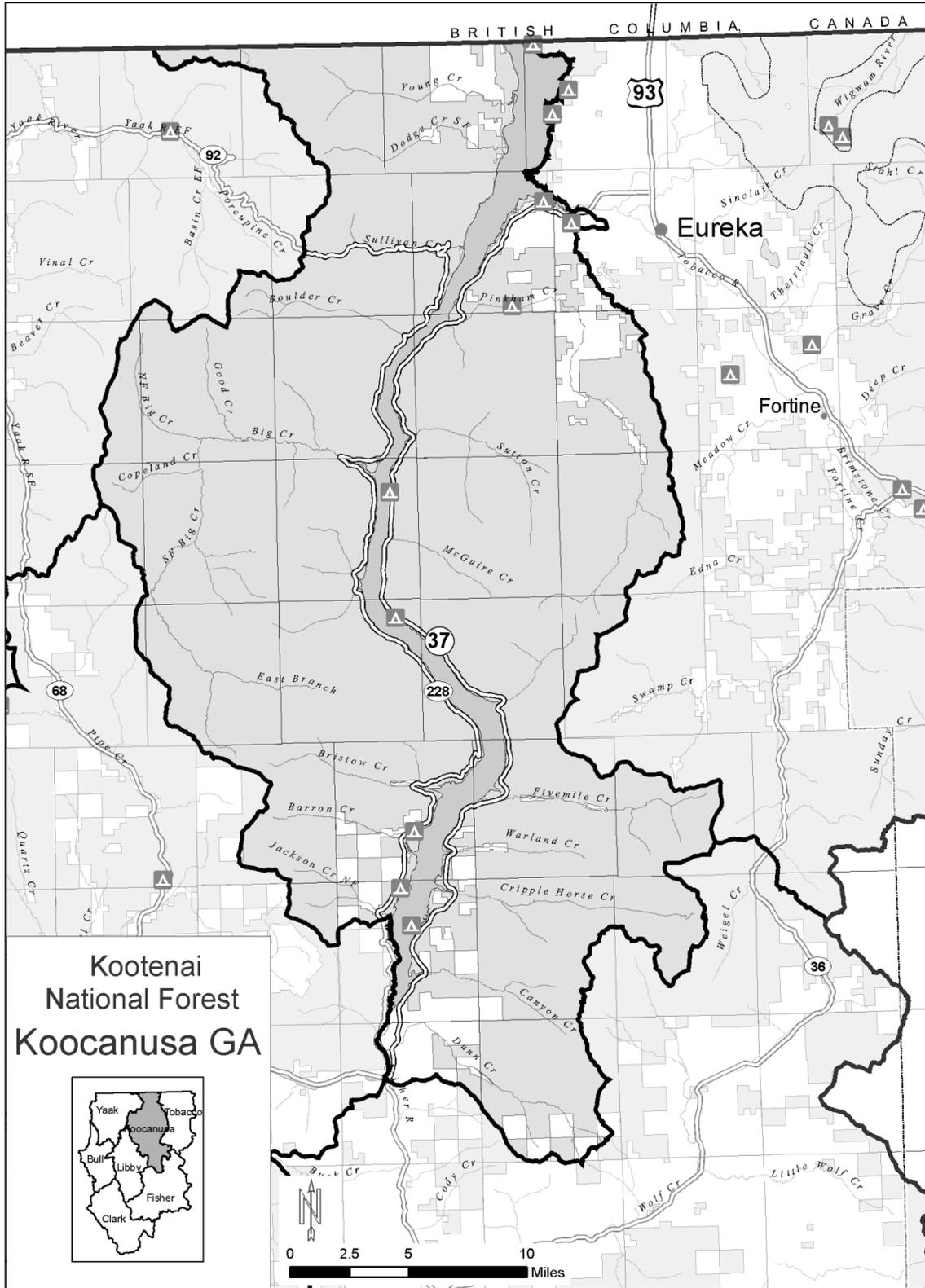


Figure 14. Koocanusa Geographic Area.

Koocanusa Geographic Area

General Location and Description

The Koocanusa GA (Figure 14) is located entirely within Lincoln County and is adjacent to British Columbia. Of the 475,000 acres within this GA, 410,800 acres (86 percent) are administered by the KNF. Communities include Rexford and West Kootenai, on either side of Lake Koocanusa, in the northern portion of the GA. This GA is culturally significant as human use dates back 8,000 years.

Desired Condition

Access and Recreation

GADC-AR-KOO-01. Recreation opportunities are maintained or improved in areas adjacent to Lake Koocanusa.

GADC-AR-KOO-02: Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the Recreation Opportunity Spectrum (ROS). The desired distribution of ROS settings are displayed in the Table 23.

Table 23. Recreation Opportunity Spectrum Desired Acreage and Percentage Ranges for the Koocanusa GA.

	Primitive		Semi Primitive Non-Motorized		Semi Primitive Motorized		Roaded Natural		Rural		Urban	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Summer	6,184	2	236,243	57	48,082	12	120,354	29	10	0	0	0
Winter	13	0	9,316	2	362,307	88	39,199	10	10	0	0	0

GADC-AR-KOO-03. A recreation plan for Lake Koocanusa is developed.

GADC-AR-KOO-04. Additional recreation opportunities for equestrians, mountain bikers, and OHV users are provided.

Vegetation

GADC-VEG-KOO-01. Noxious weed infestations are reduced and habitat conditions for native grasses, forbs and shrubs in areas of large scale natural disturbance such as Dodge and Pinkham subplanning units are improved.

Fire

GADC-FIRE-KOO-01. Threats from unplanned ignitions are reduced for the towns of Rexford, West Kootenai, the Pinkham area, and outlying communities and structures.

Wildlife

GADC-WL-KOO-01. Habitat conditions for mule deer, bighorn sheep (Ural Tweed herd), and other big game are retained or enhanced throughout this GA.

GADC-WL-KOO-02. Wildlife move relatively freely along the ridgeline from Roderick Mountain north to the Canadian border.

GADC-WL-KOO-03. McGuire Mountain, Ten Mile, Gold Hill, and Webb Mountain provide low levels of disturbance.

GADC-WL-KOO-04. Forage quality and quantity on big game winter ranges are improved as a result of restoration activities, such as those that result in a reduction in noxious weeds.

Watersheds (Water, Soil, and Riparian) and Aquatic Species

GADC-WTR-KOO-01. Watersheds continue to support populations of migratory native and desirable nonnative fishes.

Management Area Composition

Table 24 displays the acres identified within each management area for the Koozanusa GA.

Table 24. Koozanusa GA Management Area Acres.

Management Area	Management Area Name	Acres	Percentage of GA Acres
2	Eligible Wild and Scenic Rivers	9,580	2.3
3	Botanical, Geological, Historical, Recreational, Scenic, or Zoological Areas	5,600	1.4
4	Established or Proposed Research Natural Area	180	<0.1
5a	Backcountry - Non-motorized summer and winter	6,100	1.5
5c	Backcountry - Non-motorized summer, motorized winter	14,040	3.4
6	General Forest	365,690	89.0
7	Primary Recreation Area	9,750	2.4
	Total NFS Lands	410,940	

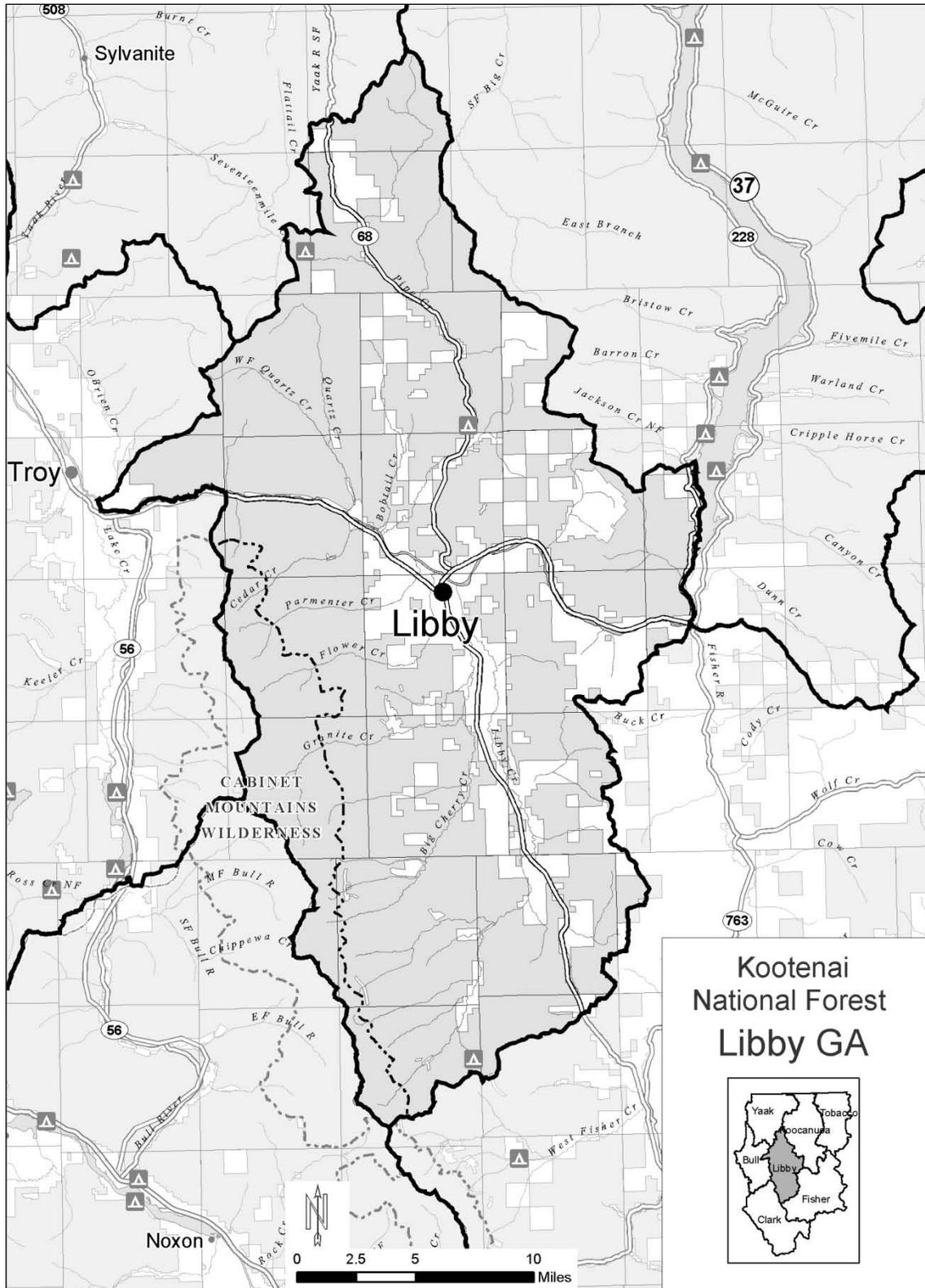


Figure 15. Libby Geographic Area.

Libby Geographic Area

General Location and Description

The Libby GA (Figure 15) lies entirely within Lincoln County. Of the 367,000 acres within this GA, 287,190 acres (78 percent) are administered by the KNF. Approximately 10,000 people live in the city of Libby and the residential areas nearby, roughly half the population in the county. The county seat and the administrative center for the KNF are located in Libby. This area has been continuously inhabited for 5,500 years and has provided major travel routes, including David Thompson's exploration in the early 1800s, Pierre deSmet in 1845, and gold miners in the 1860s. Mining and logging have historically provided the economic base. The area is known for its mineral deposits and there is interest in developing a large hard-rock underground mine in the upper Libby Creek area.

The Rainy Creek-Alexander area northeast of Libby surrounds the former vermiculite mine, which was in operation for close to 70 years and closed in 1990. Further research and exploration, in conjunction with the EPA, regarding the extent of Libby Amphibole contamination is continuing in this area and may affect future management options and public safety concerns.

EPA has designated the airshed that surrounds the community of Libby as a nonattainment area for exceeding the allowable air quality standards for fine particulate matter. To improve air quality, Lincoln County has established burning restrictions and this has limited the ability of the KNF to use prescribed fire in the area.

Desired Condition

Access and Recreation

GADC-AR-LIB-01. Opportunities to utilize partnerships and user groups to evaluate, plan, and improve trail systems and other recreational developments are pursued and maintained (e.g., Lincoln County Snowkats, Cabinet Backcountry Horsemen, Kootenai Ridgeriders ATV Club, Kootenai Winter Sports, etc.).

GADC-AR-LIB-02: Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the Recreation Opportunity Spectrum (ROS). The desired distribution of ROS settings are displayed in Table 25.

Table 25. Recreation Opportunity Spectrum Desired Acreage and Percentage Ranges for the Libby GA.

	Primitive		Semi Primitive Non-Motorized		Semi Primitive Motorized		Roaded Natural		Rural		Urban	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Summer	41,550	15	134,997	47	23,255	8	86,539	30	852	0	0	0
Winter	111	0	23,309	8	225,974	79	36,750	13	852	0	0	0

GADC-AR-LIB-03. Opportunities for winter motorized access are maintained or considered in areas such as Pipe Creek, East Face of the Cabinets, and Bear Creek. Opportunities for changing snowmobile routes are considered as vegetation or other conditions change over time.

GADC-AR-LIB-04. An opportunity is provided for the assessment of a multiple-use trail (motorized and non-motorized) between Libby and Troy as well as a possible ski area on Treasure Mountain.

Vegetation

GADC-VEG-LIB-01. The south-facing slopes adjacent to the Kootenai River provide habitat for concentrations of Geyer's Biscuitroot that have adapted to low-intensity, frequent fire disturbance.

GADC-VEG-LIB-02. Whitebark pine structure, composition, and function trend toward the desired vegetation condition within high elevation areas of the Cabinet Mountains, Quartz Mountain and the Huson Peak area.

GADC-VEG-LIB-03. Noxious weed treatment (with emphasis on toadflax, cheatgrass and knapweed) on big game winter range and the Cabinet area improves habitat conditions for native grasses, forbs, and shrubs. Rush skeltonweed is reduced in the Quartz Creek area.

Fire

GADC-FIRE-LIB-01. Threats of wildfire are reduced for the city of Libby and outlying communities and structures.

Wildlife

GADC-WL-LIB-01. Habitat conditions are retained for wildlife movement between the Cabinet Mountains and the Yaak, in particular in the area of Flagstaff Mountain. Habitat conditions for wildlife movement are also retained in the area between Turner Mountain and Alexander Creek (the Horse Range), including NFS lands in the Gold Hill and Blue Mountain areas.

GADC-WL-LIB-02. Habitat conditions for cover and security are provided for big game on key winter ranges in the Swede McMillan, Sheldon Mountain, and Horse Range areas. Undisturbed habitat conditions are retained in these areas during the spring, in particular in those areas used for calving or fawning.

GADC-WL-LIB-03. Undisturbed habitat conditions for security are provided for big game on key summer ranges in the upper Bobtail, West Pipe and East Fork Pipe Creek drainages and for bighorn sheep in the Kootenai Falls area.

Watersheds (Water, Soil, and Riparian) and Aquatic Species

GADC-WTR-LIB-01. Recovering watersheds such as Quartz, Bobtail, Big Cherry and Snowshoe are improved and support designated beneficial uses.

GADC-WTR-LIB-02. Public water supplies in the Flower Creek Municipal watershed receive special consideration during project implementation and are protected.

GADC-WTR-LIB-04. Bull trout populations increase and expand with strongholds in Quartz, Pipe, Big Cherry and Upper Libby Creeks. Populations of bull trout in adjoining drainages stabilize and begin to contribute to the middle Kootenai recovery population.

GADC-WTR-LIB-05. Populations of interior redband and westslope cutthroat are secure from hybridization by nonnative fishes and expand their distribution.

Minerals

GADC-MIN-LIB-01. Research regarding the Libby amphibole fibers related to the vermiculite mine in the Rainy Creek area (NFS lands) is ongoing, with appropriate interagency coordination, to evaluate the potential for occupational amphibole exposure as a result of Forest Service activities in this area. This area will trend toward a pre-mining condition.

Management Area Composition

Table 26 displays the acres identified within each management area for the Libby GA.

Table 26. Libby GA Management Area Acres.

Management Area	Management Area Name	Acres	Percentage of GA Acres
1a	Wilderness	33,420	11.6
1b	Recommended Wilderness	16,320	5.7
2	Eligible Wild and Scenic Rivers	7,460	2.6
3	Botanical, Geological, Historical, Recreational, Scenic, or Zoological Areas	1,560	0.5
4	Established or Proposed Research Natural Area	1,670	0.6
5a	Backcountry - Non-motorized summer and winter	11,970	4.2
5b	Backcountry - Motorized summer and winter	23,470	8.2
5c	Backcountry - Non-motorized summer, motorized winter	14,610	5.1
6	General Forest	175,430	61.1
7	Primary Recreation Area	1,280	0.4
	Total NFS Lands	287,190	

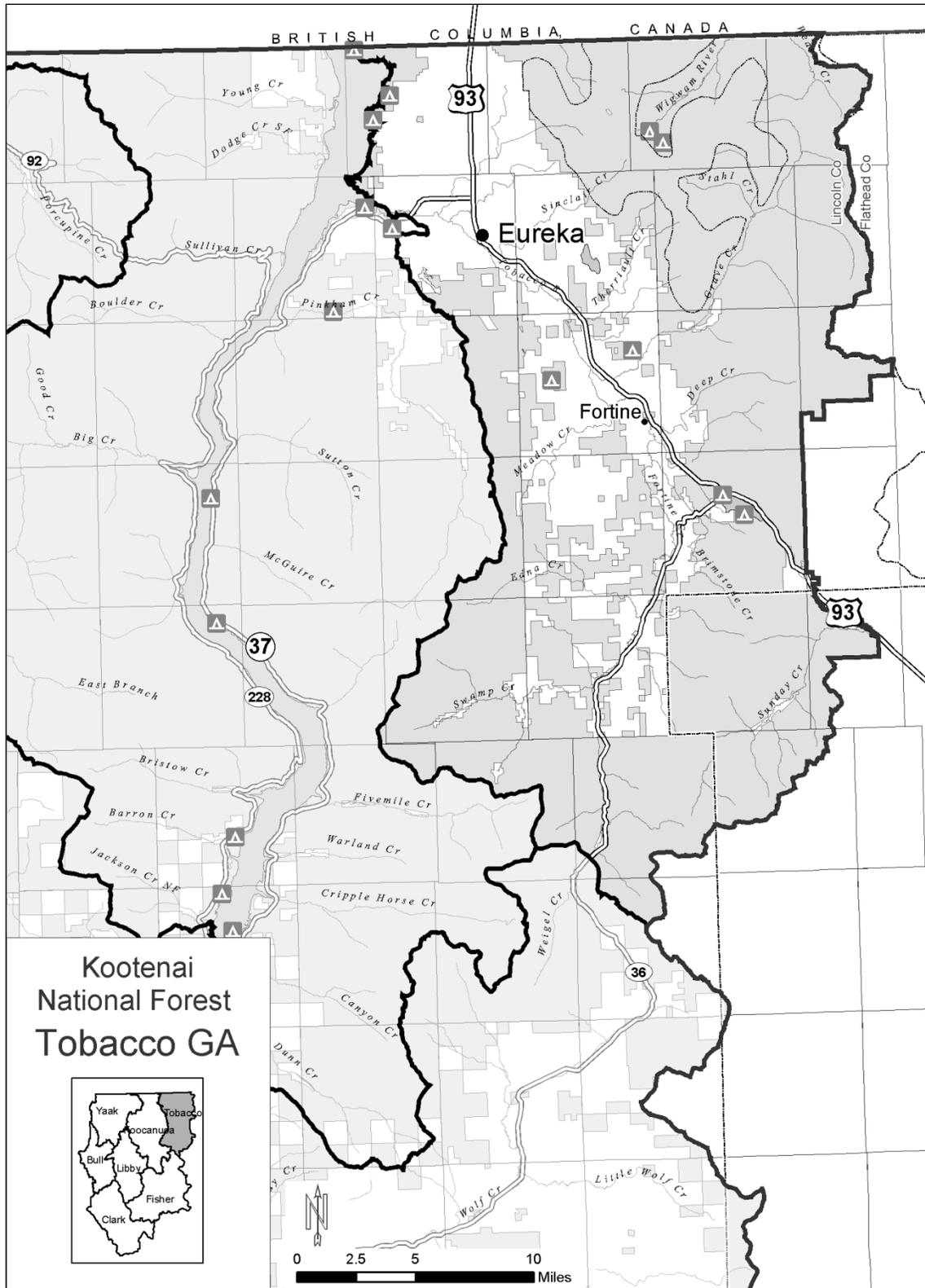


Figure 16. Tobacco Geographic Area.

Tobacco Geographic Area

General Location and Description

The Tobacco GA (Figure 16) lies predominantly in Lincoln County, Montana, with a portion in Flathead County and is adjacent to British Columbia. Of the 370,000 acres within this GA, 264,230 acres (71 percent) are administered by the KNF. Communities include Eureka, Fortine, Trego, and Stryker, Montana. This area contains the largest amount of grazing and ranching lands in the Forest. This area is culturally significant, with human use dating back at least 8,000 years.

Desired Condition

Access and Recreation

GADC-AR-TOB-01. Recreation opportunities are maintained or improved in the Ten Lakes area. An updated study for the Ten Lakes Wilderness Study Area is completed including the identification of specific areas and routes to provide a variety of winter and summer non-motorized and winter motorized recreation opportunities. Monitoring of use is an integral part of the recreation program for the Ten Lakes area.

GADC-AR-TOB-02: Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the Recreation Opportunity Spectrum (ROS). The desired distribution of ROS settings are displayed in Table 27.

Table 27. Recreation Opportunity Spectrum Desired Acreage and Percentage Ranges for the Tobacco GA.

	Primitive		Semi Primitive Non-Motorized		Semi Primitive Motorized		Roaded Natural		Rural		Urban	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Summer	25,839	10	83,324	31	49,662	19	105,576	40	0	0	0	0
Winter	0	0	5,603	2	225,223	85	33,020	13	0	0	0	0

GADC-AR-TOB-03. High-use recreation routes, such as Grave Creek Road, are maintained through dust abatement and grading.

Vegetation

GADC-VEG-TOB-01. Whitebark pine structure, composition, and function trend toward the desired vegetation condition within high-elevation areas.

GADC-VEG-TOB-02. Noxious weed treatment occurs with cooperation from the State and County to improve habitat conditions for native grasses, forbs, and shrubs.

GADC-VEG-TOB-03. Management of vegetation towards the desired vegetation condition improves or possibly increases habitat for Spalding’s catchfly. Calcareous soils and wetlands provide habitat for species such as lady’s slippers and cottongrass.

Fire

GADC-FIRE-TOB-01. Threats from unplanned ignitions are reduced for the towns of Eureka, Fortine, Trego and Stryker and outlying communities and structures.

Wildlife

GADC-WL-TOB-01. Low levels of disturbance occur for grizzly bear and wolverine denning activities and for summer use by big game in the Ten Lakes, Thompson Seton and Marston Face areas.

GADC-WL-TOB-02. Wildlife move relatively freely across Highway 93 between Ten Lakes and areas to the south.

GADC-WL-TOB-03. In the Therriault BMU the current levels of security core habitat, open motorized route densities, and total motorized route densities are also the desired condition.

Watersheds (Water, Soil, and Riparian) and Aquatic Species

GADC-WTR-TOB-01. Recovering systems such as the Tobacco River are improved and support designated beneficial uses.

GADC-WTR-TOB-02. Source water protection is provided in Deep Creek watershed for the town of Fortine.

GADC-WTR-TOB-03. Native aquatic species, particularly bull trout populations, expand into additional areas and respond to restoration activities in the Grave Creek watershed.

Management Area Composition

Table 28 displays the acres identified within each management area for the Tobacco GA.

Table 28. Tobacco GA Management Area Acres.

Management Area	Management Area Name	Acres	Percentage of GA Acres
1b	Recommended Wilderness	23,500	8.9%
1c	Wilderness Study Area	34,110	12.9%
2	Eligible Wild and Scenic Rivers	4,620	1.7%
3	Botanical, Geological, Historical, Recreational, Scenic, or Zoological Areas	3,240	1.2%
4	Established or Proposed Research Natural Area	410	0.2%
5a	Backcountry – Non-motorized summer and winter	20,430	7.7%
5b	Backcountry - Motorized summer and winter	20,120	7.6%
5c	Backcountry – Nonmotorized summer, motorized winter	30	<0.1%
6	General Forest	156,400	59.2%
7	Primary Recreation Area	1,370	0.5%
	Total NFS Lands	264,230	

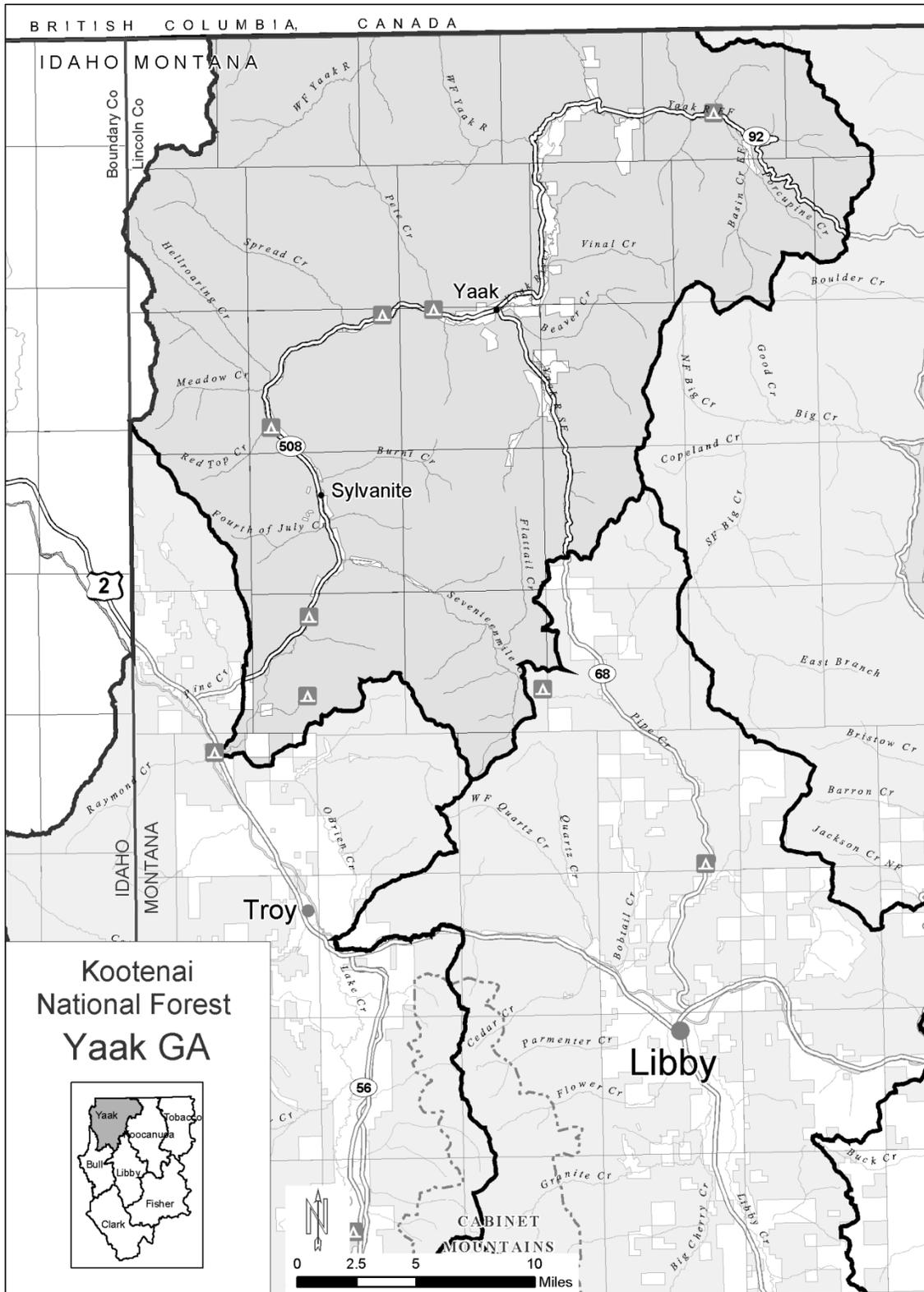


Figure 17. Yaak Geographic Area.

Yaak Geographic Area

General Location and Description

The Yaak GA (Figure 17) lies predominantly in Lincoln County, Montana, with a portion in Boundary County, Idaho, and borders British Columbia. Of the 398,000 acres within this GA, 384,490 acres (97 percent) are administered by the KNF. Communities include Yaak and Sylvanite, although residents are generally secluded and dispersed throughout the area. The area has been used for thousands of years and contains some of the oldest prehistoric sites on the KNF. A mining boom centered near Sylvanite ended when the area was burned out in the fire of 1910. The current vegetative composition and diversity are largely the result of historic wildfires (1880s, 1910, 1919-1920, 1931, 1973, 1991, 1994, and 2000), insect epidemics and timber harvest during the past century. Logging has been important here since the early 1900s.

Desired Condition

Access and Recreation

GADC-AR-YAK-01. Improvements are made to maintain or increase recreational opportunities. Historic structures are considered for restoration and addition into the rental program. Private funding and volunteer partnerships are pursued to accomplish these improvements for the Upper Ford and Sylvanite Ranger Stations, Garver, Mount Henry, Northwest Peak, Baldy Mountain and Lost Horse Mountain Lookouts and other areas.

GADC-AR-YAK-02: Provide year-round outdoor recreation opportunities and experiences in a range of settings as described by the Recreation Opportunity Spectrum (ROS). The desired distribution of ROS settings are displayed in Table 29.

Table 29. Recreation Opportunity Spectrum Desired Acreage and Percentage Ranges for the Yaak GA.

	Primitive		Semi Primitive Non-Motorized		Semi Primitive Motorized		Roaded Natural		Rural		Urban	
	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%	Acres	%
Summer	29,417	8	268,036	70	13,130	3	73,806	19	0	0	0	0
Winter	0	0	1,298	0	349,009	91	34,171	9	0	0	0	0

Vegetation

GADC-VEG-YAK-01. Management of vegetation toward the desired vegetation condition provides habitat for moonworts and northern beechfern and increases in late succession and/or old growth vegetation.

Fire

GADC-FIRE-YAK-01. Threats of wildfire are reduced for the communities of Yaak, Sylvanite, and outlying communities and structures.

Wildlife

GADC-WL-YAK-01. Wildlife move relatively freely along the ridgeline between the states of Montana and Idaho from Northwest Peaks south and across the Yaak River to areas such as Grizzly Peak and Roderick Mountain.

GADC-WL-YAK-02. Low levels of disturbance occur for denning by grizzly bear and wolverine in the Northwest Peaks, Grizzly Peak and Roderick Mountain areas.

Watersheds (Water, Soil, and Riparian) and Aquatic Species

GADC-WTR-YAK-01. Recovering watersheds such as North, East, South and West Forks of the Yaak River; Seventeenmile, Lap, Spread and Pete Creeks are improved and support designated beneficial uses.

Management Area Composition

Table 30 displays the acres identified within each management area for the Yaak GA.

Table 30. Yaak GA Management Area acres.

Management Area	Management Area Name	Acres	Percentage of GA Acres
1b	Recommended Wilderness	23,450	6.1
2	Eligible Wild and Scenic Rivers	13,450	3.5
3	Botanical, Geological, Historical, Recreational, Scenic, or Zoological Areas	14,710	3.8
4	Established or Proposed Research Natural Area	880	0.2
5a	Backcountry - Non-motorized summer and winter	59,790	15.6
5b	Backcountry - Motorized summer and winter	280	0.1
5c	Backcountry - Non-motorized summer, motorized winter	24,200	6.3
6	General Forest	247,700	64.4
7	Primary Recreation Area	30	<0.1
	Total NFS Lands	384,490	

Chapter 5. KNF Monitoring Program

The monitoring program sets monitoring questions and measures, which help managers, evaluate and assess the degree to which on-the-ground management is maintaining or making progress toward the desired future conditions and objectives in the Plan. The monitoring program forms a basis for continual improvement and adaptive management. Direction for the monitoring and evaluation of forest plans is found in (36 CFR 219.12(k)).

The monitoring program sets monitoring questions and performance measures. Every monitoring question links to one or more goal, desired condition, or objective. However, the monitoring program does not include a monitoring question for every desired condition, objective or guideline. One or more performance measures are associated with each monitoring question.

Each year, the Forest Supervisor and other managers will evaluate the monitoring information displayed in the evaluation reports through a management review and determine if changes are needed in management actions or plan guidance. Table 31 shows the Forest Plan elements and the kinds of monitoring conducted.

Table 31. Forest Plan elements and Monitoring Type for each element.

Plan Element	Monitoring Type
Desired Condition	Monitoring of desired conditions to determine whether the plan area is moving toward or maintaining desired conditions. This considers a range of ecological, economic, and social conditions, recognizing that many factors (natural events, human uses, and management activities) influence desired conditions. Monitoring tasks have a frequency specified in the monitoring guide. While monitoring may take place annually, indications of trends will likely be based on data obtained over three to five years or more.
Objectives	This type of monitoring measures progress toward the objective.
Standards and Guidelines	This monitoring addresses whether projects and other activities are accomplished within Plan standards and guidelines used for project design. The agency's administration of projects or special uses provides monitoring that document the activity occurs as designed. Audits and other monitoring systems are also used as additional checks. A sampling of projects is monitored as projects are completed.

Table 32 is a summary of the monitoring program. This table displays the monitoring questions and lists the performance measures associated with each monitoring question.

Table 32. Summary of the KNF Monitoring Program.

Monitoring Question	Measure
<i>Access and Recreation</i>	
Have appropriate management actions been taken on recreation sites where use is at or near capacity or where there are resource concerns?	Number of management actions (e.g. limitations, expansions, new construction) taken on number of sites.
To what level have Forest roads been maintained to provide access?	Miles of roads maintained by maintenance level
Have management activities trended towards desired conditions for a minimum transportation system that provides safe and efficient public and agency access and is environmentally compatible?	Miles of road open year long Miles of road open seasonally Miles of roads decommissioned Miles of roads put into intermittent storage
What motorized and non-motorized winter and summer recreation opportunities have been provided?	Miles of designated snowmobile trails Miles of designated cross-country ski trails Miles of designated motorized trails Miles of designated non-motorized trails.
<i>Vegetation</i>	
To what extent are management activities and natural disturbance processes trending toward desired conditions for vegetation composition? This includes vegetation dominance type and size, old growth, down wood, snags, fire-killed forest, and insect and disease infested forest.	Acres treated by treatment type (e.g., PCT, commercial thin, regeneration harvest, prescribed burn) and by species and size Acres by vegetation composition (species and size class) forestwide, from FIA Inventoried acres meeting Green et al definition for old growth Mapped acres of old growth Acres of old growth treated by treatment type Percent (acres) of treated acres meeting downed wood numbers Down wood amounts per acre forestwide from FIA Percent (acres) of treated acres (timber harvest) meeting snag numbers Snags per acre forestwide from FIA Acres of burned forest
Have management activities met Plan objectives and trended towards desired conditions for noxious weeds?	Acres of noxious weeds treated Number of sites of new invasive species treated Acres of presence/absence of state listed noxious weed species forestwide (when available in FIA data)
What is the amount of insect and disease activity following management activities?	Acres infested five years after management activity
<i>Timber</i>	
How much timber has the KNF sold, and is it consistent with projections?	MMBF sold annually
How many even-aged regeneration harvest units have been over 40 acres in size?	Number of even-aged regeneration harvest units exceeding 40 acres in size and category for exceeding
Are regeneration units adequately restocked?	On lands suitable for timber production, percent of acres with regeneration harvest that are adequately restocked within 5 years of harvest

Monitoring Question	Measure
Fire	
How much fuel treatment has been accomplished inside and outside of WUI and is it consistent with objective levels?	Acres of prescribed fire within and outside WUI Acres of mechanical treatment within and outside WUI
Wildlife	
To what extent is Forest management contributing to the conservation of federally listed species and moving toward short term (5-10 years) and long term (>10 years) objectives for their habitat conditions and population trends?	Grizzly Bear status on Forest Canada lynx: a) changes in lynx habitat as a result of forests being regenerated; b) snow compacting activities in lynx habitat; c) fuel treatment projects in lynx habitat; d) precommercial thinning projects in the stand initiation structural stage of winter snowshoe hare habitat; and e) vegetation management projects in multi-story mature or late successional forests of winter snowshoe hare habitat Kootenai River Sturgeon status on Forest Bull Trout status on Forest
Are population and habitat trends for Management Indicator Species (MIS) consistent with the expectations? Are these trends due to changes in habitat conditions or other factors? If they are tied to habitat conditions, is there a direct relationship with forest management, climate change or other factors?	Habitat changes and population trends for management indicator species. Monitoring will be done in cooperation with state fish and wildlife agencies, research, and other partners, to the extent practicable
Is current management providing for sufficient habitat of sensitive species on the KNF?	Habitat changes: Map and update changes in forest composition and structure. Various methods will be used as appropriate to the species or species group to monitor status, trends and distribution
Watershed	
Are soil and water conservation practices (BMPs) being identified and implemented effectively during management, resulting in protection of water quality and beneficial uses?	Percentage of field-evaluated practices with implementations and effectiveness scores 4 or above (on a scale of 1-5)
	Percentage of field-evaluated practices with implementations and effectiveness scores 3 or less (on a scale of 1-5)
To what extent is the forest meeting forest plan objectives and trending towards desired condition to reconnect fragmented stream habitat?	Miles of reconnected habitat
To what extent have management activities prevented irreversible damage to soil conditions?	Percentage of activity areas (usually timber sale units) that meet the Regional Soil Quality Standard (FSM, R1 Supplement No. 2500-99-1)
What activities have been accomplished that will lead to improving conditions in 303(d) listed watersheds?	Acres (or miles) of restoration activities accomplished in listed 303(d) watersheds.
Have management activities met Plan objectives and trended KNF watersheds towards desired watershed and aquatic conditions?	Instream and biotic attributes, summarized from stream-reach to 6th level HUC.
	Instream and channel parameters, summarized at various levels, from stream-reach to 6th code HUC

Monitoring Question	Measure
<i>American Indian Rights and Interests</i>	
To what extent has development of a consultation protocol for each Tribe progressed?	Number of approved consultation protocols
To what extent has the policy for access and acquisition of forest products for traditional cultural uses progressed in consultation with each Tribe?	Number of approved product use policies
To what extent has the forest progressed in producing management plans for traditional cultural SIAs?	Number of approved management plans for traditional cultural SIAs
<i>Heritage Resources</i>	
How many historic properties have been identified, evaluated, and nominated for listing on the National Register of Historic Places?	Number of properties identified Number of properties evaluated Number of properties nominated
How many historic properties have been protected?	Number of properties protected/preserved
<i>Minerals</i>	
How many permitted mineral activities are in compliance and/or non-compliance with its authorization document and/or plan of operations?	The number of permitted mineral activities that are in compliance and the number that are non-compliant with its authorization document and/or plan of operations at the end of each fiscal year
How many abandoned mine sites have been reclaimed over a five-year period that reduced the risk to human health?	Number of reclaimed abandoned mine sites over a five-year period that reduced the risk to human health
<i>Social And Economic Systems</i>	
How many jobs and how much labor income in the planning area results from KNF management and what is the percent of total local jobs and income?	Number of jobs and thousands of dollars in labor income from KNF management and percent of total planning area jobs and income
Is the cost of implementing the forest plan consistent with that predicted in the FEIS?	Forest annual budget
<i>Wilderness</i>	
Have management activities met Plan objectives and trended towards management area desired conditions for existing wilderness, recommended wilderness, and wilderness study areas, while maintaining appropriate recreation opportunities?	Designated Wilderness managed to standard Recommended Wilderness with wilderness character managed Wilderness Study Area where the 1977 wilderness character is maintained

Acronyms

AMS	Analysis of the Management Situation	MMBF	Million Board Feet
ASQ	Allowable Sale Quantity	MMCF	Million Cubic Feet
ATV	All-terrain Vehicle	MVUM	Motor Vehicle Use Map
BLM	Bureau of Land Management	NEPA	National Environmental Policy Act
BMP	Best Management Practices	NCDE	Northern Continental Divide Ecosystem
BMU	Bear Management Unit	NF	National Forest
CFR	Code of Federal Regulations	NFMA	National Forest Management Act
CMAI	Culmination of Mean Annual Increment	NFS	National Forest System
DEQ	Department of Environmental Quality	OHV	Off-highway Vehicle
DBH	Diameter Breast Height	PIBO	PacFish/InFish Biological Opinion
ESA	Endangered Species Act	RCA	Riparian Conservation Area
FS	Forest Service	RIVPACS	River Invertebrate Prediction And Classification System
FSH	Forest Service Handbook	RMRS	Rocky Mountain Research Station
FSM	Forest Service Manual	RNA	Research Natural Area
FWS	U.S. Fish and Wildlife Service	SIO	Scenic Integrity Objective
GA	Geographic Area		
HM	Head Month		
HUC	Hydrologic Unit Code		
IDF&G	Idaho Department of Fish and Game	T&E	Threatened and Endangered
IGBC	Interagency Grizzly Bear Committee	TMDL	Total Maximum Daily Load
KNF	Kootenai National Forest	USFS	U.S. Forest Service
IRA	Inventoried Roadless Area	USFWS	U.S. Fish and Wildlife Service
KIPZ	Kootenai-Idaho Panhandle Plan Revision Zone	VRU	Vegetation Response Unit
KNF	Kootenai National Forest	W&SR	Wild and Scenic River
LAU	Lynx Analysis Unit	WSA	Wilderness Study Area
LMP	Land Management Plan	WUI	Wildland Urban Interface
LTSYC	Long-Term Sustained Yield Capacity		
MA	Management Area		

Glossary

Activity Area	A land area affected by a management activity to which soil quality standards are applied. Activity areas include harvest units within timber sale areas, prescribed burn areas, recreation areas, and grazing areas or pastures within range allotments.
Adaptive Management	An approach to natural resource management where actions are designed and executed and effects are monitored for the purpose of learning and adjusting future management actions, which improves the efficiency and responsiveness of management.
Allowable Sale Quantity (ASQ)	The quantity of timber that may be sold from the area of suitable land covered by the forest plan for a time period specified by the plan. This quantity is usually expressed on an annual basis as the ``average annual allowable sale quantity.
Ancient Cedar Groves	Stands containing some cedar trees 60 inches or greater DBH and/or 500 years old. The density of 60 inches or greater DBH trees may be low and the distribution is often patchy, but these big (and/or old trees) can be found at least occasionally, scattered across the grove. Usually covers at least one-half acre in area, unless there is a concentration of 60 inches or greater DBH trees on a smaller area. In the same stand, there are often (but not always) additional unusually large (48 inches or greater DBH) trees.
Aquatic Ecosystem	Waters of the United States that serve as habitat for interrelated and interacting communities and populations of plants and animals. The stream channel, lake or estuary bed, water, biotic communities and the habitat features that occur therein.
Bear Year	The active bear year is from April 1 to November 30. [Spring (April 1 to June 15), summer (June 16 to September 15), fall (September 16 to November 30), winter (December to March 30)].
Bear Management Unit (BMU)	Areas established for use in grizzly bear analysis. BMUs generally a) approximate female home range size; and b) include representations of all available habitat components.
Beneficial Uses	Any of the various uses which may be made of the water, including, but not limited to, domestic water supplies, fisheries and other aquatic life, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetics.
Best Management Practices (BMPs)	Practice or set of practices that enable a planned activity to occur while still protecting the resource managed, normally implemented and applied during the activity rather than after the activity.

Best Management Practices (BMPs) (Watershed)	A practice or a combination of practices, that is determined by the State (or designated area-wide planning agency) after problem assessment, examination of alternative practices, and appropriate public participation to be the most effective, practicable (including technological, economic, and institutional considerations) means of preventing, or reducing the amount of pollution generated by nonpoint sources to a level compatible with water quality goals.
Big Game	Those species of large mammals normally managed as a sport hunting resource. Generally includes; elk, moose, white-tailed deer, mule deer, mountain goat, bighorn sheep, black bear and mountain lion.
Biophysical Setting	An aggregation of vegetation response units, grouped by broad, climatic modifiers including temperature and moisture gradients.
Capable Habitat (Caribou)	Habitat that may not be currently suitable for caribou because of variable stand attributes such as in appropriate seral stage, cover type or stand density. Utilized by caribou for travel between suitable feeding sites, movement within the ecosystem and as lower quality feeding sites.
Cavity	The hollow excavated in a tree that is used by birds or mammals for roosting and/or reproduction.
Channel Type	<p>Broad-level descriptions of major stream types based on geomorphic characteristics; from Rosgen's Stream Classification System:</p> <p>A - Steep, entrenched, cascading, step pool streams. High energy/debris transport associated with depositional soils. Very stable if bedrock or boulder dominated channel.</p> <p>B - Moderately entrenched, moderate gradient, riffle-dominated channel, with infrequently spaced pools. Very stable plan and profile. Stable banks.</p> <p>C - Low gradient, meandering, point-bar, riffle/pool, alluvial channels with broad, well-defined floodplains.</p> <p>D - Braided channel with longitudinal and transverse bars. Very wide channel with eroding banks.</p> <p>E - Low gradient, meandering riffle/pool stream with low width/depth ratio and little deposition. Very efficient and stable. High meander width ratio.</p> <p>F - Entrenched meandering riffle/pool channel on low gradients with high width/depth ratio.</p> <p>G - Entrenched "gully" step/pool and low width-to-depth ratio on moderate gradients.</p>
Coarse Woody Debris	Provides living spaces for a host of organisms and serves as long-term storage sites for moisture, nutrients, and energy. Coarse woody debris consists of any woody material greater than three inches in diameter and is derived from tree limbs, boles, roots, and large (greater than 12 inches in diameter) wood fragments and fallen trees in various stages of decay.

Community (Ecological)	A group of organisms living together; any group of interacting organisms.
Connectivity	The arrangements of habitats that allows organisms and ecological processes to move across the landscape; patches of similar habitats are either close together or linked by corridors of approved vegetation. The opposite of fragmentation.
Conservation Watersheds	Subwatersheds (6 th level HUC) that are considered to have excellent habitat, excellent water quality and strong populations of native fish species or all practical restoration opportunities have been completed. These areas are intended to protect stronghold populations of native salmonids and compliment restoration efforts. See also Priority Watersheds. Priority watersheds have been replaced by restoration watersheds for implementation of the revised Forest Plan. See also definition for Priority Watersheds Appendix E of the Forest Plan DEIS discusses the methodology for establishing Conservation Watersheds.
Corridors	Avenues along which wide ranging animals can travel, plants can propagate, genetic interchange can occur, populations can move in response to environmental changes and natural disasters, and threatened species can be replenished from other areas.
Cultural Properties	The definite location of a past human activity, occupation, or use identifiable through field inventory, historic documentation, or oral evidence. Cultural properties include prehistoric and historic archaeological remains, or architectural sites, structures, objects, or places with important public and scientific uses.
Decommission	Demolition, dismantling, removal, obliteration and/or disposal of a deteriorated or otherwise unneeded asset or component, including necessary cleanup work. This action eliminates the deferred maintenance needs for the fixed asset.
Deferred Maintenance	Maintenance that was not performed when it should have been or when it was scheduled and which, therefore, was put off or delayed for a future period. When allowed to accumulate without limits or consideration of useful life, deferred maintenance leads to deterioration of performance, increased costs to repair, and decrease in asset value. Code compliance (e.g., life safety, ADA, OSHA, environmental, etc.), Forest Plan Direction, Best Management Practices, Biological Evaluations other regulatory or Executive Order compliance requirements, or applicable standards not met on schedule are considered deferred maintenance.
Depressed Native Fish Population	Populations which have numbers that have been reduced or are declining, or a major life-history component has been eliminated.

Designated Route	A National Forest System road or a National Forest system trail on National Forest System lands that is designated for motor vehicle use pursuant to 36 CFR 212.51 on a motor vehicle use map.
Designated Utility Right-of-Way (ROW) Corridor	A parcel of land with specific boundaries identified by law, Secretarial order, the land use planning process, or by some other management decision as being a preferred location for existing and future ROW facilities. The corridor may be suitable to accommodate more than one type of ROW use or facility or one or more ROW uses or facilities that are similar, identical, or compatible. A designated corridor may already be occupied by existing utility facilities. It has been adequately analyzed to provide for a high degree of assurance that in being identified as a “designated corridor,” it can accommodate at least one new additional utility facility. (FSM 1905)
Development Scale	<p>The classification of the scale of development of recreation facilities with scales ranging from 0 to 5. Development scales are defined by levels of site modifications, type of construction material, management controls, design style, development density, services offered, and site modification allowed.</p> <p>Development Scale 0: No Site Modification</p> <p>Development Scale 1: Almost No Site Modification</p> <p>Development Scale 2: Minimal Site Modification</p> <p>Development Scale 3: Moderate Site Modification</p> <p>Development Scale 4: Heavy Site Modification</p> <p>Development Scale 5: Extensive Site Modification</p>
Disturbance	<p>A discrete event that changes existing plant community composition or structure, and interrupts, changes, or resets the ongoing successional sequence.</p> <p>Or</p> <p>Human presence, noise, or other activity that causes wildlife to move away from the area or alter behavior.</p>

Dominant Vegetation Type	<p>Dominant vegetation is determined by the following:</p> <p>Single species – species that makes up at least 60 percent of the canopy cover or weighted basal area.</p> <p>Species mix – No single species determination can be made. Type of mix, either tolerant or intolerant, is determined by what species combination makes up 80 percent of the canopy cover or weighted basal area, with each species contributing more than 20 percent to the total. Mixed species were combined with vegetation response units to derive a single species label, based on predominant vegetation types within a VRU.</p>
Down Wood	<p>Accumulation of woody material scattered on the forest floor that consists of two categories: coarse woody debris and fine woody debris.</p>
Ecological Conditions	<p>Components of the biological and physical environment that can affect diversity of plant and animal communities and the productive capacity of ecological systems. These components could include the abundance and distribution of aquatic and terrestrial habitats, roads and other structural developments, human uses, and invasive, exotic species.</p>
Ecosystems	<p>An interacting system of living organisms and their environment.</p>
Ecological Integrity	<p>The capacity to support and maintain a balanced, integrated, and adaptive biological system having the full range of elements and processes expected in a region's natural habitat. The ability to support and maintain a balanced, integrated, adaptive community of organisms having a species composition, diversity, and functional organization comparable to that of the natural habitat of the region. An ecosystem is said to have high integrity if its full complement of native species is present in normal distributions and abundances, and if normal dynamic functions are in place and working properly. In systems with integrity, the capacity for self-repair when perturbed is preserved, and minimal external support for management is needed.</p>
Endangered Species	<p>A plant or animal species listed under the Endangered Species Act that is in danger of extinction throughout all or a significant portion of its range.</p>
Experimental Forests	<p>One of a series of areas established by the Forest Service in each Region to provide for the research necessary to serve as a basis for managing forests and rangeland.</p>
Final Regeneration Harvest	<p>Timber harvest designed to regenerate a timber stand or release a regenerated stand. This includes clearcut, removal cut of a shelterwood or seed tree system, and selection cut.</p>

Fine Woody Debris	Fine woody debris (FWD) consists of downed dead branches, twigs and small tree or shrub boles less than 3 inches not connected to a live tree or shrub. FWD interacts with the biotic components of soil and litter as storage sites for moisture, nutrients, and energy and is in various stages of decomposition.
Fire Suppression	An appropriate management response to wildland fire that results in curtailment of fire spread and eliminates all identified threats from the particular fire. All wildland fire suppression activities provide for firefighter and public safety as the highest consideration, but minimize loss of resource values, economic expenditures, and/or the use of critical firefighting resources.
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 and disease, and resilience to disturbance.
Fragmentation	A condition in which a continuous area is reduced and divided into smaller sections. Habitat can be fragmented by natural events or development activities.
Fuel Treatment	Any manipulation or removal of fuels to lessen potential damage and resistance to control (includes mechanical and prescribed fire treatments).
Grizzly Bear Core Habitat	An area of secure habitat within a BMU that contains no motorized travel routes or high use nonmotorized trails during the non-denning season and is more than 0.31 miles (500 meters) from a drivable road. Core areas do not include any gated roads but may contain roads that are impassible due to vegetation or constructed barriers. Core areas strive to contain the full range of seasonal habitats that are available in the BMU.
Grizzly Bear Recovery Zone	The area in each grizzly bear ecosystem within which the population and habitat criteria for achievement of recovery will be measured. Cabinet/Yaak and North Continental Divide Ecosystem grizzly bear recovery zones: These zones are two of six grizzly bear recovery zones identified in the Grizzly Bear Recovery Plan (USFWS 1993). Located in northwestern Montana and northern Idaho, the two ecosystems encompass 12,220 square miles of habitat. Portions of the Kootenai, Idaho Panhandle, Lolo, Flathead, Helena, and Lewis and Clark National Forests are included in the recovery areas. Additionally, some state, private, Bureau of Land Management, Glacier National Park, Flathead Indian Reservation, and Blackfeet Indian Reservation lands overlap the recovery zones.
Head Month (HM)	One month's use and occupancy of the range by one animal. For grazing fee purposes, it is a month's use and occupancy of range by one weaned or adult cow with or without calf, bull, steer, heifer, horse, burro, or mule, or five sheep or goats.

Hibernacula	Habitat niches where certain animals (e.g., bats) overwinter, such as caves, mines, tree hollows, or loose bark.
Hydrologic Unit (HU)	A hydrologic unit is a drainage area delineated to nest in a multi-level, hierarchical drainage system. Its boundaries are defined by hydrographic and topographic criteria that delineate an area of land upstream from a specific point on a river, stream or similar surface waters. A hydrologic unit can accept surface water directly from upstream drainage areas, and indirectly from associated surface areas such as remnant, non-contributing, and diversions to form a drainage area with single or multiple outlet points. Hydrologic units are only synonymous with classic watersheds when their boundaries include all the source area contributing surface water to a single defined outlet point."
Hydrologic Unit Code (HUC)	<p>The numeric identifier of a specific hydrologic unit consisting of a 2-digit sequence for each specific level within the delineation hierarchy.</p> <p>4th code refers to the 4th pair of an 8-digit code of a subbasin HU that are generally 450,000 acres in size.</p> <p>5th code refers to the 5th pair of a 10-digit code of a watershed HU that generally ranges from 40,000 to 250,000 acres in size.</p> <p>6th code refers to the 6th pair of a 10-digit code of a subwatershed HU that generally ranges from 10,000 to 40,000 acres in size.</p>
Instream Flows	Streamflow regime required to satisfy a mixture of conjunctive demands being placed on water while it is in the stream.
Integrated Pest Management	A process for selecting strategies to regulate forest pests in which all aspects of a pest-host system are studied and weighed.
Intermittent Stored Service	An existing road where future use is expected but not known and is currently closed to vehicle traffic. The road is in a condition that there is little resource risk if maintenance is not performed.
Invasive Species	Invasive species are an alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. Alien species are any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem (with respect to a particular ecosystem).
Inventoried Roadless Area	For National Forest System lands in Idaho, inventoried roadless areas are those areas designated as Idaho Roadless Areas pursuant to 36 CFR §294.21 and 36 CFR §294.29. These areas are identified in a set of maps maintained at the national headquarters office of the Forest Service.
Landbird Assemblage	A group of species having similar ecological resource requirements and foraging strategies, and therefore having similar roles in the community.

Lands Managed for Old Growth	Lands managed for old growth are stands that either currently meet the definition for old growth, or they are stands that have been identified as having some characteristics of old growth stands and they are being managed with the objective of eventually meeting the definition of old growth.
Large Woody Debris	<p>Large pieces of relatively stable woody material located within the bankfull channel and appearing to influence bankfull flows. There are categorized as singles, aggregates, or rootwads.</p> <p>Single – A single piece that has a length equal to or greater than 3 meters or two-thirds of the wetted stream width and 10 cm in diameter one-third of the way from the base.</p> <p>Aggregate – Two or more clumped pieces, each of which qualifies as a single piece.</p> <p>Rootwad – Rootmass or boles attached to a log less than 3 meters in length.</p>
Linkage Areas	The area between larger blocks of habitat where animals can live at certain seasons and where they can find the security they need to successfully move between these larger habitat blocks.
Long-term Sustained Yield Capacity (LTSYC)	The highest uniform wood yield from lands being managed for timber production that may be sustained under specified management intensities consistent with multiple-use objectives.
Lynx Analysis Units (LAU)	An area of at least the size used by an individual lynx, from about 25 to 50 square miles. A project analysis unit upon which direct, indirect and cumulative effects analyses are performed.
Maintenance	The upkeep of the entire forest development transportation facility including surface and shoulders, parking and side areas, structures, and such traffic-control devices as are necessary for its safe and efficient utilization.
Management Activity	Any activity that is carried out or authorized by the Forest that would result in impacts on natural resources or change human use of the Forest.
Mechanized	Wheeled forms of transportation including non-motorized carts, wheelbarrows, bicycles and any other non-motorized, wheeled vehicle.
Minerals-Locatable	Those hardrock minerals that are mined and processed for the recovery of metals. They also may include certain nonmetallic minerals and uncommon varieties of mineral materials, such as valuable and distinctive deposits of limestone or silica.
Minerals-Leasable	Coal, oil, gas, phosphate, sodium, potassium, oil shale, sulphur, and geothermal resources.

Minerals- Materials (Salable)	A collective term to describe common varieties of sand, gravel, stone, pumice, pumicite, cinders, clay, and other similar materials. Common varieties do not include deposits of those materials that may be locatable.
Mitigation	Measures implemented to minimize, reduce, rectify, avoid, eliminate, and/or compensate the potential impacts to resources identified in the effects analysis.
Motor Vehicle	Any vehicle which is self-propelled, other than: (1) A vehicle operated on rails; and (2) Any wheelchair or mobility device, including one that is battery-powered, that is designed solely for use by a mobility- impaired person for locomotion, and that is suitable for use in an indoor pedestrian area. (36 CFR 212.1)
Motor Vehicle Use Map (MVUM)	A map reflecting designated roads, trails, and areas on an administrative unit or a Ranger District of the National Forest System. (36 CFR 212.1)
Municipal Supply Watersheds (public supply watersheds)	A watershed that serves a public water system as defined in Public Law 93-523 (Safe Drinking Water Act); or as defined in State safe drinking water regulations. The definition does not include communities served by a well or confined groundwater unaffected by Forest Service activities.
National Register of Historic Places	The National Register of Historic Places is the Nation’s official list of cultural resources worthy of preservation. Authorized under the National Historic Preservation Act of 1966, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect our historic and archeological resources. Properties listed in the Register include districts, sites, buildings, structures, and objects that are significant in American history, architecture, archeology, engineering, and culture. The National Register is administered by the National Park Service, which is part of the U.S. Department of Interior.
Native Species	Animals or plants that have historically occupied a given aquatic or terrestrial area.
Non-Game	Those species of animals that are not managed as a sport hunting resource.
Noxious Weeds	Plants designated as noxious weeds by the Secretary of Agriculture or by the responsible State official. Noxious weeds generally possess one or more of the following characteristics: aggressive and difficult to manage, poisonous, toxic, parasitic, a carrier or host of serious insects or disease, and being native or new to or not common to the united states or parts thereof.
Nutrient Limited Rock Types	Geologies (e.g. quartzites, dolomites, mafic sills) that are naturally deficient in chemical elements necessary for long-term site productivity.

Off-highway Vehicle (OHV)	Any 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. Over snow and over water vehicles are excluded from this definition.
Old Growth	<p>Old growth stands are defined as those that meet the minimum criteria as described in Green et al, 1992 (errata corrected 10/2008). If that document is revised or replaced by the Northern Region, the updated version will be used.</p> <p>In general, old growth stands are in the late stages of stand development and are distinguished by old trees and related structural attributes. These old growth stands are typically distinguished from earlier developmental stages by combinations of characteristics such as tree age, tree size, number of large old trees per acre, and stand density (expressed as basal area). Specific values for these attributes vary by local ecological type and forest type. Other characteristics sometimes associated with old growth stands (canopy layers, snags, down wood, etc) are not part of the minimum criteria needed to meet the definition of an old growth stand because those other characteristics can vary greatly even in stands that are clearly old growth.</p> <p>The old growth definitions are the USFS Northern Region definitions as documented in: Green, P.; Joy, J.; Sirucek, D.; Hann, W.; Zack, A.; Naumann, B. 1992 (errata corrected 10/2008). Old Growth Forest Types of the Northern Region.</p>
Open Motorized Route Density (OMRD)	Calculation made with the moving windows technique that includes open roads, other roads not meeting all restricted or obliterated criteria, and open motorized trails. The percent of the analysis area in relevant route density classes are calculated.
Openings	Meadows, clearcuts, and other areas of vegetation that do not provide cover.

**Operational
Maintenance Level
(roads)**

Defines the level of service provided by, and maintenance required for, a specific road, consistent with road management objectives and maintenance criteria. The maintenance level to be assigned at a future date considering future road management objectives, traffic needs, budget constraints, and environmental concerns. The objective maintenance level may be the same as, or higher or lower than, the operational maintenance level.

Maintenance Level 1: Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure period must exceed 1 year. Basic custodial maintenance is performed to keep damage to adjacent resource to an acceptable level and to perpetuate the road to facilitate future management activities. Emphasis is normally given to maintaining drainage facilities and runoff patterns. Planned road deterioration may occur at this level. Appropriate traffic management strategies are “prohibit” and “eliminate”. Roads receiving level 1 maintenance may be of any type, class or construction standard, and may be managed at any other maintenance level during the time they are open for traffic. However, while being maintained at level 1, they are closed to vehicular traffic, but may be open and suitable for nonmotorized uses.

Maintenance Level 2: Assigned to roads open for use by high clearance vehicles. Passenger car traffic is not a consideration. Traffic is normally minor, usually consisting of one or a combination of administrative, permitted, dispersed recreation, or other specialized uses. Log haul may occur at this level. Appropriate traffic management strategies are either (1) discourage or prohibit passenger cars or (2) accept or discourage high clearance vehicles.

Maintenance 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. Roads in this maintenance level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. Appropriate traffic management strategies are either “encourage” or “accept.” “Discourage” or “prohibit” strategies may be employed for certain classes of vehicles or users.

Maintenance Level 4: Assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most roads are double lane and aggregate surfaced. However, some roads may be single lane. Some roads may be paved and/or dust abated. The most appropriate traffic management strategy is “encourage.” However, the “prohibit” strategy may apply to specific classes of vehicles or users at certain times.

Maintenance Level 5: Assigned to roads that provide a high degree of user comfort and convenience. Normally, roads are double-lane, paved facilities. Some may be aggregate surfaced and dust abated. The appropriate traffic management strategy is “encourage.”

Outstandingly Remarkable Value (W&SRs)	A river-related value that is a rare, unique, or exemplary feature that is significant at a comparative regional or national scale.
Over-Snow Vehicle	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.
Pattern	Number, frequency, size and juxtaposition of landscape elements (stands and patches) that are important to the determination or interpretation of ecological processes.
Peat	Organic matter (the dead remains of plants) deposited under water-soaked conditions as a result of incomplete decomposition. Peat accumulates when the rate of deposition of dead plant matter (usually sedges or sphagnum mosses) exceeds the rate of decomposition.
Peatlands	Any waterlogged area containing an accumulation of peat 30cm or more thick. Any type of peat-covered terrain, including bogs, fens and muskegs. Once peat has developed to this depth, the availability of oxygen and nutrients essential to plant growth drops sharply, and plant roots must obtain their mineral nutrients from the saturated, oxygen-poor peat. Because nutrient cycling is limited, peatlands depend on external supplies of nutrients from either the atmosphere or inflowing, mineral-enriched water.
Plan Area	The National Forest System lands covered by a plan.
Population (Ecological)	Organisms of the same species that occur in a particular place at a given time.
Prescribed Fire	A wildland fire originating from a planned ignition to meet specific objectives identified in a written, approved, prescribed fire plan for which NEPA requirements (where applicable) have been met prior to ignition.
Priority Watersheds	Subwatersheds (6 th level hydrologic units) as described in INFS (USDA FS 1998), which are intended to provide a pattern of protection across the landscape, where habitat for inland native fish would receive special attention and treatment and would have the highest priority for restoration, monitoring and watershed analysis. Priority watersheds have been further refined by Conservation Subwatersheds and Restoration Subwatersheds for implementation of the Draft Forest Plan.

Public Water System	<p>A public water system (PWS) is a system for the provision of water to the public for human consumption through pipes or other constructed conveyances, if such system has at least 15 service connections or regularly serves an average of at least 25 individuals at least 60 days out of the year.</p> <p>A public water system can be one of three types:</p> <p>Community Water System: Serves at least 15 service connections or 25 people year round in their primary residences (e.g., most cities and towns, apartments, and mobile home parks with their own water supplies).</p> <p>Non-transient Non-community Water System (NTNCWS): Serves at least 25 of the same persons over six months per year (e.g., schools, churches, nursing homes, factories, and hospitals that have their own water source).</p> <p>Transient Non-community Water System (TNCWS): Serves an average of at least 25 persons (but not the same 25) less than six months per year (e.g., campgrounds or highway rest stops that have their own water source).</p>
Reclamation	<p>Those actions performed during or after mineral activities to shape, stabilize, revegetate, or otherwise treat the affected lands in order to achieve a safe and ecologically stable condition and land use that is consistent with long-term forest land and resource management plans and local environmental conditions.</p>
Recreation Opportunity Spectrum (ROS)	<p>A framework of land delineations that identifies a variety of recreation experience opportunities categorized into classes on a continuum. The Spectrum's continuum has been divided into six major classes for Forest Service use: Urban (U), Rural (R), Roaded Natural (RN), Semi-primitive Motorized (SPM), Semi-Primitive Non-Motorized (SPNM), and Primitive (P).</p>
Recreation sites	<p>Specific places in the Forest other than roads and trails that are used for recreational activities. These sites include a wide range of recreational activities and associated development. These sites include highly developed facilities like ski areas, resorts, and campgrounds. It also includes dispersed recreation sites that have few or no improvements but show the affects of repeated recreation use.</p>
Restoration	<p>Restoration is the process of assisting the recovery of resilience and the capacity of a system to adapt to changes if the environment where the system exists has been degraded, damaged, or destroyed. Ecological restoration focuses on reestablishing ecosystem functions by modifying or managing the composition, structural arrangement, and processes necessary to make a terrestrial and aquatic ecosystem sustainable and resilient under current and future conditions..</p>

Restoration Watersheds

Restoration watersheds are subwatersheds with a condition rating of “Moderate” or “High” and have depressed populations of bull trout, westslope cutthroat trout, interior redband trout, or a combination of the three species. These subwatersheds are a priority for restoration, as they may have degraded habitat conditions, water quality limitations, depressed populations of native fish species, or a combination of the above, but have a high potential improvement through active or passive restoration efforts. Priority watersheds have been replaced by restoration watersheds for implementation of the revised Forest Plan. See also definition for Priority Watersheds. Appendix E of the Forest Plan DEIS discusses the methodology for establishing Restoration Watersheds.

Right-of-Way (ROW)

Public or National Forest System lands authorized to be used or occupied pursuant to a ROW grant or special use authorization.

Riparian Conservation Areas (RCAs)	<p>Portions of watersheds where riparian-dependent resources receive primary emphasis and management activities are subject to specific guidelines. The followings RCA widths are based on the best available science and apply to all aquatic habitats, except where site-specific analysis supports modification:</p> <p>Category 1 – Fish-bearing streams: RCAs consist of the stream and the area on either side of the stream extending from the edges of the active channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of the riparian vegetation, or to a distance equal to the height of two site-potential trees, or 300 feet slope distance (600 feet, including both sides of the stream channel), whichever is greatest.</p> <p>Category 2 – Permanently flowing non-fish bearing streams: RCAs consist of the stream and the area on either side of the stream extending from the edges of the active channel to the top of the inner gorge, or to the outer edges of the 100-year floodplain, or to the outer edges of the riparian vegetation, or to a distance equal to the height of one site-potential tree, or 150 feet slope distance (300 feet, including both sides of the stream channel), whichever is greatest.</p> <p>Category 3 - Ponds, lakes, reservoirs and wetlands greater than one acre: RCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil,-to the extent of moderately and highly 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 maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest.</p> <p>Category 4 – Seasonally flowing or intermittent streams, wetlands less than one acre: This category includes features with high variability in size and site-specific characteristics. At a minimum, the RCAs must include the area from the edges of the stream channel or wetland, to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest.</p>
Risk	A combination of 1) the likelihood that a negative outcome will occur and 2) the severity of the subsequent negative consequences.
Risk Factors	Land-use disturbances that are negatively affecting watershed functions and processes and stream-riparian environments.
Road	A motor vehicle route over 50 inches wide, unless identified and managed as a trail.
Road Maintenance	The ongoing upkeep of a road necessary to retain or restore the road in accordance with its road management objective.
Road Construction	Activity that results in the addition of Forest classified or temporary road miles.

Road Reconstruction	<p>Activity that results in improvement or realignment of an existing classified road defined as follows:</p> <p>Road improvement - Activity that results in an increase of an existing road's traffic service level, expansion of its capacity, or a change in its original design function.</p> <p>Road realignment - Activity that results in a new location of an existing road or portions of an existing road, and treatment of the old roadway.</p>
Scenic Integrity Objective	<p>The Scenic Integrity Objectives (SIOs) serve as the desired conditions for the scenic resources and represent the degree of intactness of positive landscape attributes. SIOs are categorized into 5 levels. The highest scenic integrity ratings are given to those landscapes where valued landscape attributes will appear complete with little or no visible deviations evident. Lower SIOs are given to those landscapes where modifications to the landscape will be more evident. Each of the SIOs is defined as follows:</p> <p>Very High – Landscape is intact with changes resulting primarily through natural processes and disturbance regimes.</p> <p>High – Management activities are unnoticed and the landscape character appears unaltered.</p> <p>Moderate – Management activities are noticeable but are subordinate to the landscape character. The landscape appears slightly altered.</p> <p>Low – Management activities are evident and sometimes dominate the landscape but are designed to blend with surroundings by repeating line, form, color, and texture of valued landscape character attributes. The landscape appears altered.</p> <p>Very Low (not used in this draft plan) – Human activities of vegetative and landform alterations may dominate the original, natural landscape character but should appear as natural occurrences when viewed at background distances.</p>
Security	<p>An area where wildlife (such as elk) retreat to for safety when disturbance in their usual range is intensified – such as by logging activities or during the hunting season. To qualify as a security area for elk there must be 250 contiguous acres that are more than one-half mile from motorized routes.</p>
Self-sustaining Populations	<p>Populations that are sufficiently abundant, interacting, and well-distributed in the plan area, within the bounds of their life history and distribution of the species and the capability of the landscape, to provide for their long-term persistence, resilience and adaptability over multiple generations.</p>
Silvicultural Practices	<p>Activities that control the establishment, composition, structure and function of forested ecosystems.</p>

Silvicultural Prescription	A silvicultural prescription is a written document that describes in detail the management activities needed to implement a silvicultural treatment or treatment sequence. The prescription is based on an examination of the stand being proposed for management. The prescription documents the results of an analysis of present and anticipated future stand conditions and evaluates this in terms of management direction. It also describes the desired future vegetation conditions in measurable terms.
Silvicultural Systems	A planned series of treatments for tending, harvesting, and re-establishing a stand.
Size Class	Size class is based on basal area weighted diameter of the plot/stand. Weighted diameter is calculated then classification is made as follows according to weighted diameter: Seedling/sapling: 0.0 – 4.9 inch DBH (if basal area weighted diameter is 0.0, must have 100 or more trees per acre) Small: 5.0 – 9.9 inch Medium: 10.0 – 14.9 inch Large: 15.0 +
Snag	A standing dead tree usually greater than five feet in height and six inches in diameter at breast height (DBH).
Soil Productivity	The inherent capacity of a soil to support the growth of specified plants, plant communities, and soil biota. It is often expressed by some measure of biomass accumulation.
Source Water Areas	Source water areas contain untreated water from streams, rivers, lakes or underground aquifers that is used to supply private wells and public drinking water.
Special Use Authorization	A permit, term permit, lease, or easement that allows occupancy, use, rights, or privileges of NFS land.
Stand Replacement Fire	A fire severity classification where at least 75 percent average top-kill of vegetation occurs within a typical fire perimeter.
Stronghold Populations	Directly associated with strong populations. For native fish, strong populations have stable numbers or are increasing, and all major life history forms that historically occurred within the watershed are present.
Suitable Habitat	Habitat that currently has both the fixed and variable stand attributes for a given species habitat requirements. Variable attributes change over time and may include seral stage, cover type and overstory canopy cover.

Sustainability	Meeting needs of the present generation without compromising the ability of future generations to meet their needs. Sustainability is composed of desirable social, economic, and ecological, economic conditions or trends interacting at varying spatial and temporal scales embodying the principles of multiple-use and sustained yield.
Temporary Road or Trail	A road or trail necessary for emergency operations or authorized by contract, permit, lease, or other written authorization that is not a forest road or a forest trail and that is not included in a forest transportation atlas.
Threatened Species	Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range and which the appropriate Secretary has designated as a threatened species.
Timber Harvest	The removal of trees for wood fiber utilization and other multiple-use purposes.
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. In addition, managing land to provide commercial timber products on a regulated basis with planned, scheduled entries.
Total Maximum Daily Load (TMDL)	An estimate of the total quantity of pollutants (from all sources - point, nonpoint, and natural) that may be allowed into waters without exceeding applicable water quality standards.
Total Motorized Route Density (TMRD)	Calculations made with the moving windows technique that includes open roads, restricted roads, roads not meeting all reclaimed criteria, and open motorized trails. The percent of the analysis area in relevant route density classes is calculated.
Traditional Cultural Areas	Those areas of the forest used by American Indians for traditional activities and often referred to as “religious use areas” or “sacred areas.” They may include areas traditionally used for gathering of special forest products.
Trail	A route 50 inches or less in width or a route over 50 inches wide that is identified and managed as a trail.
Unauthorized Road or Trail	A road or trail that is not a forest road or trail or a temporary road or trail and that is not included in a forest transportation atlas.
Ungulate	A hoofed mammal such as a deer or elk.

Vegetation Management	Activities designed primarily to promote the health of forest vegetation in order to achieve desired results. When vegetation is actively managed, it means that it is manipulated or changed on purpose by humans to produce desired results. Where active management of vegetation is required, techniques are based on the latest scientific research and mimic natural processes as closely as possible. Vegetation management is the practice of manipulating the species mix, age, fuel load, and/or distribution of wildland plant communities within a prescribed or designated management area in order to achieve desired results. It includes prescribed burning, grazing, chemical applications, biomass harvesting, and any other economically feasible methods of enhancing, retarding, modifying, transplanting, or removing the aboveground parts of plants.
Vegetation Response Unit (VRU)	Units of land with vegetative communities that have broadly similar disturbance responses and successional pathways, and that produce similar landscape-scale vegetation patterns. VRUs are typically groups of habitat types aggregated by landform and topographic characteristics that regulate disturbance regimes and successional response. Historically lands within a given VRU were subject to broadly similar disturbance regimes.
Watershed	A geographic area of land, water, and biota within the confines of a drainage divide. The total area above a given point of a water body that contributes flow to that point.
Watershed Condition Rating	<p>The state of the watershed based on physical and biogeochemical characteristics and processes (such as, hydrologic, geomorphic, landscape, topographic, vegetative cover, and aquatic habitat), water flow characteristics and processes (such as volume and timing), and water quality characteristics and processes (such as chemical, physical, and biological).</p> <p>Low: Watersheds exhibit geomorphic, hydrologic, and biotic integrity relative to their natural potential condition. The drainage network is generally stable. Physical, chemical, and biologic conditions suggest that soil, aquatic, and riparian systems are predominately functional in terms of supporting beneficial uses.</p> <p>Moderate: Watersheds exhibit moderate geomorphic, hydrologic and biotic integrity relative to their natural potential condition. Portions of the watershed may exhibit an unstable drainage network. Physical, chemical, and biologic conditions suggest that soil, aquatic, and riparian systems may not support beneficial uses.</p> <p>High: Watersheds may have limited geomorphic, hydrologic, and biotic integrity relative to their natural potential condition. A majority of the drainage network may be unstable. Physical, chemical, and biologic conditions suggest that soil, riparian, and it is assumed that beneficial uses are not generally supported.</p>

Watershed Scale Aquatic Restoration	<p>Restoration, based on problem-identification through watershed analyses, where the emphasis is on treating the entire catchment area rather than focusing on just a local project or site. The intent is to establish a trend, at the watershed scale, toward a desired condition of functions and processes, or toward proper functioning condition within an acceptable range of variability.</p> <p>Site-scale restoration is then used to address or treat specific elements Watershed-scale problems can be defined as anything that interferes with the normal functions and processes that operate in a watershed, from runoff volume and timing of stream flows to slope stability, to canopy conditions in the riparian areas and water quality.</p>
Wet Season	<p>A time frame that identifies the length of leaving tops and limbs onsite for nutrient retention and soil productivity. It should consist of a minimum of 4 to 6 months, not including summer months from July through September.</p>
Wetlands	<p>Those areas that are inundated by surface or ground water with a frequency sufficient to support, and under normal circumstances do or would support a prevalence of vegetation or aquatic life that requires saturated or seasonally saturated soil conditions for growth and reproduction. Wetlands generally include swamps, marshes, bogs, and similar areas such as sloughs, potholes, wet meadows, river overflows, mud flats, and natural ponds.</p>
Wetted Width	<p>The width of the water surface measured at right angles to the direction of flow.</p>
Width-to-Depth Ratio	<p>An index value that indicates the shape of the channel cross-section (ratio of bankfull width/mean bankfull depth).</p>
Wildfire	<p>Unplanned ignitions of a wildland fire (such as a fire caused by lightning or unauthorized and accidental human-caused fires) and escaped prescribed fires.</p>
Wildland Fire	<p>A general term describing any non-structure fire that occurs in the wildland. Two distinct types of wildland fire have been defined and include planned ignitions (prescribed fire) and natural unplanned fire (wildfire).</p>

Wildland Fire Mitigation Plan

A plan for an at-risk community that:

Is developed within the context of the collaborative agreements and the guidance established by the Wildland Fire Leadership Council and agreed to by the applicable local government, local fire department, and State agency responsible for forest management, in consultation with interested parties and the Federal land management agencies managing land in the vicinity of the at-risk community;

Identifies and prioritizes areas for hazardous fuel reduction treatments and recommends the types and methods of treatment on federal and non-federal land that will protect one or more at-risk communities and essential infrastructure; and

Recommends measures to reduce structural ignitability throughout the at-risk community.

Wildland Urban Interface (WUI)

The term “wildland urban interface” means either:

(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 ½-mile from the boundary of an at-risk community;
- (ii) an area within 1 ½ 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 Crossing** A structure that facilitates the safe movement of wildlife across a man-made barrier such as a highway or railroad, or warning systems for motorists that reduce the likelihood of a collision with wildlife. Examples include overpasses, underpasses, culverts, fencing and electronic systems that detect the presence of large animals and flash warning signs to slow down drivers.
- Winter (Recreation)** December 1 through April 30 every year. This is the period defined for the suitable-use tables for winter motorized and nonmotorized activities.
- Winter Range** The area available to and used by wildlife (big game) during the winter season (Dec 1 to April 30). Generally, lands below 4,000 feet in elevation, on south and west aspects, that provides forage and cover.

Appendix A – Possible Actions

Proposed and possible actions are those actions that the Forest anticipates to occur over the life of the Plan that show the variety of multiple use opportunities or resource management programs that the Forest expects to provide (36 CFR 219.11(b)). The proposed and possible actions are presented as a brief summary of the types of projects that may occur to maintain or move the Forest toward desired conditions. Because the Plan is a strategic document that provides general management guidance, the following items include program strategies anticipated during the next 15 years.

The list of proposed and possible actions is not intended to be all-inclusive, nor are they intended to be decisions. They are projections of what actions may take place in the future for program areas that might constitute the typical annual program of work for a unit.

Access and Recreation

Recreation management includes those activities that assist in providing a range of recreation opportunities across the Forest. Controlling visitor impacts to resources and other visitors; constructing and maintaining facilities and trails; and providing a positive visitor experience. Specifically, the following types of actions are likely to occur:

- Trail construction, reconstruction, maintenance and relocation;
- Construction of facilities such as parking areas, toilets, trailheads, information kiosks, fishing access and boating access points;
- Maintain and upgrade of facilities such as campgrounds, picnic areas, toilets and parking lots.
- Maintain and modify dispersed recreation sites to reduce or eliminate resource concerns;
- Complete and implement the Recreation Facility Master Plan Assessment and identify unsustainable recreation programs to be eliminated.
- Implement the Scenic Management System across the Forest.
- Maintain (e.g. clearing, grading, brushing, providing functioning water structures) and improve (e.g. realignment, resurface, bridges and water structures) existing road and trail system and construct new roads when needed.
- Enter into agreements with cooperators to provide access to winter motorized and non-motorized trails.
- Complete travel management planning. Identify summer routes that are open to wheeled motorized vehicles. Identify areas and trails for motorized and non-motorized winter uses on the Forest.
- Provide special use permits for commercial recreation opportunities (e.g. resorts, ski areas, outfitter and guides, special events)
- Provide recreational rental cabins and lookouts for public use.
- Develop interpretation and educational opportunities for public enjoyment.

Road construction:

- Road reconstruction (includes BMP work)
- Temporary road construction
- Annual road maintenance
- Deferred road maintenance
- Drainage structure repair and replacement
- Putting roads into 'intermittent stored service'
- Road decommissioning
- Emergency repairs caused by natural events

For Administrative Facilities:

- Annual maintenance
- Deferred maintenance
- Improvements to meet health and safety requirements
- Improvements to reduce operation and maintenance costs (increase energy efficiency)
- Emergency repairs caused by natural events
- Building decommissioning

Vegetation Management

Vegetation management includes those activities that actively move vegetation towards desired conditions. Vegetation management might include activities that would increase representation of early seral, shade-intolerant, drought and fire tolerant, insect/disease resistant species dominance types. Activities could treat areas to maintain or improve forest resilience, natural diversity and productivity and to reduce negative impacts of non-native organisms over the life of the Plan. Specifically, the following types of actions are likely to occur:

- Thinning stands to improve forest health and trend towards historic densities
- Regeneration timber harvest using a variety of silvicultural prescriptions (see timber section)
- Planting blister rust resistant white pine
- Planting shade-intolerant, fire-adapted, drought resistant species
- Managing stands to retain or move towards old growth
- Treating noxious weeds
- Treating insects and disease using integrated pest management techniques

Timber

Timber management is used to move vegetation towards historic condition and to reduce fuels. Activities for timber management may include the following:

- Intermediate timber harvest (thinning)
- Regeneration harvest with treatments that are even age in nature (clearcut, or two-age regeneration), or uneven age (group selection)
- Salvage of dead or dying timber

The predicted volume sold (under current budget levels) is 47.5 MMBF/year. It is anticipated that 5,700 acres per year would be harvested to achieve this timber volume and move vegetation towards desired conditions.

Fire Management

Wildland fire management will be based on the appropriate management response. Actions related to treatment of fuels will include the following:

- Planned ignitions
- Mechanical treatments, including commercial timber sales and noncommercial treatments
- Unplanned ignitions

Wildlife

Wildlife habitat management involves establishing and maintaining the vegetation diversity necessary to provide food, cover and security for all wildlife species native to the Forest in cooperation with federal, state and other organizations. Activities might include:

- Maintenance or restoration of wildlife habitat (i.e., burning)
- Site-specific improvement of motorized access densities and secure core habitat parameters within Bear Management subunits
- Travel management
- Limited Amphibian surveys

Watersheds (Water, Soil, and Riparian) and Aquatic Species

Activities will likely consist of:

- Stream restoration actions at selected stream segments to improve degraded conditions and stream channel stability;
- Reshaping stream banks to stable slopes;
- Removing streamside berm material that disconnects streams from floodplains;
- Constructing instream structures to stabilize channels and improve aquatic habitat;
- Planting riparian-type vegetation;
- Treating noxious weeds in riparian areas;
- Watershed level restoration actions to improve sediment and water yield;
- Removal, reconstruction or improved maintenance of stream-side roads to increase water infiltration and reduce chronic sediment delivery to stream channels;
- Evaluating and treating upland roads to reduce water interception and reduce landslide risk;

- Completing water body status assessments in cooperation with Idaho Department of Environmental Quality through water quality assessments, total maximum daily loads, restoration plans, best management practices implementation, and monitoring;
- Riparian plantings to increase streamside shade;
- Erosion control by decommissioning and re-constructing streamside roads;
- Culvert replacement or removal;
- Riparian area fencing;
- Mining reclamation;
- Fisheries management may include actions needed to: (1) ensure a steady stream of large woody debris is available to provide in-stream nutrients; (2) ensure streamside shading and stream bank stability; and (3) prevent the unnatural accumulation of sediments from sources such as roads and trails;
- Actions anticipated to improve fish passage include reconstruction or removal of road crossings which limit upstream migration of native fish and other stream-associated species.

American Indian Rights and Interests

Activities will likely consist of:

- Continued habitat management of traditional use areas through development of management plans for ongoing consultation through a cooperatively established communication policy.
- Cooperatively established policy for continued access and acquisition of forest products for each federally recognized tribe with historical or treaty interest for cultural uses.
- Ongoing government-to-government and staff consultation for each federally recognized tribe with historical or treaty interests in Forest land, through a cooperatively established communication policy.

Grazing

Activities will likely consist of:

- Permitting livestock grazing where compatible with management area suitability

Heritage Resources

Heritage resources activities will likely consist of:

- Conducting surveys to identify significant sites, and follow-up actions necessary to protect, stabilize, or salvage sites.
- Identifying and evaluating heritage resources for the National Register of Historic Places
- Stabilizing, rehabilitating, restoring and caring for heritage resources
- Conducting deferred maintenance to historic facilities
- Promoting heritage values through public education, outreach, and interpretative programs
- Conducting scientific and historic research on heritage resources

Lands

Lands program actions are likely to include:

- Maintaining landlines and actions associated with adjusting national forest system ownership through purchases, exchanges or other conveyances.
- Special use program management involves permitting uses (e.g. easements), structures (e.g. communication towers), outfitter/guides and special events.
- Conveyance
- Land Exchange
- Special Use Authorizations
- Boundary Management (Land line survey and monumentation)
- Right-of-way acquisition

Minerals

Activities will likely consist of:

- Locatable minerals exploration and development
- Mineral materials development
- Abandoned mine reclamation
- Locatable and leasable minerals exploration and development".

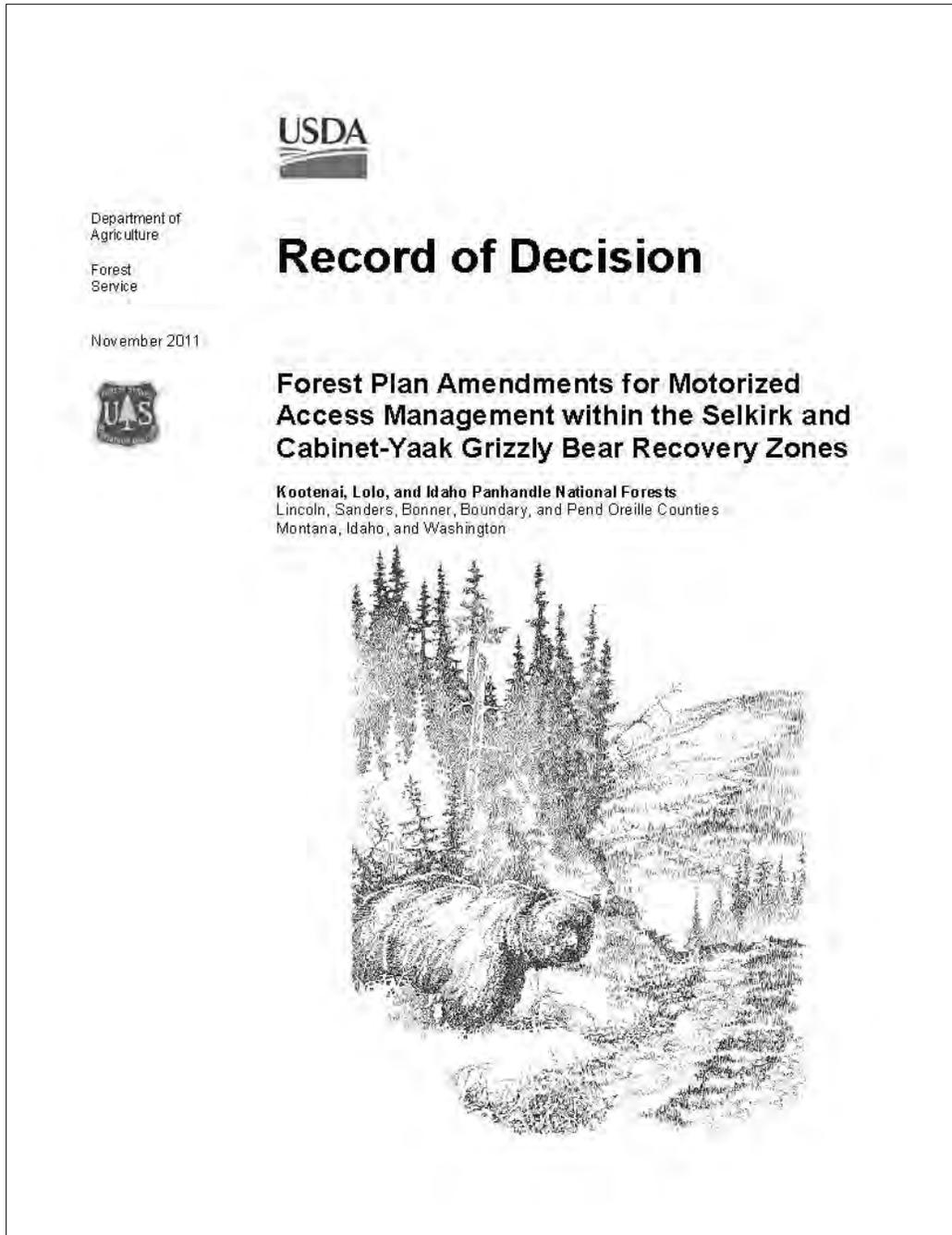
Social and Economic Systems

- Contribute to and support local jobs and labor income within the counties surrounding the forest through anticipated output associated with management activities

Appendix B – Retained Existing Decisions

Grizzly Bear Access Amendment
Inland Native Fish Strategy and Bull Trout Biological Opinion
Northern Rockies Lynx Management Direction

GRIZZLY BEAR ACCESS AMENDMENT



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Record of Decision
Kootenai, Lolo, and Idaho Panhandle National Forests
Forest Plan Amendments
for
Motorized Access Management
Within the Selkirk and Cabinet/Yaak Grizzly Bear Recovery Zones
USDA Forest Service
Northern Region
November 2011

I. Introduction

This programmatic record of decision (ROD) changes the land and resource management plans, also known as the forest plans, for the Kootenai (KNF), Lolo (LNF), and Idaho Panhandle National Forests (IPNF) by amending the objectives, standards, and guidelines that address grizzly bear management within the Selkirk and Cabinet-Yaak recovery zones.

Planning for units of the National Forest System involves two levels of decision-making. The first level, often referred to as land and resource management planning (often referred to as forest planning), is the development or amendment of forest plans that provide management direction for resource programs, uses, and protection measures. Forest plans and associated amendments are intended to set out forest-wide direction and management area prescriptions or decisions with goals, objectives, standards, and guidelines for future site-specific decisions. The plan amendment guides resource management decisions and aids the next level of site-specific planning.

The second level of planning involves the analysis and implementation of projects designed to achieve goals and objectives of the forest plan. This is commonly referred to as site-specific or project-level planning. It requires relatively detailed information on a wide variety of resources including the location, condition, and current uses of individual roads and trails, and the identification of when and where individual roads and trails will be open or closed to various types of use. This step is most often accomplished at the ranger district (local) level.

This amendment does not make site-specific access management decisions within the two recovery zones.

Site-specific decisions on individual roads and trails will be proposed through future project-level planning. These proposals will require public notification and input for identification of issues and concerns and development of alternative actions. This ROD does not directly authorize any specific action; rather, it identifies and selects a programmatic action that sets standards for implementation of site-specific proposals. Site-specific access related decisions made through previous NEPA analyses and with completed U.S. Fish and Wildlife Service (USFWS) consultation will not be affected by this decision. The decision on these forest plan amendments will not require re-consultation on previous decisions for access or resource management projects. The standards set in this decision will apply to all future site-specific decisions regarding access management in the Selkirk and Cabinet-Yaak grizzly bear recovery zones (as described in the Analysis Area section of the Final Supplemental Environmental Impact Statement (FSEIS), pp. 39 and 40).

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II. Background

The IPNF, KNF, and LNF forest plans were approved in 1987. Each of the plans provided similar, but slightly different management direction for grizzly bears, especially in relation to road management. The Grizzly Bear Recovery Plan (USFWS 1993a) identifies adequate effective habitat as the most important element in grizzly bear recovery. Effective habitat is a reflection of an area's ability to support grizzly bears based on the quality of the habitat and the type/amount of human disturbance imposed on it. Security habitat allows for sufficient space for grizzly bears to roam and effectively use available habitats. By definition, security habitat is an area or space outside or beyond the influence of high levels of human activity. Open roads, vegetation and fuel projects, and high-use recreational areas such as trails or campgrounds are examples of activities that reduce the amount of secure habitat that is available and may result in displacement of bears.

Controlling and directing motorized access is one of the most important tools in achieving habitat effectiveness and managing grizzly bear recovery (ibid). By controlling motorized access, certain objectives can be achieved including minimizing human interactions and potential grizzly bear mortality, reducing displacement from important habitats, and minimizing habituation to humans.

The Recovery Plan recognized that existing forest plans may not provide sufficient direction for the management of roads. It specifically recommended that the Interagency Grizzly Bear Committee (IGBC) appoint a task force of biologists to develop a standardized process of addressing open and closed roads. In 1994, the IGBC issued a Task Force Report recommending the Selkirk/Cabinet-Yaak Subcommittee develop parameters for road densities and core area in the Selkirk and Cabinet-Yaak Recovery Zones using the best available biological information, and considering the social and economic impacts of those recommendations (IGBC 1994). The USFWS issued Amended Biological Opinion and Incidental Take Statements on the KNF, LNF, and IPNFs' Forest Plans in 1995, 1996 and 2001, respectively, which included as a term and condition that the Forest Service adopt the IGBC recommendations, when developed. Additionally, in 1995 following an appeal of the Kootenai Forest Plan, the Chief of the Forest Service directed the Regional Forester to incorporate, through Forest Plan amendments or revisions, the IGBC Subcommittee recommendations in their entirety.

In response to the IGBC Subcommittee recommendations, an Access Management Task Group was formed in 1996, which developed a set of parameters based on best available science, public input, and social impacts. These recommendations utilized research performed by grizzly bear research scientists Wayne Wakkinen (Idaho Department of Fish and Game (IDFG)) and Wayne Kasworm (USFWS). The work of the Access Management Task Group culminated in the following recommendations:

1. Open motorized route density (OMRD) of greater than 1 mile per square mile on no more than 33 percent of a bear management unit (BMU);
2. Total motorized route density (TMRD) of greater than 2 miles per square mile on no more than 26 percent of a bear management unit;
3. Core area of at least 55 percent of the bear management unit;
4. Administrative use that would be restricted to an average of no more than one trip per day on gated roads; and
5. Road density calculations that would be determined by using the Moving Windows Analysis method.

These recommendations were presented to the IGBC Subcommittee in 1998 and Implementation Guidelines were then developed to guide how the Forests would implement the

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recommendations. The subcommittee proposed implementation of the recommendations as interim guidelines to be in place for the next three years or until the Forest Plan revisions were completed. The subcommittee approved the Interim Access Management Rule Set (IGBC 1998b) in December of 1998 (IGBC 1998a). Implementation of the Interim Access Management Rule Set was then litigated by Alliance for the Wild Rockies in 1999. The lawsuit contended that the KNF and IPNF could not implement the Interim Access Management Rule Set without first amending their Forest Plans.

In 2001, the Forests settled the lawsuit with Alliance for the Wild Rockies by agreeing to amend their Forest Plans to address grizzly bear habitat management. The LNF, though not named in the lawsuit, was included in the planning process in order to make conforming amendments to its own Forest Plan and to provide consistent management direction throughout the Cabinet-Yaak Recovery Zone. In compliance with the settlement agreement, the Forests released an FEIS in March 2002. On March 24, 2004, the Record of Decision was signed that amended the Forest Plans for the KNF, LNF, and IPNF.

The 2004 Record of Decision selected Alternative E for implementation. This alternative was modified to incorporate the terms and conditions identified in the Biological Opinion issued by the USFWS. The 2004 Record of Decision amended the objectives, standards, and guidelines in the three Forest Plans that addressed grizzly bear management within the Selkirk and Cabinet-Yaak Recovery Zones. At that time, the Forests began analyzing grizzly bear habitat using guidance provided by the Biological Opinion. This included analysis of OMRD, TMRD, core area, and linear open/total road densities for areas of grizzly bear occupancy adjacent to the recovery zones (BORZ polygons).

In November and December 2004, lawsuits were filed in the U.S. District Court of Montana against the Forest Service and the USFWS by the Alliance for the Wild Rockies and The Lands Council, and another by the Cabinet Resource Group, Great Bear Foundation, Idaho Conservation League, Natural Resources Defense Council, and Selkirk Conservation Alliance. On August 28, 2006, the Montana District Court ruled in favor of the Forest Service and USFWS in the lawsuit brought by the Alliance for the Wild Rockies and The Lands Council. On December 13, 2006, the Court ruled in favor of the Forest Service and USFWS on most issues, but against them on one issue in the lawsuit brought by the Cabinet Resource Group, Great Bear Foundation, Idaho Conservation League, Natural Resources Defense Council, and Selkirk Conservation Alliance. As a result, the District Court ordered that the 2002 FEIS and 2004 Record of Decision be set aside as contrary to law and that the matter be remanded to the Forest Service for preparation of a new environmental analysis that complied with 40 CFR 1502.22 (a) and (b). Specifically, the court held that the analysis must: (1) acknowledge that study authors Wakkinen and Kasworm were uncertain whether the bears they studied had chosen optimal habitat or whether they simply chose the best habitat available, (2) must take into account the misgivings of the USFWS biologists over the 33/26/55 standards, (3) must consider the findings of other studies measuring habitat parameters in other ecosystems, and (4) must address the status of grizzly bear mortality in the Selkirk and Cabinet-Yaak Recovery Zones.

On March 20, 2008, Forest Supervisors Paul Bradford (KNF), Ranotta McNair (IPNF), and Deborah Austin (LNF) issued a project initiation letter to the interdisciplinary team to prepare a draft supplemental environmental impact statement (DSEIS) that complied with the December 2006 District Court Order. A notice of intent (NOI) to prepare a supplemental environmental impact statement (SEIS) for the Access Amendment was published in the *Federal Register* on May 13, 2008. A DSEIS was completed and made available for public review in May 2009. The

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DSEIS included detailed analysis of Alternative D Modified, as well as updates to Alternative E.⁴ Alternative D, as discussed in the 2002 FEIS, was developed in response to comments requesting additional grizzly bear habitat security beyond what was provided by the Interim Access Management Rule Set (IGBC 1998a). However, in the 2002 FEIS Alternative D was not considered in detail, whereas in the supplemental EIS it has been. The basis for the parameters for Alternative D comes from the 1989-1991 home range data of a single 20-year-old female grizzly bear; whereas the parameters for Alternative E Updated came from the 1989-1994 home range data of six grizzly bears. This decision considers Alternatives A, B, and C as presented in the 2002 FEIS and Alternative D Modified and Alternative E Updated as presented in the FSEIS.

Regardless of this litigation, the Forest Service has continued to improve grizzly bear habitat conditions. Since January 1999 when the Forest Service began working toward achieving the Wakkinen-Kasworm recommendations within the Selkirk and Cabinet-Yaak ecosystems, habitat conditions for grizzly bear have been steadily improving as existing road miles within the two recovery zones have been reduced. In 2002, the amount of total motorized routes (gated roads, open roads and open motorized trails) within the recovery zones for the Kootenai and Idaho Panhandle NFs was about 3,877 miles (DSEIS, p. 120). In 2009 there were about 3,767 miles of total motorized routes, which is a reduction of about 110 miles (FSEIS, pp. 162 and 163). In 2009, the entire Cabinet-Yaak Recovery Zone had a total of 57 percent core area versus 56 percent core area in 2002. From 2002 to 2009 there has been an increase of approximately 17,773 acres in designated core area. In 2009, the portion of the Selkirk Recovery Zone affected by this proposal had a total of 60 percent core area versus 59 percent in 2002. From 2002 to 2009 there has been an increase of approximately of 3,635 acres in designated core area.

However, the three forests have been working since the late 1980s to create secure habitat for grizzly bears. If one considers agency efforts to comply with Forest Plan direction since that time, overall secure grizzly bear habitat on National Forest System lands (i.e. core area) has increased in the two recovery zones by about 390,000 acres (Selkirks = 74,150; Cabinet-Yaak = 315,850 acres) from the days of maximum road construction and use to conditions in 2009 (FSEIS Appendix C). This equates to more than an 11 and 18 percent increase in core area in the Selkirk and Cabinet-Yaak recovery zones, respectively, since implementation of habitat security measures began in the late 1980s.

III. Location

The Selkirk and Cabinet-Yaak Recovery Zones are two of six grizzly bear recovery zones identified in the Grizzly Bear Recovery Plan (USDI Fish and Wildlife Service 1993) as areas with adequate space and suitable habitat to support self-sustaining populations of grizzly bears. Located in northwestern Montana, northern Idaho, northeastern Washington, and British Columbia, the two ecosystems encompass 4,560 square miles of habitat. Portions of the Kootenai, Idaho Panhandle, Lolo, and Colville national forests, and Kootenay Lakes Forest District (in British Columbia) are included in the recovery areas (see Figure 1).

This ROD addresses the amendment of the forest plans for the Kootenai, Lolo, and Idaho Panhandle National Forests. Those portions of the recovery zones located on these forests are displayed in Figures 2 and 3. The total area within the recovery zones on the three national forests, including state and private inholdings, is as follows: 1,189,000 acres within the KNF; 163,000 acres within the LNF, and 806,000 acres within the IPNF. The private and state land acreage was quantified, mapped, and analyzed together with national forest lands (including the Colville NF); however this decision only affects lands administered by the three national forests.

³ Alternative E Updated includes adjustments to standards in eight Bear Management Units (FSEIS p. 12)

4

*Forest Plan Amendments for Motorized Access Management
within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones*

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IV. Purpose and Need

The purpose and need for action is to amend the three Forest Plans to include a set of wheeled motorized vehicle access and security guidelines that meet the agency's responsibilities under the Endangered Species Act (ESA) to conserve and contribute to recovery of grizzly bears. More specifically, in 2002 there was a need to incorporate wheeled motorized vehicle access and security direction based on: (1) the 1994 IGBC Task Force Report, (2) the Amended Biological Opinion and Incidental Take Statements on the KNF and LNF Land and Resource Management Plans, (3) the 1995 decision by the Chief of the Forest Service on the Appeal of the Kootenai Forest Plan, and (4) the stipulations of a 2001 Settlement Agreement in a lawsuit challenging implementation of the Interim Access Management Rule Set (IGBC 1998a) developed by the Selkirk/Cabinet-Yaak Subcommittee of the IGBC. Issuance of the 2002 FEIS fulfilled item 4 of the purpose and need. See the 2002 FEIS for further background regarding the specific directives related to this analysis and the background discussion above for an explanation of the purpose and need for this analysis that supplements the 2002 FEIS.

V. Description of the Decision

It is our decision to select Alternative E Updated as described within the FSEIS. Alternative E Updated includes the grizzly bear design elements from the FSEIS and also incorporates the terms and conditions of the USFWS biological opinion for these amendments (see Appendix B for a full listing of the design elements and BO terms and conditions).

Our selected alternative amends the Kootenai, Lolo, and Idaho Panhandle forest plans to include new wheeled motorized access standards within the Cabinet-Yaak and Selkirk Recovery Zones bear management units (BMUs) along with administrative use levels and timelins. Alternative E Updated removes the existing forest plan standards regarding linear open road density and habitat effectiveness and replaces these standards with limits on Open Motorized Road Density (OMRD), Total Motorized Road Density (TRMD), and core area.

Alternative E Updated also sets linear miles of open and total road standards for areas outside the recovery zones that are experiencing recurring use by grizzly bears, i.e. Bears Outside of Recovery Zones or BORZ. The intent of this direction is to reduce the potential for mortality and displacement of grizzly bears from areas of reoccurring use by grizzly bears outside of but adjacent to the recovery zones (see Figures 2 and 3).

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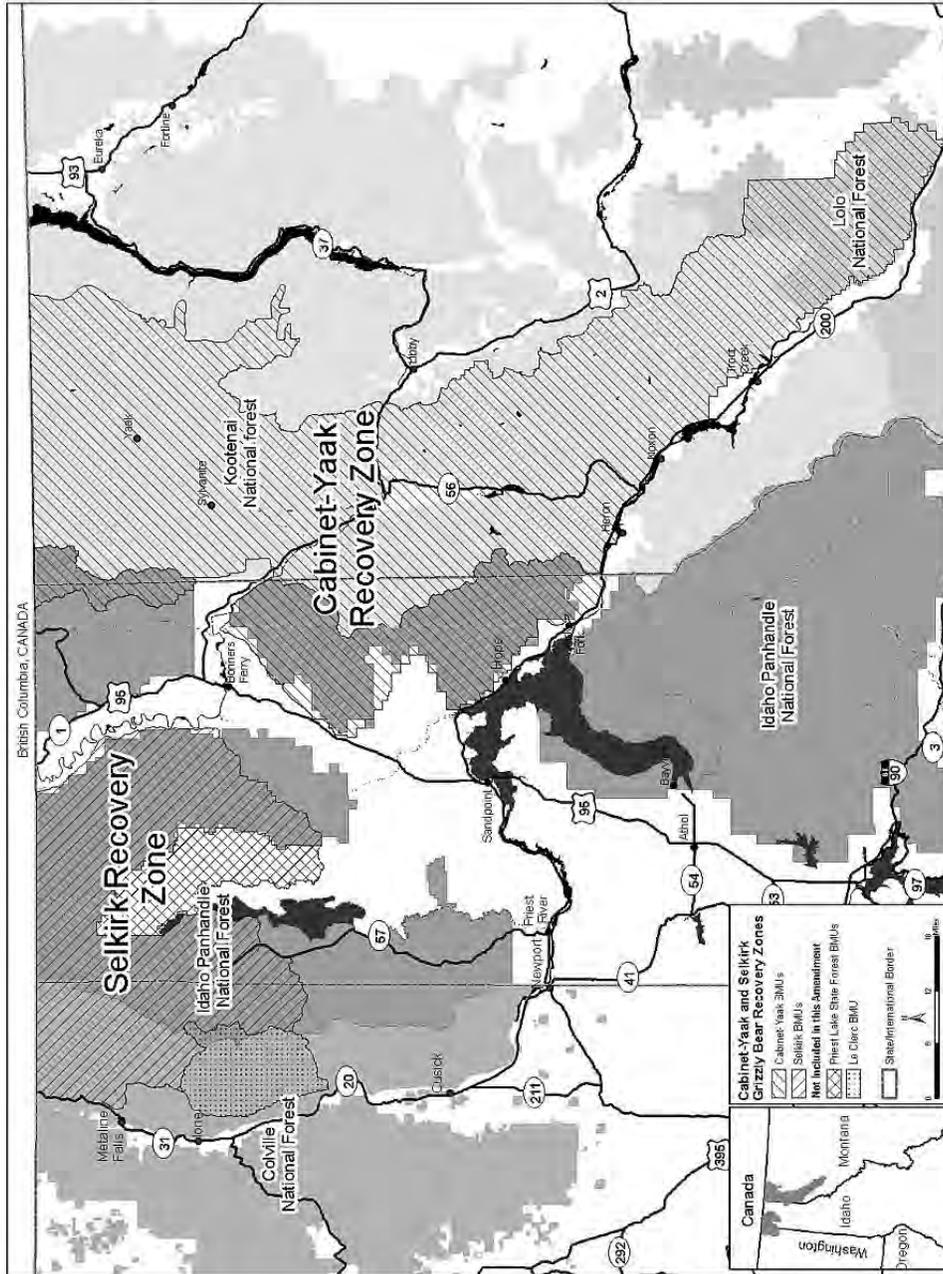


Figure 1. Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones

Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones

Record of Decision

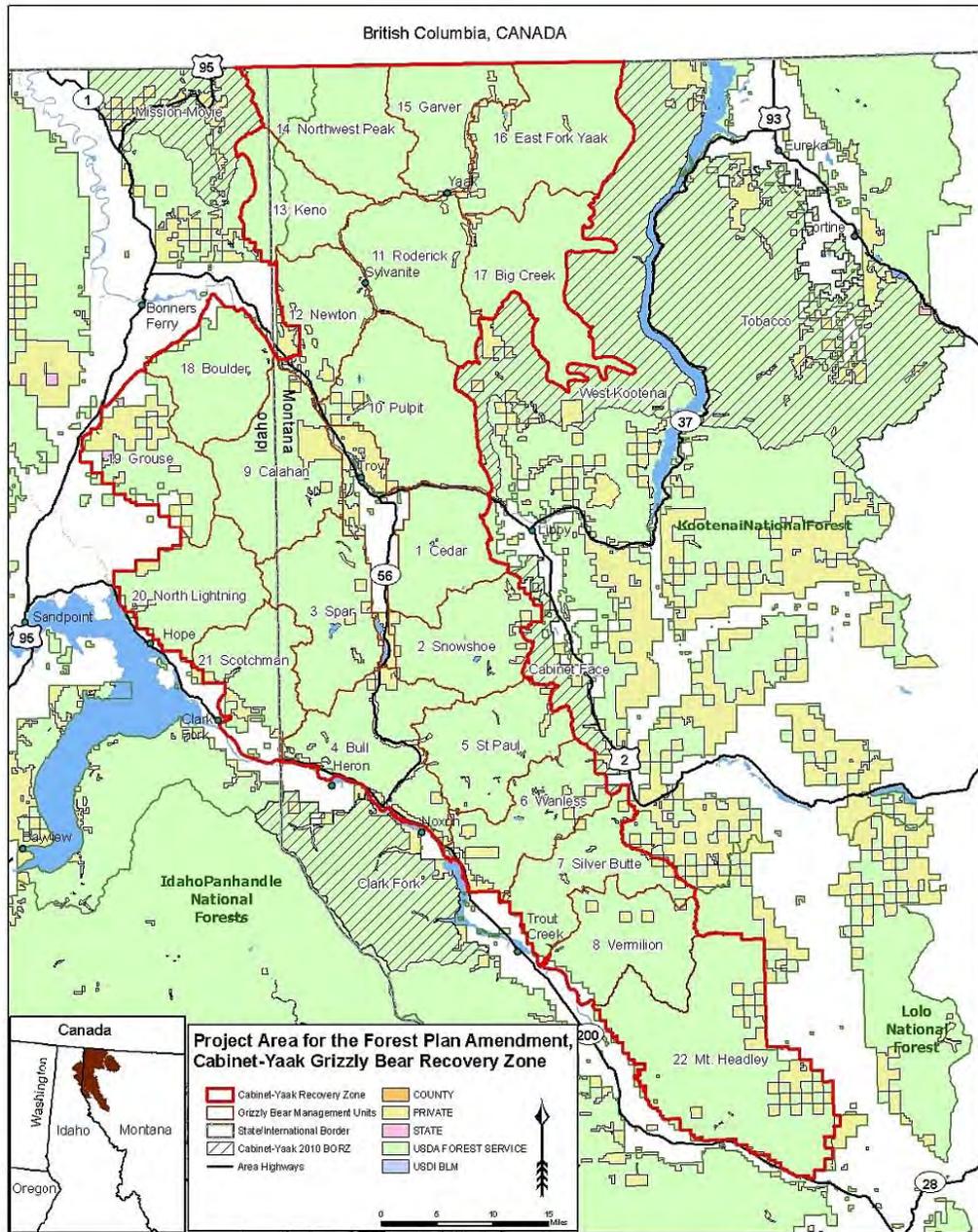


Figure 2. Cabinet-Yaak Grizzly Bear Recovery Zone and locations of grizzly bears outside recovery zones (BORZ)

Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones

Record of Decision

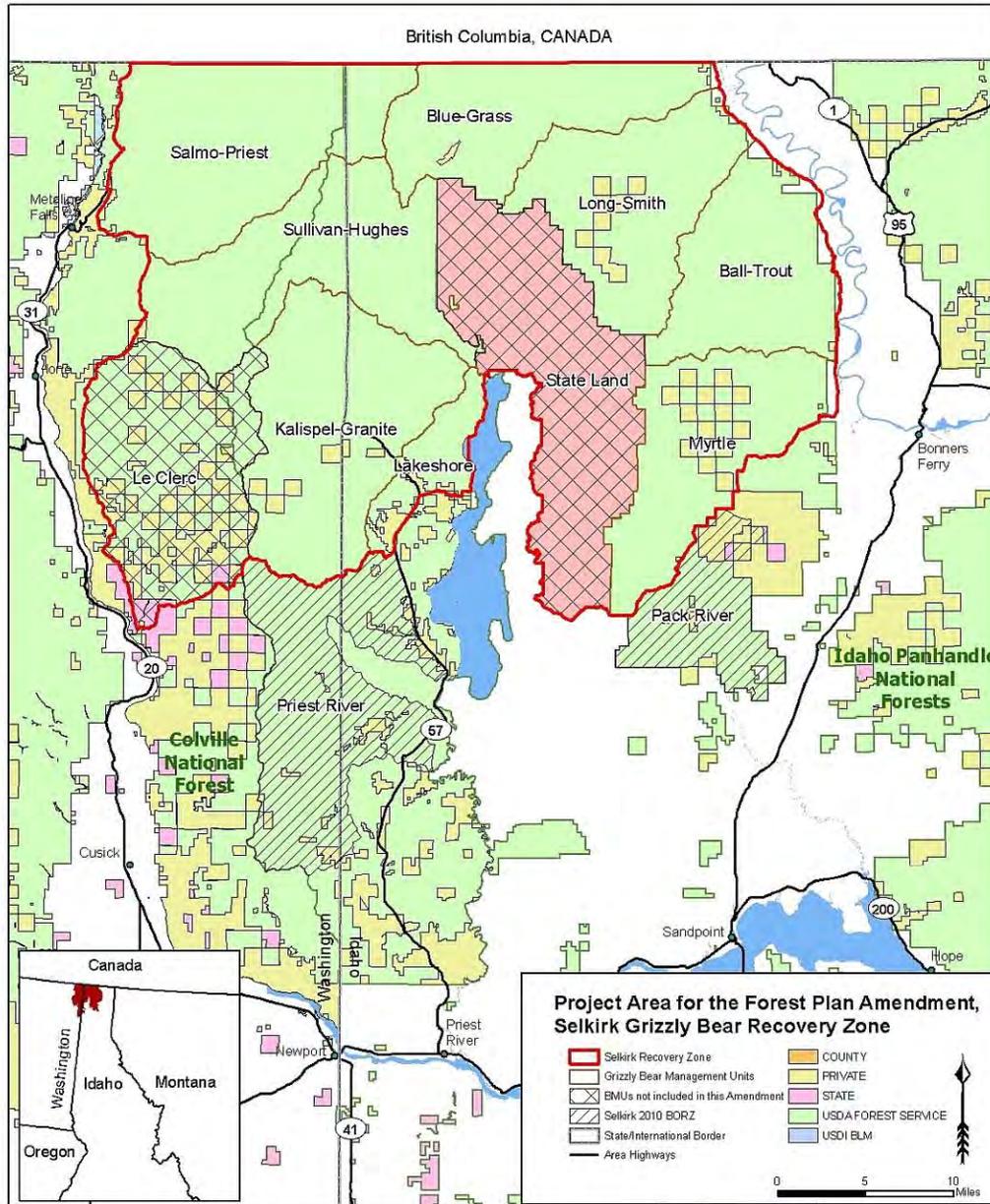


Figure 3. Selkirk Grizzly Bear Recovery Zone and locations of grizzly bears outside recovery zones (BORZ)

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Features of the Selected Alternative

With the selected alternative, habitat security standards have been set individually for each BMU. These habitat security standards were determined through consultation with the USFWS and grizzly bear research scientists and reflect the unique biological factors (e.g., high quality habitat, sightings of family groups, human caused mortality, adjacency to BMUs having females with young, and tie to linkage areas), as well as other non-biological factors (highways, access to inholdings, access to popular recreation areas) in specific BMUs. Standards were set depending on the site-specific capability of each BMU. Constraints accounted and deducted for, as they were considered to affect an individual BMUs ability to achieve specific levels of core habitat and total and open motorized route densities included: 1) non-federal land, including corporate timber land, and private land contained within towns and municipalities; 2) public, county, and private roads; 3) some forest roads that function as “through” roads, and therefore, could not be closed without significantly increasing public travel distances between destination points, and popular recreational destinations; and 4) historically and culturally popular recreation destinations (e.g. campgrounds, concentrated fishing locations) with high human use. Figures 2 and 3 display the BMUs while Table 1 and Table 2 display features of the selected alternative.

For those BMUs that currently do not meet standards, implementing changes in habitat conditions to achieve the designated standard will be required for compliance with the USFWS biological opinion. Therefore, in BMUs not meeting OMRD, TMRD, or the core area standard, proposed actions affecting any of these parameters, must result in a post-project movement (improvement) toward the affected parameter’s standard (FSEIS, p. 17).

Research recommended levels² for OMRD, TMRD, and core area are:

- 1) OMRD greater than 1 mile/square mile must comprise 33 percent or less of the BMU;
- 2) TMRD greater than 2 miles /square mile must comprise 26 percent or less of the BMU and
- 3) Core area at least 55 percent of the BMU;

As noted above, each specific BMU has its own set of standards based on biological and non-biological factors. Of the 30 BMUs, fourteen of the BMUs had at least one of the habitat parameters set at a higher level than recommended, six were set at the recommended level and 10 were less than recommended for at least one habitat parameter. Of the ten less than recommended, habitat levels were set to the degree possible while still providing access to private lands and not affecting county roads, through roads or access to popular recreational destinations (see Table 2).

² The recommendations were based on an average of conditions used by grizzly bears in the Cabinet-Yaak and Selkirk recovery zones. Five of six bears utilized habitat with core area values of less than or equal to 55. Three of six bears used habitat with TMRD values greater than or equal to 26 percent. Four of six bears used habitat with OMRD values of greater than or equal to 33 percent.

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Table 1. Specific features of the selected alternative

Feature	Discussion
Linear Open Rd Density (KNF, LNF and IPNF)	No standard within BMUs (This means existing standards for grizzly bear will be removed for BMUs from the forest plans for the Kootenai and Lolo N.F. There is no existing standard for within BMUs to be removed from the forest plan for the Idaho Panhandle NF.)
Habitat Effectiveness (Security)	No standard (This means existing standards will be removed for grizzly bear from the forest plans for BMUs on the Kootenai and Idaho Panhandle NF. There is no existing standard to be removed from the forest plan for the Lolo NF.)
Point Source Disturbance (a)	The analysis of point source disturbances will be required in site-specific project documents.
Open Motorized Route Density (OMRD) (b) (For all forests, unless specified)	OMRD in BMUs within all three Forests will be set at numeric standards established for each BMU as detailed in Table 2. In BMUs not meeting OMRD, actions affecting OMRD must result in a post-project movement toward the standard.
Total Motorized Route Density (TMRD) (c)	TMRD in BMUs within all three Forests will be set at numeric standards established for each BMU as detailed in Table 2. In BMUs not meeting TMRD, actions affecting TMRD must result in a post-project movement toward the standard.
Core Area (d)	Core area in BMUs within all three Forests will be set at numeric standards established for each BMU as detailed in Table 2. In BMUs not meeting core area standard, actions affecting core area must result in increased post-project core area. Other core area requirements will include consideration for seasonal needs, and core area fixed in place for 10 years minimum.
Administrative Use	60 and 57 round trips allowed per restricted road per year, divided by season within the Cabinet-Yaak and Selkirk Recovery Zones, respectively. Trips within the Cabinet-Yaak Recovery Zone are to be apportioned as follows: ≤18 round trips in spring (April 1 through June15); ≤23 round trips in summer (June 16 through September 15); and ≤19 round trips in fall (September 16 through November 30). Trips within the Selkirk Recovery Zone are apportioned as follows: ≤19 round trips in spring (April 1 through June15); ≤23 round trips in summer (June 16 through September 15); and ≤15 round trips in fall (September 16 through November 15).
Public Use Period-30 day	Public Use Periods (30 days) will not be allowed on restricted roads in any of the three national forests.
Mapped areas of grizzly bear recurring use outside of the recovery zones (see Figures 2 and 3) (BORZ)	No increases in permanent linear miles of open road on NFS lands above the baseline conditions identified for the Priest, Pack River, Clark Fork, Cabinet Face, West Kootenai, Tobacco, and Mission-Moyie areas (see Figures 2 and 3). No net permanent increases in linear miles of total roads above the baseline conditions identified for the Priest, Pack River, Clark Fork, Cabinet Face, West Kootenai, Tobacco, and Mission-Moyie areas (see Figures 2 and 3).

(a) Point Source Disturbance - Pertains to a disturbance originating from a single point rather than a linear feature such as a road. Examples include a drill rig, a campground, a garbage collection site, etc...

(b) Open Motorized Route Density (OMRD) - Calculation made with the moving windows technique that includes open roads, other roads not meeting all restricted or obliterated criteria, and open motorized trails. The percent of the analysis area in relevant route density classes is calculated.

Note: Moving windows is a technique for measuring road densities on a landscape using a computerized Geographic Information System (GIS).

(c) Total Motorized Route Density (TMRD) - Calculation made with the moving windows technique that includes open roads, restricted roads, roads not meeting all reclaimed criteria, and open motorized trails. The percent of the analysis area in relevant route density classes is calculated.

(d) Core Area - An area of secure habitat within a BMU that contains no motorized travel routes or high use non-motorized trails during the non-denning season [non-denning season includes the dates 4/1-11/15 (SRZ) or 4/1-11/30 (CYRZ), inclusive] and is more than 0.3 miles (500 meters) from a drivable road. Core areas do not include any gated roads but may contain roads that are impassible due to vegetation or constructed barriers. Core areas strive to contain the full range of seasonal habitats that are available in the BMU.

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Table 2. Alternative E Updated – BMU status and selected standards

BMU	BMU Priorities	OMRD ≥ 1 mi/mi ² (percent)		TMRD ≥ 2 mi/mi ² (percent)		Core Area (percent)		Percent NFS Land
		2009 Status	Selected Standard (max)	2009 Status	Selected Standard (max)	2009 Status	Selected Standard (min.)	
1-Cedar	2	14	15	10	15	83	80	99
2-Snowshoe	2	20	20	16	18	76	75	94
3-Spar	3	27	33	26	26	62	59	95
4-Bull	2	37	36	29	26	62	63	84
5-St. Paul	1	28	30	23	23	58	60	97
6-Wanless	1	29	34	34	32	53	55	85
7-Silver Butte-Fisher	2	32	26	23	23	62	63	92
8-Vermillion	3	33	32	24	21	55	55	93
9-Callahan	2	27	33	26	26	59	55	90
10-Pulpit	2	44	44	29	34	51	52	95
11-Roderick	1	28	28	28	26	54	55	96
12-Newton	1	42	45	29	31	58	55	92
13-Keno	1	34	33	25	26	59	59	99
14-NW Peaks	1	28	31	26	26	56	55	99
15-Garver	1	29	33	25	26	55	55	94
16-East Fork Yaak	1	29	33	27	26	54	55	96
17-Big Creek	2	30	33	16	26	58	55	99
22-Mt Headley	3	38	33	37	35	51	55	89
18-Boulder	3	31	33	35	29	50	55	92
19-Grouse ^{ab}	3	60	59	59	55	32	37	54
20-North Lightning	1	36	35	20	20	62	61	94
21-Scotchman	2	35	34	27	26	63	62	81
Blue-Grass	1	33	33	28	26	50	55	96
Long-Smith	1	21	25	14	15	73	67	92
Kalispell-Granite	1	31	33	28	26	49	55	96
Lakeshore	3	82	82	54	56	19	20	86
Salmo-Priest	2	30	33	24	26	66	64	99
Sullivan-Hughes	1	24	24	19	19	61	61	99
Myrtle	2	29	33	20	24	60	56	85
Ball-Trout	2	17	20	11	13	72	69	94

a - Less than or equal to 75 percent NFS lands;

b - Due to the high level of non-Federal lands within the Grouse BMU, existing conditions and standards are calculated assuming no contribution of secure habitat from private lands.

Management direction for the recovery zones prior to this decision (see Alternative B discussion, FEIS, pp. 2-9 to 2-11) provided for 30-day public use periods on one gated road system per year per BMU, if the BMU met prescribed security criteria (FEIS, p. 2-10). With this decision, the ability to provide new public use periods on restricted road systems within the recovery zones will no longer be available on the Kootenai, Lolo, or Idaho Panhandle National Forests.

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However, as we have previously stated in this decision, site-specific access related decisions made through previous NEPA analyses and with completed USFWS consultation will not be affected by this programmatic decision. Such existing decisions were considered as part of the environmental baseline in this analysis. We expect this decision to provide for a greater level of habitat security and a greater resulting mitigation for mortality risk to grizzly bears.

Point Source Disturbance (PSD) pertains to a disturbance originating from a single point rather than a linear feature such as a road. Examples include a drill rig, a campground, or a garbage collection site. These disturbances have potential effects and must be mitigated or accounted for in accordance with our grizzly bear cumulative effects model. However, we do not believe this programmatic EIS is the place to address the specifics of PSD. There is no established protocol for addressing PSDs programmatically. Therefore, we believe PSDs are better addressed on a project-by-project basis through the use of our grizzly bear cumulative effects model and project level consultation. While they are disturbances to be considered in site-specific project analysis, they are not a road or trail access issue, and thus, not within the scope of our decision.

Because not all habitats are of equal value to grizzly bear, our decision provides for the future development of a habitat-based access management approach. While new techniques currently are becoming available for a habitat-based approach to access management, the techniques are not yet available for the two recovery zones. Our decision has considered recent scientific information and does not preclude the consideration, use and incorporation of new scientific findings/information in future site-specific decisions. Furthermore, if new and applicable scientific findings and/or information is identified our decision encourages its use for project level activities.

As displayed in Table 1, the selected alternative will also remove for each national forest within the recovery zones any existing forest plan standards regarding linear open road density and habitat effectiveness within recovery zones that are currently applicable to grizzly bear (see also FSEIS, Table 2, p. 17).

Alternative E Updated also provides for some flexibility once all the BMUs in each respective recovery zone meet all their standards. Alternative E Updated allows for increases in route densities and decreases in core area within individual bear management units where the standards have been exceeded (higher than necessary). This flexibility will be limited because any newly created core habitat in these BMUs must stay in place for 10 years (except for emergencies or other unforeseen circumstances consulted on with USFWS). In addition, any projects that propose to permanently reduce core areas by roads shall undergo section 7 formal consultation. This limited flexibility will allow us to address ecosystem restoration needs, including those that may be beneficial to bears.

We do not expect that the flexibility options will be implemented either at the full extent allowable in each bear management unit or widely applied across all of the units. The selected flexibility measures are designed to be and will be used with discretion. Any site-specific project involving road management occurring within the recovery zones that would propose to increase route densities or decrease core area in BMUs that currently exceed standards would be subject to public input, analysis, and consultation with USFWS prior to implementing any such proposal.

Management flexibility will also be provided through administrative use of 57 round trips within the Selkirk Recovery Zone and 60 round trips within the Cabinet-Yaak Recovery Zone per

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restricted road per year, divided by season³. Such use will include motorized vehicle use in BMUs on restricted roads outside of core areas by agency employees, contractors, and permittees.

Implementation

We estimate that full implementation of the actions needed to reach the prescribed standards of the selected alternative will take eight years from the date of this decision. Thirty-three percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within three years of the amendment decision date; 66 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within 5 years of the amendment decision date, and 100 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within eight years of the amendment decision date. Appendix C details the implementation strategy for achieving the desired conditions of the selected alternative.

While we expect steady progress during this timeframe, actions beyond the control of the Forest Service could delay full implementation. Actions beyond our control include: administrative appeals or litigation of this decision or project-level decisions; budgets to support project-level decisions; or future priorities affecting the project-level decisions. However, since about 1987, we have made progress increasing grizzly bear security within the recovery zones. Secure grizzly bear habitat on NFS lands (i.e. core area) has increased in the Selkirk and Cabinet-Yaak recovery zones by approximately 390,000 acres (Selkirks=74,150; Cabinet-Yaak=315,865 acres) from the days of maximum road construction and use to conditions in 2009 (FSEIS, p. 11). When the selected standards in all of the BMUs are fully achieved (based on 2009 status) there will be a projected increase in core area of about 19,771 acres within the Cabinet/Yaak Recovery Zone and about 8,144 acres in the Selkirk Recovery Zone (FSEIS, p. 89). With implementation of the selected alternative, core area will be well distributed throughout each of the Selkirk and Cabinet-Yaak recovery zones (see FSEIS, Figures 8 and 9, pp. 80-81), will most often occur at levels at or higher than 55 percent in each BMU (see Table 2), and occur at levels cumulatively higher than 55 percent across the recovery zones (e.g., the KNF/Lolo and the IPNF) overall (see FSEIS, Table 28, p. 89).

The changes that will occur in OMRD, TMRD, and core area within the BMUs to reach full implementation are non-discretionary and necessary for the Forests to maintain compliance with the U.S. Fish and Wildlife Service Incidental Take Statement on these amendments. Once all BMUs in a respective recovery zone meet all their standards, then subsequent projects, within that recovery zone that propose to permanently reduce core area by roads shall undergo independent section 7 formal consultation with the USFWS. Reductions of core area within individual BMUs shall not reduce the percent core area below the minimum standards for the affected BMU without compensating with in-kind replacement concurrently or prior to incurring the losses. However, such proposals are opportunities, not requirements, and would receive a separate NEPA analysis at the time such actions may be proposed, including public comment. Any project that proposes to permanently reduce core will undergo independent section 7 consultation (as appropriate) and will be analyzed given the prevailing conditions and information at the time, including grizzly bear population and habitat indices (USDI Fish and Wildlife Service 2011, p. A-85).

³ The level of allowable administrative use was based on work in the Flathead National Forest, which found no measurable displacement when administrative use was less than one vehicle pass per day (one round trip every other day). This equates to 57 trips per year, distributed throughout the season. In reality, the level of administrative use is far lower than that as evidenced by annual reporting by the National Forests. Further, there are often seasonal restrictions in administrative use, further reducing the allowable use days.

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This amendment will result in a new appendix to the forest plans for the Idaho Panhandle and Lolo National Forests. This amendment is an addendum to Appendix 8 of the forest plan for the Kootenai National Forest (see Appendix A of this ROD).

All three national forests have begun the revision of their respective forest plans. Presently, completion of the revision of the Kootenai and Idaho Panhandle forest plans is expected in 2012, while the Lolo N.F. forest plan revision is expected a few years later. The revised forest plans are expected to include the management direction adopted in this amendment.

A. Monitoring/Reporting Requirements

In addition to all existing forest plan monitoring requirements, each of the three national forests shall:

- 1) Meet annually with USFWS to discuss progress made towards achieving established standards for each BMU.
- 2) By April 15 each year, the Forests shall submit annual reports to the Service that detail the progress made toward achieving and maintaining the standards for Percent Core Area, OMRD, and TMRD within the Recovery Zones.
- 3) The Forests shall coordinate with state and federal agency biologists to collect credible grizzly bear observations that occur outside of the Recovery Zone boundaries (i.e., BORZ) and add this information to the 6th-order HUC database for inclusion into the annual report.
- 4) The annual report shall provide an ongoing list detailing the locations, dates, duration, and circumstances for invoking the allowance for entering core area for the purposes of road decommissioning or stabilizations.
- 5) To ensure the effective implementation of the open road density parameter (OMRD), at least 30 percent of closure devices (gates and barriers) will be monitored annually within the respective ecosystems. Monitoring techniques may include visual checks as well as road counters.

Individual ranger districts will maintain records of administrative use on restricted roads within the recovery area, to insure compliance with existing guidelines. Project-level decisions will consider the need for additional monitoring of site-specific activities within BMUs. Application of additional monitoring will be a future decision at the project-level and is beyond the scope of this amendment.

B. Biological Opinion Terms and Conditions

This decision incorporates the terms and conditions of the USFWS biological opinion for grizzly bear and bull trout. For grizzly bear, the design elements of our selected alternative include measures to minimize the effects of some implementation (such as the timeline and gateways for achieving standards; and the sideboards for stabilizing roads within core area). These design elements include many of the reasonable and prudent measures and terms and conditions previously required by the 2004 biological opinion (USDI Fish and Wildlife Service 2004). Thus, the 2011 USFWS biological opinion did not repeat those features as reasonable and prudent measures or terms and conditions. Because no reasonable and prudent measures were provided for grizzly bear, with the exception of the reporting requirements (see Section A, above), no terms and conditions were necessary. A complete description of

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the FSEIS design elements and biological opinion terms and conditions are included as Appendix B of this document.

VI. Rationale for the Decision

We considered five alternatives in detail in making our decision. These alternatives were presented in the FEIS and FSEIS. However, for reasons noted in the ROD issued in 2004, we again have determined not to select Alternatives A, B, or C. In summary, Alternatives A and B do not utilize the most current research; under both alternatives human-caused grizzly bear mortality has continued to occur. Alternative C, in contrast, would conserve bears at the lowest level considered to have a reasonable potential for success. Nothing in our analysis between the 2004 ROD and this decision indicates a need to reconsider these findings. Therefore, the following discussion will focus on our selected alternative (Alternative E Updated) and Alternative D Modified.

Our decision to select Alternative E Updated is based upon the following factors

- Responsiveness to the stated purpose and need.
- Consideration of the Court decision
- Responsiveness to public comment and issues.

The IPNF, KNF and Lolo Forest Plans all include goals to contribute to the recovery of species listed under the ESA. As noted above, the Grizzly Bear Recovery Plan (USFWS 1993a) identifies providing adequate effective habitat as the most important element in grizzly bear recovery. Controlling and directing motorized access is one of the most important tools in achieving habitat effectiveness and managing grizzly bear recovery (ibid). By controlling motorized access, certain objectives can be achieved including minimizing human interactions and potential grizzly bear mortality; reducing displacement from important habitats, and minimizing habituation to humans. However, the Recovery Plan also recognizes the need to integrate the biological, social, valuational and institutional forces toward a common effort involving grizzly bear conservation. A management system that achieves this will have the highest chance of success. Therefore, our decision considers the biological and social elements related to grizzly bear recovery.

A. Purpose and Need/Response to Issue Regarding Increased Security Habitat for Grizzly Bears

The following discusses how our decision is responsive to the purpose and need and the issue identified in the FEIS (page 2-2) stating that the proposed action may not sufficiently restrict motorized access. Part of the purpose and need was the need to incorporate wheeled motorized vehicle access and security direction into the forest plans. In addition, our decision considers the factors the Court found deficient in the original decision made in 2004.

1. Biological

The ESA requires the USFWS and Forest Service, respectively, to base the biological opinion and subsequent agency action on the use of best scientific and commercially available data [16 U.S.C. 1536(a)(2)]. The IGBC directed that information on OMRD, TMRD and core area be incorporated into the management of grizzly bears and that each grizzly bear ecosystem develop ecosystem-specific guidelines using local data where possible [Interagency Grizzly Bear Committee Taskforce Report on Grizzly Bear/Motorized Access Management (Revised), p. 5].

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Consideration of findings from studies. The best available scientific information regarding access management in grizzly bear habitat is considered to include two sources. One of these is the research from the South Fork of the Flathead River regarding how road access affects grizzly bears (Mace and Manley 1993, Mace and Waller 1997). This research resulted in development of OMRD, TMRD and core area as management measures for ensuring grizzly bear habitat security. The second source is research from local bear populations that applies the South Fork technology to the Selkirk and Cabinet-Yaak Recovery Zones (Wakkinen and Kasworm 1997). The Wakkinen and Kasworm report was peer reviewed by nine biologists, whose comments were incorporated in the final report. Wayne Kasworm, grizzly bear researcher with the USFWS and Wayne Wakkinen, grizzly bear researcher with the Idaho Department of Fish and Game have over 45 years of experience monitoring grizzly bear populations in the Selkirk and Cabinet-Yaak ecosystems.

Some comments questioned the science that was used in the Wakkinen and Kasworm study (1997). Specifically, comments were received concerning the standards derived from the 1997 Wakkinen and Kasworm study as not being based on best available science. Commenters claimed the study's deficiencies included the small sample size; two of the six bears in the study being killed shortly after completion of the study; and the uncertainty of whether the bears studied had chosen optimal habitat or whether they simply chose the best available habitat. Comments also claimed the Forest Service failed to consider the interaction between the findings of the 1997 Wakkinen and Kasworm study and recent population trend information for grizzly bear within the Cabinet-Yaak Recovery Zone. Some commenters believed that more stringent standards should be utilized to conserve grizzly bear within the Selkirk and Cabinet-Yaak Recovery Zones.

Consideration of the Wakkinen and Kasworm (1997) study. For the FSEIS (see FSEIS pp. 45-50 and FSEIS Appendix C), a detailed look at Wakkinen and Kasworm (1997), a review of other applicable grizzly bear management scientific studies, and a review of other applicable science was completed (Allen et al 2011). The review addresses commenters concerns over the adequacy of the Wakkinen and Kasworm (1997) study to serve as the basis for setting motorized access standards within the Selkirk and Cabinet-Yaak Recovery Zones for the purpose of contributing to grizzly bear recovery. The review considered the potential short comings of the Wakkinen and Kasworm (1997) study, as well as the other applicable science. In addition, the review considered whether the studied bears had chosen optimal habitat or whether they simply chose the best habitat available (ibid).

The Forest Service review of the habitat security conditions available to the six study bears south of the international border showed they did indeed have several large areas of core habitat available to them outside of their home ranges. The composite home ranges of the Cabinet-Yaak and Selkirk study bears in the U.S. reflected about 28.8 and 41.8 percent core habitat, respectively, versus 39.6 and 41.5 percent core habitat available throughout the respective recovery zones (only in the U.S.). These results indicate that bears were selecting habitats with the same—if not more—roads than found within the entire ecosystem. This demonstrates that the core area results from the Wakkinen and Kasworm (1997) research effort are a reflection of bears actively choosing these areas and not an indication that they had a lack of opportunity to select home ranges with fewer roads (ibid). This evaluation lends additional support to our use of the Wakkinen and Kasworm (1997) study results in developing access parameters for grizzly bears in these two ecosystems.

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Consideration of Other Recommendations. The IGBC recommended that in individual BMUs with more than 75 percent federal ownership, the Forests are to: 1) attain 55 percent core habitat; 2) have less than 33 percent of each bear management unit with open motorized route densities exceeding 1 mi/mi²; and 3) have less than 26 percent of each bear management unit with total motorized route densities exceeding 2 mi/mi². These parameters were based on the best available science of the 1997 Wakkinen and Kasworm study. However, with current land ownership constraints, and public, county, and private roads, achieving these recommendations in all bear management units is not pragmatically possible. The IGBC also directed the recovery zones to develop recommended parameters for road densities and core area using the best biological information and considering the social and economic impacts (FEIS, 1-4).

Both the selected alternative and Alternative D Modified include standards for OMRD, TMRD, and core area. The selected alternative and Alternative D Modified include OMRD, TMRD, and core area standards set individually for each BMU based on site-specific capability.

Alternative D Modified was considered in detail in both the draft and final supplemental EIS. This alternative was developed to respond to arguments over the litigation of the 2002 FEIS and 2004 Record of Decision that the Forest Service failed to explain why Alternative D could not have been modified to reflect its feasibility on a BMU-by-BMU basis – similar to that of Alternative E. Alternative D Modified focused exclusively on the biological needs of the grizzly bear and was designed to provide OMRD, TMRD, and core area standards by individual bear management unit (BMU) that achieve higher security parameters for bears (where possible), than recommended by the Wakkinen and Kasworm (1997) study. The basis for these parameters came from the 1989-1990 home range data of a single 20-year-old female grizzly bear. The conditions for OMRD (less than or equal to 17 percent), TMRD (less than or equal to 14 percent), and core area (greater than or equal to 72 percent) were set for each BMU when possible to achieve within Forest Service jurisdiction.

Consideration of Mortality Factors. Kasworm et al. (2009) calculated a minimum population estimate of 47 bears for the Cabinet-Yaak Recovery Zone from 2000 to 2008 with a 78 percent probability of a downward population trend. This included a minimum of 18 individuals in the Cabinet Mountains and 29 individuals the Yaak portion of the recovery zone.

The USFWS estimated that there were approximately 46 bears in the Selkirk Recovery Zone in 1999 by extrapolating previous research (Weilgus et al. 1994) completed on the British Columbia portion of the recovery zone (USDI Fish and Wildlife Service 1999). Proctor et al. (2007) estimated a population of 58 bears for the entire South Selkirk Grizzly Bear Population Unit⁴. Wakkinen and Kasworm (2004) estimated that the Selkirk Recovery Zone grizzly bear population has a 67 percent probability that it is increasing. Wakkinen et al. 2009 states that grizzly bears appear to be increasing in the Selkirk Recovery Zone both in numbers and distribution based on an increase of sightings of bears, and changes in the distribution of credible sightings (e.g., documented grizzly bear use in areas not previously documented).

⁴ The Grizzly Bear Population Unit is larger (=1,571 square miles) than the 752 square mile study area used to sample bears. Proctor et al. (2007) did not include a population estimate for the original study area, but Wakkinen (2010) reported an abundance of 33 individuals for this 2005 research north of B.C. Highway 3.

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Security is an important element of grizzly bear habitat, helping to minimize human-caused bear mortalities. Grizzly bear mortality is an important factor limiting the growth of bear populations in both recovery areas (USFWS 1993). Historically, of the 97 bears known to have died due to human causes in both ecosystems since 1982, at least 73 percent of these occurred near (<500 meters) open roads (FSEIS, p. 55). Therefore, the management of roads is an important tool available to balance the security needs of grizzly bears with the activities of humans (USFWS 1993).

We considered the level of mitigation for grizzly bear mortality risk to be an important factor in making our decision. The greater level of security provided by an alternative, the greater the resulting mitigation for mortality risk. The selected alternative, along with Alternative D Modified were found to provide a high level of mitigation for grizzly bear mortality risk (FSEIS, p. 94). While Alternative D Modified would provide for the greatest amount of core area for grizzly bears (about 1.53 million acres), the selected alternative would also provide a high amount of core area at either full implementation or at standard (about 1.27 and 1.25 million acres, respectively), providing for a high level of mitigation from mortality risk (FSEIS, p. 94). By comparison, the 2002 environmental baseline for these amendments contained about 1.23 million acres of core area; FEIS Alternative C proposed 1.18 million acres⁵ of core area; and core area available in the late 1980s totaled at a minimum about 862,000 acres⁶ in the recovery zones.

The FSEIS provided an in-depth review of grizzly bear mortalities in and around the Selkirk and Cabinet-Yaak Recovery Zones from 1982-2011 (FSEIS, pp. 54-61). Much of the recent grizzly bear mortality is associated with conflicts arising from attractants on private lands rather than conflicts on public lands (USDI Fish and Wildlife Service 2011, p. A-77). The mortality data indicated that grizzly bear habitat conditions, as related to roads, have improved in the Selkirk and Cabinet-Yaak Recovery Zones since the application of wheeled motorized vehicle access strategies began in 1987. Both within the Selkirk and Cabinet-Yaak Recovery Zones, there has been a decreasing trend in mortalities occurring over time on NFS lands since beginning implementation of the IGBC guidelines in 1999. Within the Cabinet-Yaak, as the overall population increased over the last two decades (i.e. from estimated 15 in 1993 to 47 bears in 2008) the average number of bears that died due to human causes has remained about the same but the percentage of human-caused mortality occurring on NFS lands has dramatically decreased within each time period. This decline in grizzly bear mortality rates on public land and increase on private lands is noteworthy. Disproportionately more bears are killed on private land than public land. The Cabinet-Yaak ecosystem is 90 percent public land yet human-caused mortality on public land is only about 14 percent of the trend mortality. The Cabinet-Yaak ecosystem is about 10 percent private yet human-caused mortality on private lands in the U.S. accounted for 23 percent of trend mortality. Mortality on private lands in the U.S. has become the largest source of human-caused mortality in the Cabinet-Yaak ecosystem (USDI Fish and Wildlife Service 2011, p. A-78).

Within the Selkirk Recovery Zone, there is also an apparent decreasing trend in mortalities occurring on NFS lands within-and-around this recovery zone over time. This is true both in terms of the average number of bears killed per year by time period, and the percentage of human-caused mortality within each time period. Conversely, there was a corresponding increase in both of these parameters on non-NFS lands, including

⁵ 2,158,000 acres within the recovery zones (FEIS p. 1-2) multiplied by approximately 55% core.

⁶ NFS lands only, including the LeClere BMU.

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Canada. Since 1999, about 72 percent and 88 percent of the known human-caused grizzly bear mortality has occurred on non-NFS lands in the Cabinet-Yaak and Selkirk ecosystems, respectively (FSEIS, pp. 56 and 57).

It is important to note that bear mortality is a function of numerous variables besides the amount and juxtaposition of motorized access alone. Some of these variables include the type and seasonality of hunting seasons, the availability of “unnatural” foods (i.e. human provided—e.g. garbage, agricultural products such as orchards/grain/livestock, or big game carcasses), and the amount and juxtaposition of private property and associated development. For instance, Schwartz et al. (2010) found that survival of grizzly bears was best explained by the amount of human development and ungulate hunting that occurred within the home ranges of bears in the Yellowstone ecosystem. Therefore, implementing wheeled motorized vehicle access management standards, even if more restrictive, would not completely remove grizzly bear mortality risk due to the presence of other risk factors such as big game hunting, sanitation and agricultural food attractants, and human attitudes toward the grizzly bear. Mace et al. (1996) summarized this situation when he stated that “access management through road use restrictions on multiple-use lands will be of limited mitigative value if habituation and mortality levels are not minimized on or adjacent to private lands”.

Mitigation for grizzly bear displacement potential was also an important consideration in our decision. The greater the level of security provided by an alternative, the greater the mitigation for potential displacement of grizzly bears from preferred habitat. Both Alternative D Modified and the selected alternative were rated “high” for their level of mitigation for grizzly bear displacement potential (FSEIS, p. 94).

The values for the Cabinet-Yaak Recovery Zone, in Tables 6, 7, and 8 include the Grouse BMU. The Grouse BMU is comprised of only 54 percent NFS lands. Inclusion of this BMU in the calculations for the Cabinet-Yaak Recovery Zone contributes high values for OMRD and TMRD as well as low core area values. This skews the averages for OMRD, TMRD, and core area within the recovery zone. Without the Grouse BMU included in the calculations for the recovery zone, the averages for OMRD, TMRD, and core area for the selected alternative improve by one to two percent for each of these parameters at standard (OMRD=32 percent; TMRD=26 percent; core area=58 percent). In all cases, the resultant values are better than or equal to the best science recommended levels for OMRD, TMRD, and core area (FSEIS, p. 91).

The biological opinion for these amendments (USDI Fish and Wildlife Service 2011, pp. 81 and 82) found that after all BMUs have reached standards (i.e. 2019), adverse effects on grizzly bears could occur over the short-term through any permanent loss of core area from existing conditions within any individual BMU currently exceeding (being better than) the research benchmarks. Adult female grizzly bears that have established habitat use patterns within a core area may experience significant displacement from an area if a road(s) were built or upgraded, and used. The Fish and Wildlife Service expects that adult females impacted by new roads in core would likely find alternate suitable habitat over time, and adjust their habitat use patterns accordingly. As we have previously stated, any project that proposes to permanently reduce core area would receive a separate NEPA analysis at the time such actions may be proposed, including public comment and undergo independent section 7 consultation (as appropriate). Thus, any incidental take that may result from any future reductions in core area has not been exempted here by the Fish and Wildlife Service.

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2. Valuational

We understand some people are opposed to grizzly bear recovery because of perceived adverse effects on lifestyles and the economy. Arguments have been made that restricting the public's use of the national forests can have a backlash effect, resulting in people intentionally killing bears. As public lands managers, we face a difficult decision in trying to balance the need for resource management standards against potential consequences of illegal activities. In considering whether to set higher standards for total or open road densities and percent core habitat, we were concerned with the increased risk of the malicious killing of grizzly bears (known as social jeopardy). Social jeopardy has not been scientifically studied to quantify a cause and effect risk but we believe a true risk exists. In the time that the forests have been implementing their respective forest plan direction for road closures, human-caused bear mortality has occurred in both the Selkirk and Cabinet-Yaak Recovery Zones (FSEIS, p. 55). At least fifteen bear deaths are listed as malicious or are under investigation. Deaths as recent as 2010 and 2011 occurred in Idaho and Montana and are under investigation. We know a segment of our local communities are frustrated and angry with road closures. A small number of people vent their displeasure by shooting signs and taking out gates. As evidenced by the human-caused bear mortalities, some will shoot bears. We believe the loss of bears by malicious intent is a high probability if substantially higher road standards were to be implemented. This is especially true if those roads access popular recreational sites such as fishing access and campgrounds.

While Alternative D Modified would provide for increased levels of habitat security (an increase of about 280,000 acres over current levels) for grizzly bears and other threatened, endangered, and sensitive species, it does not consider the social, valuational, and institutional forces (Grizzly Bear Recovery Plan 1993; IGBC 1994 and 1998b). The Recovery Plan states "that the future of the grizzly bear will depend on integrating, as Kellert (1986) states: 'the socioeconomic and utilization values of the general [local] population into the establishment and management of preservation programs... A management system that seeks to integrate all biological, social, valuational, and institutional forces toward a common effort involving grizzly bear conservation will have the highest chance of success.'"

The selected alternative was developed to provide increased grizzly bear habitat security while allowing some management flexibility in response to issues related to public and administrative access, economics, and access to private inholdings. It integrates the biological, social, valuational, and institutional forces by considering the IGBC recommendations, inherent capabilities of each bear management unit (including important habitat features), private lands and roads, and important recreation areas (FSEIS, p. 25). It considered factors such as whether or not there was a history of mortality or sanitation related problems associated with important and heavily used recreation sites. It also considered other ongoing efforts, such as efforts to address the attitudes and concerns of the local public. Alternative D Modified would result in reducing the access to up to 22 developed recreation sites. Based on the analysis, Alternative D Modified could result in the closure of six campgrounds, three boat ramps, and three day use areas on the KNF. On the IPNF one campground, one cabin rental, and several day use areas could be affected. On the LNF two campgrounds and a lookout rental could be affected in order to meet the standards under Alternative D. No grizzly bear mortalities have been associated with these sites in the past.

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Comments we received on the DSEIS requested that the Forest Service consider how Alternative D Modified could be achieved with lesser impacts to recreation and timber management than those displayed in the DSEIS. An alternative that would modify Alternative D Modified to be less restrictive was initially considered, but after further review it was determined that the alternative was not meaningfully different from other alternatives already considered and therefore, was not given detailed study. Changing destinations (e.g., campgrounds, concentrated fishing locations, trailheads, etc.) with high human use and road thoroughfares, and provide some flexibility would essentially result in Alternative E Updated (FSEIS, p. 35).

Alternative E Updated best integrates the needs of the grizzly bear with social and economic considerations; therefore, it should have a higher likelihood of social tolerance.

With the selected alternative, core areas will meet researchers' recommended level of 55 percent in 13 BMUs and exceed it in 14 BMUs (see Table 2). TMRD would meet the recommendation of 26 percent in 13 BMUs and be better in 10 BMUs. OMRD would meet the recommendation of 33 percent in 12 BMUs and be better in 10 BMUs. Our rationale for selecting appropriate standards for individual BMUs is summarized in Table 4 (for more detailed discussion see Kaiser 2003). We recognize that the selected alternative provides habitat security at levels that do not meet the research recommendation in 8, 7 and 3 BMUs, respectively, for OMRD, TMRD, and core area (see Tables 3, 4, 5, 6, 7 and 8). However, when considered across both recovery zones, the level of security provided is higher than in either existing forest plan direction or current practices. Current core area for the Cabinet-Yaak Recovery Zone is at 57 percent (see Table 5), while the Selkirk Recovery Zone (portion considered with this decision) is at 60 percent. In eight years, upon full implementation of the amendment, core area percent within the Cabinet-Yaak Recovery Zone will be 58 percent and within the Selkirk Recovery Zone it will be 61 percent. Even if the maximum amount of flexibility available were to be implemented, core area across the recovery zones would still exceed baseline (2002) and current conditions (2009) (see Table 7). It is important to note that some allowed changes (i.e. increases in road densities or decreases in core area in BMUs that are currently better than standards), though allowed to occur by the standards, might not occur due to other resource concerns (FSEIS, p. 90). In contrast, proposed changes needed to bring deficient BMUs up to standard will be mandatory (FEIS, p. 3-16; FSEIS, p. 18). These standards were not found by the USFWS to result in jeopardy determination for the grizzly bear (USDI Fish and Wildlife Service 2011, p. A-75).

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Table 3. Comparison of numerical effects indicators between the alternatives considered (based upon 2000-2002 status)

Effects Indicator	Alternatives		
	A*	D Modified	Selected Alternative***
Cabinet-Yaak Recovery Zone (22 BMUs)			
# BMUs meeting ≤33% OMRD	13	20	15
# BMUs meeting ≤26% TMRD	8	21	16
# BMUs meeting ≥55% Core	13	21	20
# BMUs meeting 33%-26%-55% (all three)	6	20	13
Average OMRD (all BMUs) (%)	N/A	21	33
Average OMRD change per BMU (%)	N/A	-11	+1
Average TMRD (all BMUs) (%)	27*	16	28
Average TMRD change per BMU (%)	0*	-9	-1
Average Core (all BMUs) (%)	58*	71	58/57
Net Core change for Cabinet-Yaak Recovery Zone (acres)	0*	+245,638	+37,538/ +23,749
Allowable administrative use per road	121 trips KNF 15 days IPNF 14 days LNF	60 trips	60 trips
Selkirk Recovery Zone (7 BMUs in Alts A, B, C; 8 BMUs in Alternative D Modified and Selected Alternative)			
# BMUs meeting ≤33% OMRD	N/A	7	7
# BMUs meeting ≤26% TMRD	N/A	8	7
# BMUs meeting ≥55% Core	N/A	8	7
# BMUs meeting 33%-26%-55% (all three)	N/A	7	7
Average OMRD (all BMUs) (%)	N/A	22	31
Average OMRD change per BMU (%)	N/A	-10	-2
Average TMRD (all BMUs) (%)	N/A	15	23
Average TMRD change per BMU (%)	N/A	-9	<-1
Average Core (all BMUs) (%)	N/A	71	61/59
Net Core change for Selkirk Recovery Zone (acres)	N/A	+58,592	+11,779/+1,586
Allowable administrative use per road	15 days IPNF	57 trips	57 trips
<p>* Alt A is inconsistent with IGBC direction in that it does not establish numerical OMRD, TMRD, or core requirements.</p> <p>***KNF and LNF only (N/A on IPNF). LeClere BMU not included (<75% federal and mostly on Colville NF).</p> <p>**** For the selected alternative the double values for average core percent and net acres of core change represent values at full implementation and at the assigned standard, respectively.</p> <p>N/A - Not applicable: The IPNF Forest Plan or Biological Opinion does not contain a requirement for these standards.</p> <p>Bold underlined = best for bears</p> <p>Bold = second best. Where there is a tie for best, no second best is identified.</p>			

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Table 4. Selected alternative determination for BMU specific standards

BMU	OMRD Standard	TMRD Standard	Core Area Standard	Rationale for Selected Standard(s)
1- Cedar	15	15	80	Standards are better (higher) than average research levels because the BMU is 99% federal ownership with a fairly high percentage of designated wilderness and designated roadless habitat. This BMU is the northern most BMU in the Cabinet Mountains, which links to BMU 10 in the Yaak portion of the Cabinet-Yaak Ecosystem.
2- Snowshoe	20	18	75	Standards are better (higher) than average research levels because the BMU is 94% federal ownership with a fairly high percentage of designated wilderness and designated roadless habitat. There were sixteen grizzly bear sightings during the period 1990-2000 in this BMU.
3- Spar	33	20	50	Core area can be maintained at a higher level than the research recommended level. OMRD and TMRD do not vary from research values. The southern portion of the BMU is a linkage zone between Idaho and the East Cabinets. There were two bear sightings between 1990-2000 in this BMU (no female with young). There are five developed recreation sites within this BMU – Bad Medicine and Spar Lake Campgrounds, Ross Creek Picnic Area, Bad Medicine Day Use Site, and Bad Medicine Boating Site. The selected standards would maintain public access to these recreation sites.
4- Bull	36	26	63	The standard for OMRD is within the range of values shown in the research. OMRD is affected by state highways located on two sides of the BMU. Core is better than the average research level because much of the BMU is currently proposed wilderness, inventoried roadless, or wilderness. Eleven grizzly bear sightings occurred from 1990-2000 in this BMU, including three sightings of females with young. There are four developed recreation sites located within this BMU – Bull River Boat Ramp, Bull River Day Use Area, Bull River Campground, and Big Eddy Picnic Area. The selected standards would maintain public access to these recreation sites.
5- St. Paul	30	23	60	This BMU has a high percentage of designated wilderness and designated roadless habitat and is capable of achieving levels above and beyond the research average core level, and below the average OMRD and TMRD levels. This strategy provides some management flexibility while still providing a high level of habitat security. There were eighteen grizzly bear sightings from 1990-2000. One of these included a female with young. The Howard Lake Campground and Bull River Guard Station are located within this BMU. The selected standards would provide for continued public access to these sites.
6- Wantless	34	32	55	Much of the private land in the eastern half of the BMU is owned by Plum Creek Timber Company (PCTC). In addition, several roads in the eastern half of the BMU are currently under County jurisdiction. The selected standards are within the range of values shown in the research. There were twenty-five sightings of grizzly bear from 1990-2000 in this BMU, including five sightings of females with young. There is one developed recreation site located in this BMU – Lake Creek Campground. Access to this campground would be maintained under the proposed standards for this BMU.
7- Silver Butte-Fisher	26	23	63	Standards are better (higher) than average research levels because this BMU is 92% federal ownership and currently has a large designated roadless area adjacent to the Cabinet Mountains Wilderness. There were four grizzly bear sightings from 1990-2000, including one female with young. The Sylvan Lake Campground is located in this BMU. The selected standards for this BMU would maintain public access to this campground.
8- Vermilion	32	21	55	The proposed standards for OMRD and TMRD are better than the research recommendation. Regenerating harvest units that produce huckleberries are well distributed throughout the BMU. There were four grizzly bear sightings from 1990-2000, including one sighting of a female with young. Sightings and telemetry indicate bear use has occurred in all seasons and most portions of the BMU. Willow Creek Campground is located in this BMU. The selected standards would maintain public access to this campground.

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Table 4. Selected alternative determination for BMU specific standards

9- Callahan	33	26	55	The selected security levels do not deviate from the 33-26-55 parameters. The northern portion of the BMU is a linkage zone between the Yaak River drainage, across the Kootenai and into BMU 9. There were three grizzly bear sightings from 1990-2000 in this BMU. Sightings and telemetry are limited, but indicate bear use has occurred in all seasons and most portions of the BMU.
10- Puljiti	44	34	52	The selected standards are within the range of values shown in the research. Core area, OMRD & TMRD are at the levels that can be maintained without closing access to private land and recreational facilities. The southern portion of the BMU is a linkage zone from the BMUs to the north of the Kootenai River to the BMUs in the Cabinet Mountains, south of the river. There were twelve sightings of grizzly bear from 1990-2000 in this BMU. Sightings and telemetry are limited, but indicate bear use has occurred in all seasons and most areas of the BMU, except the southerly most portions. The BMU is extensively used by the community of Troy and the surrounding area for a variety of recreational and social traditions. There are seven developed recreation sites located within this BMU - Big Horn Boat Ramp, Surprise Gulch Shooting Range, Yaak Mountain Lookout, Yaak River Group Picnic Area, Yaak River Campground, Kiltreman Lake Campground, and Kiltreman Lake Boat Site. The selected standards would maintain public access to these recreation sites.
11- Rodrick	28	26	55	The selected standard for OMRD is better than the research recommendation. TMRD and core do not vary from research recommendations. There were ninety-four sightings of grizzly bear in this BMU from 1990-2000, including fourteen sightings of females with young. Sightings and telemetry indicate bear use has occurred in all seasons and most portions of the BMU.
12- Newton	45	31	55	There are major Forest Service arterial access roads that would need to be closed during the non-damming period to meet the research recommendations for OMRD and TMRD. The proposed standards are within the range of values shown in the research. The southern portion of the BMU, at the junction of Highway 2 and Highway 508, is a linkage zone to the south across the Kootenai River into BMU 9. There were eight sightings of grizzly bear from 1990-2000 in this BMU. Sightings and telemetry are limited, but indicate bear use has occurred in all seasons and most areas of the BMU except the southerly most portions. Two developed recreation sites are located in this BMU. Public access to the Yaak Falls and Red Top campgrounds would be maintained with the selected standards.
13- Keno	33	26	59	OMRD and TMRD do not vary from research values. On-the-ground conditions show that core can be maintained at a higher level than the research recommended. The BMU is a linkage zone between Idaho and BMUs 11 & 14. There were seven sightings of grizzly bear from 1990-2000 in this BMU. One of these sightings was of a female with young. Sightings and telemetry indicate bear use has occurred in all seasons and most portions of the BMU. There are two developed recreation sites within this BMU - Mt. Baldy Buckhorn Ridge Lookout and the Keno Creek Trailhead. The selected standards would allow for continued public access to these recreation sites.
14- NW Peaks	31	26	55	TMRD and core do not deviate from research recommended levels. OMRD can be maintained at a higher (better) level than the research recommended level. The BMU is a linkage zone between Idaho and BMUs 11 and 15. There were twenty-seven sightings of grizzly bear from 1990-2000 in this BMU, including five of females with young. There are two developed recreation sites located in this BMU - Whetani Campground and Garver Mountain Lookout. The selected access standards would provide for continued public access to these recreation sites.
15- Garver	33	26	55	Selected security levels do not deviate from the research recommended levels. There were twenty-three sightings of grizzly bear from 1990-2000, including eleven of females with young during this period. Sightings and telemetry indicate bear use has occurred in all seasons and most portions of the BMU. This BMU has two developed recreation sites - Pete Creek Campground and Upper Ford Guard Lookout. The selected standards would allow for continued public access to these recreation sites.
16- East Fork Yaak	33	26	55	Selected security levels do not deviate from the research recommended levels. There were thirty-seven sightings of grizzly bear from 1990-2000 in this BMU, including three sightings of females with young. Sightings and telemetry indicate bear use has occurred in all seasons and most portions of the BMU. There is one developed recreation site

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Table 4. Selected alternative determination for BMU specific standards

17- Big Creek	33	26	55		located within this BMU – Caribou Campground. The selected standards would allow for continued public access to this recreation site. Selected security levels do not deviate from research recommended levels. BMU 17 is not directly part of a linkage zone, but it is the closest BMU in the Cabinet-Yaak Ecosystem to the linkage zone to the NCDE through the Stryker area. There were thirty-nine sightings of grizzly bear which occurred in this BMU from 1990-2000. One of these sightings included a female with young. Sightings and telemetry indicate bear use has occurred in all seasons and most portions of the BMU. The Big Creek Baldy Lookout is located in this BMU. The selected standards for this BMU would maintain public access to this recreation site.
18-Boulder	33	29	55		Sets a higher TMRD because of numerous roads accessing private lands in NW corner of this BMU. There are a few private residences in NW portion of BMU, and numerous residential and agricultural developments just outside northern and northwestern boundary of this BMU. In the Final Interim Road Management Strategy (1998) this BMU was listed as a priority (3) BMU. The BMU is part of a linkage zone and borders Highway 200 on the Idaho side, although it is across the Kootenai River from the highway. The Black Mountain Lookout Cabin is a recreation site located within this BMU. The selected standards for this BMU maintain public access to this recreation site.
19-Grouse	59	55	37		This BMU is unique in that almost half of it resides in non-federal ownerships. Because of numerous private in holdings and the associated ownership pattern standards for OMRD and TMRD are set higher and core is set lower. There are numerous private inholdings, many with residences or other structures within or immediately adjacent to BMU boundaries in the Twentymile, Trail, Grouse, Gold, and Rapid Lightning Creek drainages. There are also two small communities (Naples and Elmira) within 1 mile of the BMU western boundary. The selected habitat parameters set at a level that is achievable given the private inholdings. There is a relatively small amount of high quality seasonal foraging habitat in this BMU. In the Final Interim Road Management Strategy (1998) this BMU was listed as a priority (3) BMU. This BMU is part of a linkage zone and is adjacent to the McArthur Lake Wildlife Corridor, which represents a point where the Selkirk Mountains and Cabinet Mountains are in closest proximity to one another. Developed recreation sites located in this BMU include the Lunch Peak Lookout site and Grouse Falls Trailhead. The selected standards would maintain public access to these recreation sites.
20-N Lightning	35	20	61		Sets a higher OMRD due to configuration of arterial roads, however, the standard is within the range of values shown in the research. The value for OMRD is primarily due to two major public routes (North Lightning and Trestle Creek Roads) and the configuration and topography of the BMU, which requires a winding road course across the BMU. TMRD is better than the research value. Higher core value results from Bee Top roadless area and other areas between major drainages. This BMU has large blocks of core habitat that grizzly bears would most likely utilize during home range movements while minimizing potential encounters with humans. The lower TMRD value results from the Lightning Creek Restoration Project. Spring habitat is restricted to private lands and the bottoms of Trestle and Trout Creek drainages. The higher elevation habitat contributes high quality forage (huckleberries, as well as other preferred species) resulting from older harvest areas and fires. The Final Interim Road Management Strategy (1998) listed this as a priority (1) BMU. There are numerous private inholdings, many with residences or other structures within or immediately adjacent to this BMU's westerly boundary. There is also the community of Hope, which lies on the southwest boundary of the BMU. There are three developed recreation sites within this BMU, including Huckleberry Campground, the Moose Lake Trailhead, and the Lunch Peak Trailhead. The selected standards for this BMU would maintain public access to these recreation sites.
21- Scoobman	34	26	62		OMRD is not as good as research average level due to high densities on private ownership; however the standard is within the range of values shown in the research. Most of the roads in this BMU are located in the southern quarter of the BMU and are associated with non-federal lands. Higher core value results from roadless area and TMRD does not deviate from research value. This BMU has large blocks of core area that are connected to core area in adjacent BMUs to the east. In the Final Interim Road Management Strategy (1998) this BMU was listed as a priority (2)

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Table 4. Selected alternative determination for BMU specific standards

22-Mt. Headley	33	35	55		BMU based on sightings of family groups, credible sightings, human-caused mortalities, and adjacent BMUs having females with young. Porcupine Lake Campground is located within this BMU. The selected standards for this BMU would maintain public access to this recreation site. A higher TMRD was set because the amount and pattern of private ownership. There is high quality habitat occurring in a large undisturbed area in the center of the BMU (Cabe Iron/Sitcox proposed wilderness and roadless areas north to Banson and Lone Tree peaks). This BMU is a major portion of the Cabinet-Yaak to Bitterroot Linkage Zone (identified by Servheen 2001). This bear unit is the closest point to the Bitterroot ecosystem and there are some large roadless land areas immediately south of the bear unit. This bear unit is likely occupied, but this was not confirmed and no female observations had been confirmed by 2000. Public access to the Fishtrap Creek and Fishtrap Lake Campgrounds, and the Cougar Mountain Lookout rental recreation sites would be maintained under the selected standards for this BMU.
Blue-Crass	33	26	55		Selected security levels do not deviate from the 33-26-55 parameters. This BMU contains a variety of seasonal foraging habitats, as well as important denning habitat. In the final Interim Road Management Strategy (1998) this BMU was listed as a priority (1) BMU. There is a private inholding near the middle of the BMU. Access to this inholding must be granted through the United States.
Long-Smith	25	15	67		This BMU is better than research average values for core area and road densities due to high quality habitat, low road densities, and an elevated level of habitat effectiveness. The western side of this BMU contains high elevation habitat that was affected by the Trapper Peak fire and now provides high quality forage in the form of berry fields. In the Final Interim Road Management Strategy (1998) this BMU was listed as a priority (1) BMU based on sightings of family groups, credible sightings, human-caused mortalities, and adjacent BMUs having females with young. Two developed recreation sites are located in this BMU - West Fork Cabin and Shorry Peak Lookout. The selected standards would maintain public access to these recreation sites.
Kalispell-Granite	33	26	55		Selected security levels do not deviate from the 33-26-55 parameters. High quality spring habitats are more common within this bear management unit than are generally found within most other BMUs. Quality denning habitat also exists in this BMU. This BMU is considered as occupied and also occupied by female bears. The majority of the grizzly bear occurrences occur within the spring season with the late, summer/fall season being the next highest period of use. Grizzly bear use is normally documented each year within this BMU. There are no private residential lands, thus no private residential development in this BMU. Four developed recreation sites are located in this BMU, including Stagger Inn Campground, Granite Falls Trailhead, Boulder Meadows Horse Camp, and the Road 302 Snowmobile Trailhead. The selected standards for this BMU would maintain public access to these recreation sites.
Lakeshore	62	36	20		Achieving the research average values was not considered feasible due to the small size of the BMU and its close proximity to developed residential areas. The proposed standards maintain existing conditions. High quality spring habitats are more common within this BMU than are generally found within most other BMU's. This was the rationale for adding this BMU along with the Kalispell-Granite BMU to the recovery area in 1994. Spring habitat is generally well distributed. The majority of the grizzly bear occurrences occur within the spring season. This BMU has a high potential for human-bear interactions. Private residential properties that exist and also which may be added in the future will likely continue to encroach on spring range. Distillery Bay, Bottle Bay, and Beaver Creek Campgrounds are located in this BMU. The Navigation Trailhead is also located within the Lakeshore BMU. The selected standards would maintain public access to these recreation sites.
Salmo-Priest	33	26	64		Level of core habitat is better than the average research values because of the proportion of designated wilderness within the BMU. OMRD and TMRD do not deviate from research values. High quality spring habitat is less common within this BMU largely as a result of topography and elevation. Quality summer habitat is abundant throughout the BMU. Denning habitat is also abundant. This BMU is considered occupied, including with female bears.

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Table 4. Selected alternative determination for BMU specific standards

Sullivan-Hughes	24	19	61	The levels of core habitat would exceed the 55 percent level based on the proportion of designated wilderness, which is located within the BMU and also because of the low percentage of core habitat, which would be managed for within the Lakeshore BMU. Summer berry fields are generally associated with past timber management areas, open canopy timber stands and numerous smaller scale older burns. Quality denning habitat is located in this BMU. This BMU is considered occupied, including by female bears. There are three developed recreation sites located in this BMU. Flowboy, Geisinger, and Navigation Campgrounds are located in this BMU. The selected standards would maintain public access to these recreation sites.
Myrtle	33	24	56	Selected standards reflect ownership patterns and lower total motorized road densities. The large Sundance Burn occupies about a third of the Myrtle BMU. It provides huckleberries as well as other preferred species such as mountain ash. The burn has high quality forage, and is increasing in available cover as vegetation grows. Approximately 1/3 of the BMU is part of the Myrtle Creek Game Preserve, where no hunting is allowed. In the Final Interim Road Management Strategy (1998) this BMU was listed as a priority (2) BMU. In the past, there have been numerous unconfirmed sightings of family groups. While not immediately adjacent, this BMU is part of a linkage zone and represents the easternmost portion of the Selkirk Recovery Zone, and as such is closest to the McArthur Lake Wildlife Corridor. Karman Nose Trailhead and Campground and Harrison Lake Trailhead are located in this BMU. The selected standards would maintain public access to these recreation sites.
Ball-Trout	20	13	69	This BMU is better than the average research values for core and road densities due to high quality habitat, low road densities, and an elevated level of habitat effectiveness. The Ball Trout BMU has a large proportion of unroaded habitat, with several popular trails. Management designs have limited the number of users in this backcountry area to a level deemed to be compatible with bear recovery. In the Final Interim Road Management Strategy (1998) this BMU was listed as a priority (2) BMU. Upper Trout Creek Trailhead is located within this BMU. The selected standards for this BMU would maintain public access to this site.

Note: Gray shading Denotes a deviation from the recommended standard(s) of less than or equal to 33% OMRD, less than or equal to 26% TMRD, or greater than or equal to 55% Core Area

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Table 5. Rating of alternatives by non-numerical effects indicators

Effects Indicator	Alternative		
	A	D Modified	Selected Alternative
Contributes to achieving Grizzly Bear Recovery Plan objectives and consistent with IGBC Access Direction	Partial	Partial	<u>Yes</u>
Consistent with ESA Section 7(a)(1) requirement to conserve listed species	Partial	<u>Yes</u>	<u>Yes</u>
Consistent with ESA Section 7(a)(2) requirement to avoid jeopardizing continued existence of listed species	No	<u>Yes</u>	<u>Yes</u>
Utilizes best available scientific information	Partial	<u>Yes</u>	<u>Yes</u>
Level of mitigation for grizzly bear mortality risk	Medium	<u>High</u>	<u>High</u>
Level of mitigation for grizzly bear displacement potential	Medium	<u>High</u>	<u>High</u>
Provides for future development of habitat-based access management approach	No	<u>Yes</u>	<u>Yes</u>

Alternatives that are **best** for grizzly bears under each criterion are identified with bold underlined letters.

Table 6. Summary of the number of acres and percent core area from 2002 (i.e., environmental baseline) to 2009 current conditions and the two phases of the Selected Alternative

Grizzly Bear Recovery Zone	Core Area Habitat (Total Acres/Percent of Recovery Zone)			
	Environmental Baseline 2002 ¹	Current Conditions 2009	Selected Alternative at Full Implementation (≤8 years)	Selected Alternative At Standard
Selkirk	303,817 (59%)	307,452 (60%)	315,596 (61%)	305,403 (59%)
Cabinet-Yaak	924,444 (56%)	942,217 (57%)	961,982 (58%)	948,193 (58%)

¹2002 represents the ESA Section 7 consultation baseline per the 2004 Biological Opinion on motorized access (USFWS 2004).

Table 7. Summary of changes in acres of core area from 2002 (i.e. environmental baseline) to various identifiable time periods including the 2009 current conditions and two phases of the Selected Alternative

Grizzly Bear Recovery Zone	Changes in Core Area Habitat (Total Acres) for Identifiable Time Periods				
	2002 to 2009	2002 to 2019 Full Implementation	2009 to 2019 Full Implementation	2002 to 'At Standard'	2009 to 'At Standard'
Selkirk	3,635	11,779	8,144	1,586	-2,049
Cabinet-Yaak	17,773	37,538	19,771	23,749	5,981
Combined	21,408	49,317	27,915	25,335	3,932

Table 8. Summary of changes in percent OMRD and TMRD from 2002 (i.e. environmental baseline) to 2009 current conditions and the two phases of the Selected Alternative

Grizzly Bear Recovery Zone	Motorized Access Parameter	Access Parameter (Percent)			
		Environmental Baseline 2002 ¹	Current Conditions 2009	Selected Alternative Full Implementation (≤8 years)	Selected Alternative At Standard
Selkirks	OMRD	28	29	≤31	31
	TMRD	23	22	≤23	23
Cabinet-Yaak	OMRD	33	33	≤33	33
	TMRD	29	28	≤28	28

¹2002 represents the ESA Section 7 consultation baseline per the 2004 Biological Opinion on motorized access (USFWS 2004).

3. Social-structural

We recognize that other steps can be taken to help reduce grizzly bear mortalities. These include hunter certification programs, sanitation, law enforcement, and education. These efforts are ongoing agency actions separate from this specific decision. While the Forest Service and other agencies currently are pursuing actions to address these elements (FSEIS, pp. 6 to 9), they are beyond the scope of this decision, which pertains to the access management element. The following summarizes these other ongoing agency actions:

Hunter certification: Some of human-caused mortality that occurs on NFS lands is tied to legal state big game hunting seasons when hunters frequent areas within the recovery zones. Seventeen percent (12 total) of all human-caused mortality involved hunting-season associated deaths where grizzlies were killed in “secure” habitat (i.e., more than 0.31 miles from an open road). To address this, Montana Fish, Wildlife and Parks instituted a voluntary bear identification course for hunters in 2001 and made it mandatory in 2002 to assist with reducing grizzly bear mortality within the state. The state wildlife management agencies for Idaho and Washington have recently agreed to a request to institute similar programs in their respective states (FSEIS, p. 6).

Sanitation: Attraction of grizzly bears to improperly stored food and garbage is identified by the Recovery Plan as one of the principal causes of grizzly bear mortality (USDI Fish and Wildlife Service 1993). In many cases, management removals of grizzly bears are the result of bears becoming habituated to unnatural food sources such as human food or garbage. The FSEIS, pages 6 and 7, summarizes the sanitation measures that have taken place on the three forests. In 2011, the three forests are implementing mandatory food storage orders for those portions of the forests included within the Selkirk/Cabinet-Yaak ecosystems

Law enforcement: An active law enforcement program can be a deterrent against illegal grizzly bear mortality. The Forest Service actively cooperates with State and Federal law enforcement officials concerning any illegal killings of grizzly bears. Most grizzly bear poachings occur during legal hunting seasons for other species (Knick and Kasworm 1989). In the Selkirk and Cabinet/Yaak ecosystems, humans have been responsible for the death of at least 97 grizzly bears since 1982, the majority of which occurred during big-game hunting seasons. Enforcement patrols and in-field educational efforts are therefore a high priority during these periods.

In Northern Idaho, the Idaho Department of Fish and Game administers the Grizzly Bear Enforcement and Education Program, the goal of which is to reduce human-caused mortalities of grizzly bears in the Selkirk and Cabinet-Yaak ecosystems in Idaho. Under this program, extensive field patrols are conducted throughout the spring, summer, and fall.

Education: Public education is an important element of any program designed to reduce grizzly bear mortalities. Through education, people can learn to live in a way that is more compatible with the needs and behaviors of bears. Education programs can reduce bear mortalities in instances of self-defense and habituation to unnatural foods. The Forest Service and cooperating agencies maintain a regular program of public information and education within the Selkirk and Cabinet-Yaak Recovery Zones – see FSEIS, page 8 and 9.

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4. Institutional

Based on the preceding discussion, we have concluded that, of the alternatives considered, in both the FEIS and FSEIS, our selected alternative best provides for an overall improvement in the habitat security needs of the grizzly bear while considering social, valuational, and institutional needs emphasized by the Grizzly Bear Recovery Plan and IGBC. In summary:

- Alternative D Modified partially contributes to Recovery Plan objectives, is fully consistent with ESA, utilizes best available scientific information, and provides the highest levels of mitigation for grizzly bear mortality and displacement risk. However, as we have previously stated, Alternative D Modified does not consider the social, valuational, and institutional forces per the Grizzly Bear Recovery Plan; therefore, we believe it has a lower chance of achieving the purpose and need for action than does the selected alternative.
- Alternative E fully contributes to Recovery Plan objectives, is fully consistent with ESA, utilizes best available scientific information, provides a high level of design for preventing displacement, disturbance and mortality on NFS lands, and incorporates the consideration of social, valuational, and institutional needs. It also incorporates some flexibility in order to provide for public and administrative access, economics, and access to private inholdings.

We have also considered whether or not the selected alternative meets the direction for Management Situation 1. Management Situations were mapped areas within the Recovery Zones to aid in the recovery of the species (Recovery Plan, p. 23). Management Situation 1 contains grizzly population centers. Management direction for these areas states that management decisions will favor the needs of the grizzly bear when grizzly bear habitat and other land use values compete. Land uses which can affect grizzly bear and/or their habitat will be made compatible with grizzly bear needs or such uses will be disallowed or eliminated. The IGBC provided guidelines which are to be applied to Management Situation 1. The following summarizes how those guidelines apply to this action.

- 1) *Maintain close contact with research.* The analysis provided in the FSEIS is based on the best available research at this time (see earlier discussion regarding the biological needs of the bear).
- 2) *Complete a biological assessment.* Our biological assessment (BA) concluded that during the time period of eight years from our decision or prior to all BMUs meeting standards, the existing environmental baseline condition may affect, and is likely to adversely affect the grizzly bear or its habitat. While human use of roads may contribute to disturbance and displacement of grizzly bears, research has shown that bears can co-exist and survive with a certain level of roads (Wakkinen and Kasworm 1997) without apparent adverse effects. Once the selected access management standards are achieved, disturbance and displacement is not expected to be at levels that result in adverse effects to bears as evidenced by the available research and consultation with USFWS (Biological Assessment, p. 61). Therefore, we are confident that implementation of the selected alternative will contribute to the conservation and recovery of grizzly bears within the recovery zones.
- 3) *Use a cumulative effects analysis process.* The analysis presented in the FSEIS and BA considers the potential cumulative effects of the management direction on grizzly bears.

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- 4) *Initiate consultation with the USFWS, as necessary.* Because of the potential effects to grizzly bear resulting from the environmental baseline condition during the eight years from this decision, we requested formal consultation with USFWS. The action that was consulted on with the USFWS was the continued implementation of each forest plan as modified by this amendment. For grizzly bear, the USFWS considered the action area to be the affected BMUs managed entirely or in part by the Forests, within the Selkirk and Cabinet-Yaak recovery zones, and associated BORZ - adjacent areas on the Forests identified as having recurring use by grizzly bears outside of these recovery zones. The USFWS concluded that these amendments would not jeopardize the continued existence of the Selkirk and Cabinet-Yaak grizzly bear population (USDI Fish and Wildlife Service 2011, p. A-80). The selected alternative may cause localized and short- or long- term adverse effects, but would result in overall ecosystem-wide improvements, and reductions of incidental take as a result of high road densities, which will benefit the grizzly bear populations. (USDI Fish and Wildlife Service 2011, p. A-85).
- 5) *With full awareness of the Biological Opinion, recommend project or land use modification which will provide compatibility between grizzly bears and other land uses.* The Recovery Plan identified concerns with the management of roads and provided recommendations for road management in grizzly habitat (Recovery Plan appendix B). It specifically recommended that open road density in all MS1 and MS2 areas be standardized using best available data, and that this standardized approach could take into account ancillary needs for security such as road use, trail use, and the availability and extent of security areas. The management direction incorporated into the selected alternative meets this recommendation. It incorporates a standardized analysis process, identifies habitat parameters (standards) for ORMD, TMRD and core (security), utilizes a moving windows analysis, and considers these standards in comparison to where grizzly bears are reproducing and where there are mortality risks. In addition, many of the roads that access primary recreation areas are in Management Situation 3 habitat, where grizzly habitat maintenance and improvement are not management considerations.

In addition, the selected alternative provides management direction for areas of recurring use by grizzly bears (BORZ). These lands are located adjacent to but outside of the recovery area. The BORZ lands do not overlap any of the management situation areas; therefore the management situation guidelines do not apply to them. However, the additional management direction for the BORZ will provide additional protections for the grizzly bear.

B. Response to Other Issues

1. Public Access for Recreation and Social Issues

Recreational use within all BMUs of the recovery zones has been well established and is an integral part of the management and use of the land. Opportunities provided range from semi-primitive non-motorized to motorized summer and winter travel on a well developed transportation system; from remote backpack and horse camping to developed campgrounds with tables, toilets, and other amenities; from a feeling of remoteness and solitude to one associated with the presence of other users.

Of the types of recreation opportunities considered in our analysis, motorized, dispersed recreational activities (both summer and winter) will be most affected by our decision.

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However, for winter recreation there are often fewer restrictions because the potential impacts to grizzly bear are less when they are in their dens.

Opportunities for motorized recreation: Full implementation of the selected alternative is expected to result in a decrease in the amount of open road available for public use within the recovery zones (see Table 9). Based upon the 2011 FSEIS (pp. 172 and 176), Alternative D Modified would provide for the greatest reduction in the amount of open road available for public use. We estimate that implementation of the selected alternative’s standards will result in changing about 34 to 102 miles of road open year round to either gated or barriered status during the active bear season in order to bring deficient BMUs into compliance with the selected standards (see Table 10). The majority of changes in road status necessary to meet the standards will come from conversion of gated roads to barriered roads. Approximately 74 to 222 miles of roads with existing seasonal restrictions will need to be barriered to achieve the standard.

Table 9. Projected road mileage by alternative for all Forests¹

Road Status	Existing Road Miles (2009) ²	Alternative D Modified ²	Selected Alternative ²
Open Roads	2,882	1,711	2,780
Gated Roads	1,539	943	1,371
Barriered Roads	1,173	2,940	1,443

¹ The estimated “maximum change” was used.
² Mileages shown are from the 2011 FSEIS.

Table 10. Estimated miles of road status change by alternative for all Forests

Road Status	Alternative D Modified ¹	Selected Alternative ¹
From Open to Gated (miles)	282-403	18-54
From Open to Barriered (miles)	598-768	16-48
From Gated to Barriered (miles)	665-999	74-222
Total	1,545-2,170	108-324

¹ Mileages shown are from the 2011 FSEIS.

Our selected alternative potentially provides for the ability to open a limited amount of road that is gated or barriered for public wheeled motorized travel. We reviewed each BMU and quantified the approximate extent of options for each recovery zone (FSEIS, pp. 173-174). Table 11 displays the approximate range of flexibility disclosed in the FSEIS for the selected alternative. As previously stated we do not expect that the flexibility options will be implemented either at the full extent allowable in each bear management unit or widely applied across all of the units, because resource management issues may limit or eliminate this flexibility (FSEIS, p. 175).

Table 11. Future options for adjustments to motorized access – selected alternative

Possible Road Access Options	Miles by Recovery Zone	
	Cabinet-Yaak	Selkirk
Gated to Open	72-216	14-42
Barriered to Open	6-18	18-54
Barriered to Gated	12-36	0

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Opportunities for access to developed recreation sites: Within the analysis area, for the KNF, LNF, and IPNF, overnight camping at five developed campgrounds was used to show a trend in use between 1990 and 2000. The five sites were Rexford Bench, Yaak River, Bull River, Dorr Skeels, and Sam Owen. These five sites were selected because they were within or near the Selkirk and Cabinet-Yaak Recovery Zones and reliable use records existed. Overnight use at the five developed sites increased 52 percent in the decade between 1990 and 2000. These same five sites showed a 23 percent increase in the six years between 2000 and 2006. Future increase at these five sites is expected to be less than what has been realized over the past two decades as three of the sites – Rexford Bench, Dorr Skeels, and Sam Owen – are reaching capacity between July 1 and Labor Day, especially during the weekends. However, all three Forests usually have capacity at other developed campgrounds to meet overnight use, provided all campgrounds continue to be operated and maintained (FSEIS, p. 208).

Our decision is not expected to affect use of developed sites within the analysis area (FSEIS, p. 215). These sites are generally located along major travel routes, most of which are paved, and access to and use of these developed sites will be maintained. Similarly, access to non-motorized recreational opportunities within the analysis area should only be minimally affected as the scope of our decision only addresses motorized access within the recovery zones (FSEIS, p. 216). In contrast, achieving the standards contained in Alternative D Modified could result in the closure of six campgrounds, three boat ramps, and three day use areas on the KNF; one campground, one cabin rental, and several use areas on the IPNF; and two campgrounds and a lookout rental on the LNF, even though no grizzly bear mortalities have been associated with these sites in the past.

The selected alternative will require there be no increases in permanent linear miles of open road and no net permanent increases in linear miles of total roads on an additional 725,000 acres of National Forest System lands outside of but adjacent to the recovery zones (BORZ) (see Figures 2 and 3). Linear miles of open road in a given area will not be able to go above the defined baseline conditions displayed in Table 16 of Appendix B. Therefore, any additional roads that are opened, constructed, or reconstructed in these areas will need to be effectively closed to public motorized access.

In summary, full implementation of the selected alternative is expected to result in a decrease in the amount of open road available for public use within the recovery zones; however, the reduction will be substantially less than under Alternative D Modified (see Table 10). While some flexibility is provided, our selected alternative will provide for an increase of core habitat for grizzly bear across the recovery zones (see Table 3). Therefore, we believe that the selected alternative will continue to provide for a level of public motorized use within the recovery areas, while meeting our responsibilities to the grizzly bear under the Endangered Species Act.

2. Administrative Access

During the analysis process, the public expressed concerns about reductions in access affecting management of vegetation (timber) on National Forest System lands. Restrictions on motorized access can limit administrative access and can change the ways in which we respond to fire, windthrow, and insect and disease outbreaks and infestation.

In each respective forest plan, timber management goals, objectives, and standards were identified along with an upper limit for timber harvest, or allowable sale quantity (ASQ). On each national forest, since the forest plans were initially approved, the ASQ has never

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been reached. The number of acres annually treated with timber harvest has shown much variability in recent years, but the trend has been slightly downward. The volume harvested has declined more rapidly over the same period, because of changes in management direction and silvicultural regimes, from primarily regeneration harvest early in the period to primarily intermediate and salvage harvest in more recent years (FSEIS, p. 194).

The selected alternative will limit our ability as resource managers to respond to fire, windthrow, insects and disease, and to provide timber or other commodities. Approximately 990,500 acres of suitable timberland is located within the recovery zones. The FSEIS disclosed that the selected alternative could potentially reduce access to about 100,000 acres of these lands, when compared to the existing condition (FSEIS, p. 204). This amounts to about 3 percent of the total suitable timber base on the three national forests (FEIS, p. 3-96).

Alternative D Modified exceeds the selected alternative in the amount of reduction in access to suitable timberlands (440,000 and 100,000 acres, respectively) by converting between 1,263 and 1,757 miles of either open or gated road to barriered status (FSEIS, p. 204). In contrast, the selected alternative will restrict management activities within the analysis area by converting between 90 to 270 miles of either open or gated road to barriered status. Alternative A (no change) provides the least amount of change in access to suitable timber acres (FEIS, p. 3-104) and therefore, would be more favorable from a timber management perspective. However, this alternative was found to be only partially consistent or not consistent with IGBC guidance for access management (FEIS, p. 3-159).

Our decision will limit access to some of these timber stands with stand-tending needs. While there are about 230,000 acres with potential stand-tending needs, the selected alternative will retain access to approximately 224,000 of these acres (FSEIS, p. 204). The effects of limiting access to an estimated 6,000 acres of timber stands potentially in need of tending sometime in the future are expected to result in growth and yield reductions, a potential loss of investment, and higher fuel loadings on the affected acres. Although core area requirements of the selected alternative provide some management flexibility, in the short term, newly created core must stay in place for 10 years. This requirement will restrict management activities in some BMUs. BMUs requiring large increases in core area with this alternative are Vermillion, Boulder, Grouse, Blue Grass, and Kalispell-Granite. The overall net change in acres of core area from 2009 to full implementation will be an increase of 19,771 acres within the Cabinet-Yaak Recovery Zone and an increase of 8,144 acres in the Selkirk Recovery Zone (FSEIS, p.89).

The selected alternative also sets standards for linear miles of open and total roads on areas adjacent to but outside of the recovery zones where grizzly bears have recurring use. These standards will apply to the BORZ, which encompasses an additional 725,000 acres of National Forest System lands (see Figures 2 and 3). We do not expect implementation of these standards to limit our ability to conduct vegetation management activities within these grizzly bear recurring use areas; therefore, they do not combine cumulatively with the access management standards for the recovery zones in limiting our ability to access the suitable timber base. While no increase in linear miles of open will be permitted, this requirement can be addressed by effectively closing any newly created, opened or reconstructed road to motorized public use. Similarly, increases in linear miles of total road will not be permitted. Addressing this standard will require reclaiming or making hydrologically neutral any new construction upon completion of

project activities or reclaiming or making hydrologically neutral an equal amount of existing road (see Table 16, Appendix B).

While our decision is expected to reduce needed access for timber management purposes, we determined that these changes and restrictions to access are necessary for meeting our responsibilities for protecting the grizzly bear under the ESA. The selected alternative is consistent with the Grizzly Bear Recovery Plan and IGBC direction for access management (FSEIS, pp. 91-92). While access for needed timber management will be constrained, these changes are not expected to result in irreversible or irretrievable commitments of this resource (FSEIS, p. 265).

3. Local Economic Conditions

Rural areas surrounding national forests often depend on forest resources for much of their social and economic well-being. The majority of the analysis area encompasses parts of four counties in two states and on two national forests: Boundary and Bonner counties in Idaho, and Lincoln and Sanders counties in Montana (FSEIS, p. 223, Figure 14). These counties make up the zone of influence for our decision.

The analysis area's economy is heavily dependent upon natural resources of the national forests. The counties are heavily forested, ranging from 80 percent (Bonner County) to 95 percent (Lincoln County) as forestland. Timber harvest has been an important land use for all four counties (FSEIS, p. 226).

Additionally, outdoor social activities within the analysis area contribute to defining the culture and quality of life for many local residents and include hunting, fishing, huckleberry picking, and firewood cutting. The area has a wide array of wildlife and fish species. Hunting has had a large influence on settlement of the area and remains a major activity for local residents and visitors to the area (FSEIS, p.226).

The selected alternative is expected to have a lower negative impact than Alternative D Modified (see following table). Of the alternatives, because it would close the most roads, Alternative D Modified has the potential for the largest negative impact on the social environment and area economy (FSEIS, p. 240), thereby causing the largest reduction in employment and income in the local communities surrounding the recovery zones (FSEIS, p. 240).

The selected alternative will result in 16 to 48 miles of currently open roads being barred and an additional 18 to 54 miles of open roads being gated. Full implementation of this alternative will leave less road open to public use, but more than would be available for use under Alternative D Modified (see Table 9).

Erecting barriers on currently gated roads that are open and drivable during a portion of the year will displace some individuals to other areas of the national forests for hunting, fishing, huckleberry picking, or firewood gathering. As a result, these users could be displaced into a smaller area, increasing competition for the uses mentioned above. This may make it more difficult for some people to obtain their firewood or huckleberries or have a high quality, successful hunting experience. Either they will not be able to obtain the quantity or quality of products they have in the past or they may have to walk further from an open road to obtain these products. We recognize that this is likely to generate a feeling that an aspect of their quality of life has been diminished. We expect this effect to be similar in nature to the effects of a slowly increasing population where new inhabitants would also participate in these outdoor activities. While existing uses could be affected,

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the amount of open road within the analysis area will decline by only about three to four percent, with implementation of the selected alternative (see Table 9 and Table 10). Overall, only about 11 percent of the existing amount of open and gated road within the analysis area will be converted to barriered roads (see Table 9 and Table 10). Therefore, we do not expect the level of potential effect to be significant.

With respect to the area economy, existing access to the suitable timberland base will potentially be reduced on approximately 100,000 acres (FSEIS, p. 204). The largest reductions occur in Vermillion, Boulder, Grouse, Mt. Headley, Blue Grass, and the Kalispell-Granite BMUs. The selected alternative will set road densities and core areas individually for each BMU within the analysis area. The selected alternative provides a lower reduction in TMRD than Alternative D Modified. Our decision also sets administrative use at 57 and 60 round trips per year on each restricted road system in the Selkirk and Cabinet-Yaak Recovery Zones, respectively. Therefore, because of the reduced allowance and the decrease in TMRD, our decision has a lower potential for reducing future timber harvest than Alternative D Modified (FSEIS, p. 242).

While our decision provides for flexibility by allowing BMUs with levels of OMRD, TMRD, or core area that are better than their respective standard to accommodate some reductions in habitat security, as previously noted, other resource management issues may limit this flexibility. Therefore, implementation of these options is uncertain and public comment, project-level analysis and consultation with USFWS will be required prior to any decision affecting habitat security.

The selected alternative also sets standards for linear miles of open and total roads on areas adjacent to but outside of the recovery zones. The socio-economic effect of implementing these standards in combination with the access management standards for the recovery zones will not be significant. As we have previously stated, existing levels and opportunities for motorized access and use will be maintained and implementation of these standards is not expected to limit our ability to conduct vegetation management activities within the grizzly bear recurring use areas outside of the recovery zones. While opportunities for a permanent increase in motorized route density will not be possible, there are opportunities to accommodate public needs. On roads created, opened, or reconstructed to facilitate management activities, motorized use by the public will only be permitted following completion of all mechanized harvest and post-harvest slash activities requiring use of the road, to allow motorized public use during the bear summer season prior to the fall bear hunt (i.e., June 16 - August 31). This will allow for such activities as personal use firewood gathering. There will be no restrictions on non-motorized uses occurring within these areas.

Because of the availability of alternative areas on and near the national forests, we expect recreation levels to remain at current levels. The reduction in access to the suitable timberland base will potentially result in reduced timber harvest levels. While we do expect a temporary increase in jobs and income associated with the increase in road reclamation work over the next eight years, this work is not expected to offset the decline in timber related employment and income (FSEIS, p. 241). Therefore, of the alternatives, our decision will have a smaller negative impact on the area economy than Alternative D Modified (see Table 12).

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Table 12. Qualitative assessment of effect on the social and economic environment by alternative

Level of Effect on	Alternative D Modified	Selected Alternative
Social Environment	Very High	Moderate
Area Economy – Recreation Jobs and Income	Recreation jobs and income would be reduced	No Change
Area Economy – Timber Jobs and Income	Timber related jobs and income would be reduced	Decrease
Area Economy – Road Reclamation Jobs and Income	Highest temporary increase in jobs and income	Temporary Increase
Area Economy – Payments to Counties	No Effect	No Effect

4. Access to Private Inholdings

By law (Alaska National Interest Lands Conservation Act), the Forest Service must provide for adequate access to private land inholdings within the national forests. We acknowledged early in this project that the Forest Service has a legal obligation to provide access to private inholdings. In determining the effects of the habitat security standards, we modeled scenarios that did not change existing access to private lands. If future needs for access to private inholdings require motorized access, the area surrounding the access route would no longer qualify as security habitat. If this causes the affected BMU to not meet security standards, core habitat designation and route density adjustments will be necessary elsewhere on Federal lands within the BMU (FSEIS p. 99).

VII. Other Alternatives Considered

A. Alternatives Not Given Detailed Study in the FEIS and/or FSEIS

1. Alternative F – Maintain Current Levels of Access

This alternative was designed to respond to comments requesting the Forest Service maintain the existing levels of closed and open roads on the landscape, as well as responding to public comment asking for no additional road closures. The design of this alternative would be to “freeze” the current status as reported at the end of Bear Year 2000. Upon examination of the existing status of security parameters in the Selkirk/Cabinet-Yaak BMUs, we determined that the present status did not fully meet any particular desired biological or social condition. The “freezing” of the present status would not provide an option that more fully resolved any of the biological or social concerns identified as significant issues. The Interdisciplinary Team fully considered this alternative but found it did not warrant detailed study because it would not meet the purpose and need for action (FEIS, pp. 2-18 and 4-186).

2. Alternative G – Maximum Access

We developed this alternative in response to public comment requesting as much access as possible for recreation and economic activities in the three national forests. The design of this alternative would require all currently gated roads to be opened.

This alternative did not meet important elements of the purpose and need for action and was not given detailed study. The overall purpose as previously stated in this ROD is to “amend forest plans to include a set of motorized access and security guidelines to meet our responsibilities under the Endangered Species Act to conserve and contribute to

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recovery of grizzly bears”. Eliminating the existing gates on all restricted roads would not likely conserve and contribute to the recovery of grizzly bears within the recovery zones.

Other than access management and habitat improvement, the Forest Service has limited capabilities to affect changes that contribute to grizzly bear recovery. Without the ability to manage road access, other mitigation for grizzly bear security would need to be implemented, such as firearms restrictions or changes to hunting seasons. However, these options are outside the jurisdiction of the Forest Service and beyond the scope of this analysis.

This alternative was not given further detailed study in this analysis, as it did not meet the purpose and need for action and would require actions beyond the jurisdiction of the Forest Service to conserve and contribute to the recovery of grizzly bears in the Selkirk and Cabinet-Yaak Recovery Zones.

3. Alternative H – Mix of Alternatives E Updated and D Modified

Comments we received on the DSEIS requested that the Forest Service consider how Alternative D Modified could be achieved with lesser impacts to recreation and timber management than those displayed in the DSEIS. An alternative that would modify Alternative D Modified to be less restrictive was initially considered, but after further review it was determined that the alternative was not meaningfully different from other alternatives already considered and therefore, was not given detailed study. Changing Alternative D Modified to consider historically and culturally popular recreation destinations (e.g., campgrounds, concentrated fishing locations, trailheads, etc.) with high human use and road thoroughfares, and provide some flexibility would essentially result in Alternative E Updated.

Both Alternative D Modified and E Updated would have similar consequences for grizzly bear by contributing toward conservation of the species in accordance with Section 7(a)(1) of the Endangered Species Act (FSEIS, p. 92). Under Alternative E Updated, once core, OMRD, and TMRD in a BMU reach the benchmark densities reported in Wakkinen and Kasworm (1997), disturbance and displacement is not expected to be at levels that result in adverse effects to bears as evidenced by the available research and consultation with USFWS (USDI Fish and Wildlife Service 2011, p. A-79). As a result, an alternative that provides a different mix of Alternatives D Modified and E Updated would not be significantly distinguishable in its effect from either Alternative D Modified or Alternative E Updated, so it was not given detailed study.

4. Alternative I – Reverse designation of the recovery zones

This alternative would amend the respective forest plans to reverse the designation of the grizzly bear recovery zones. It was not given detailed consideration because it is beyond the scope of this analysis and would not respond to the identified purpose and need for action. The purpose and need for this proposal is to amend the three forest plans to include a set of wheeled motorized vehicle access and security guidelines that meet the agency’s responsibilities under the Endangered Species Act to conserve and contribute to recovery of grizzly bears (FEIS, p. I-4). Designation of the recovery zones is done under the authority of the USFWS.

B. Alternatives Given Detailed Study in the FEIS and/or the FSEIS

1. Alternative A – No Action

The No Action Alternative is defined as the direction and implementation of the forest plans, as amended and under the terms and conditions of their respective biological opinions, prior to December 1, 1998, the date the Interim Access Rule went into effect. The goals and objectives of the forest plans and other directives that were in place at that time would remain unchanged under this alternative.

Page 2-6 and Table 2-1 of the FEIS (p. 2-8) display the features of this alternative by BMU with respect to the major habitat security components for grizzly bear.

The No Action Alternative is required by the National Environmental Policy Act (NEPA) and provides a baseline against which to compare the amount and rate of change of all other alternatives. At the same time, it does provide a certain level of responsiveness to some of the unresolved issues identified by the proposed action. This alternative displays the effects of a more conservative approach to access management than our Proposed Action (Alternative B). In doing so, it provides a different course of action that is responsive to the issues of public access, administrative access, economics, and access to private inholdings.

We did not select this alternative for implementation because it did not address the purpose and need for action as well as the selected alternative. This alternative would not implement standards for OMRD, TMRD, or core area within the BMUs; therefore, it was not consistent with IGBC direction (FEIS, p. 3-18). We considered the likelihood to be high that the USFWS would find this alternative to jeopardize the continued existence of grizzly bears under ESA (FEIS, p. 3-20).

2. Alternative B

Alternative B was presented as the proposed action in the FEIS and incorporated all the protective measures of Alternative A plus it would implement the Interim Access Rule Set issued by the Selkirk/Cabinet-Yaak Subcommittee of the Interagency Grizzly Bear Committee (IGBC) on December 1, 1998. The Interim Access Rule Set provides a goal of achieving core habitat on a minimum of 55 percent of the area within each Priority 1 BMU (see Table 2 for a listing of BMU priority). This alternative stopped short of setting standards but did provide specific direction for several habitat security parameters. The levels of linear open road density and habitat effectiveness prescribed in the forest plans and biological opinions are to be met. Existing levels of OMRD and TMRD would not be increased. Other parameters such as levels of administrative use and public use are included to provide management flexibility in meeting local social and economic needs. Table 2-2 of the FEIS (p. 2-11) displays the features of this alternative by BMU with respect to the major habitat security components for grizzly bears.

While this alternative establishes goals for core in Priority 1 BMUs and allows no increases in OMRD or TMRD, no numerical standards are established for these measures. Additionally, no standard for core is established in priority 2 and 3 ranked BMUs. Therefore, while this alternative meets the purpose and need for action better than Alternative A, we did not select it for implementation because, unlike the selected alternative, it is not fully consistent with IGBC and Recovery Plan direction for grizzly bear because no numerical standards would be established for these measures (FEIS, p. 3-18).

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3. Alternative C

In this alternative, numeric standards for OMRD (less than or equal to 33%), TMRD (less than or equal to 26%), and core area (greater than or equal to 55%) would be established for all BMUs with greater than 75 percent federal lands. This alternative was developed in response to concerns that the Proposed Action lacked sufficient habitat security for grizzly bears. It was designed to incorporate the OMRD, TMRD, and core area levels recommended in 1997 by the Selkirk/Cabinet–Yaak Access Task Group, as well as in a recent USFWS biological opinion on the forest plan for the Idaho Panhandle NFs. These recommendations represent average security values documented through the latest available science and results of grizzly bear research and monitoring within the recovery zone.

Alternative C would not allow for an increase in route densities or decrease in core habitat until all BMUs in the recovery zone meet the standard for these parameters. This alternative would also remove the existing forest plan standards regarding linear open road density and habitat effectiveness. Table 2-3 of the FEIS displays the Year 2000 status as well as the maintained levels of these parameters in Alternative C.

We did not select this alternative because it did not address the purpose and need for this project or some of the key issues as well as the selected alternative. While Alternative C is fully consistent with IGBC and Recovery Plan direction, the selected alternative will set security standards, overall across the recovery zones at a higher level of security than Alternative C (FEIS, p. 3-19; FSEIS, pp. 92). Therefore, we expect that the selected alternative will go farther towards insuring the continued existence of the grizzly bear in the recovery areas than would Alternative C (FEIS, p. 3-20; FSEIS pp. 93).

Alternative C also did not respond to the key issues of public access and economic conditions as well as the selected alternative. To meet prescribed security standards, Alternative C would convert the second greatest amount of open road to barriered or gated status and the second greatest amount of gated road to barriered status (see Table 3-26 of the FEIS). As a result, there would be a greater effect from this alternative to motorized recreation opportunities and the area economy (FEIS, pp. 3-101 to 3-102; 3-116 to 3-118; and 3-144 to 3-146) without providing for an accompanying enhancement in the achievement of the project's purpose and need.

4. Alternative E

Alternative E was updated (Alternative E Updated) from the FEIS to the FSEIS and is the preferred alternative and the alternative that we have selected for implementation. The rationale for its selection has been disclosed in this ROD.

5. Alternative D Modified

Alternative D Modified focused on the biological needs of the grizzly bear and was designed to provide OMRD, TMRD, and core area standards by individual bear management unit that achieve the highest security parameters for bears (where possible), as identified in Wakkinen and Kasworm (1997). The basis for these parameters came from the 1989-1991 home range data of a single 20-year-old female grizzly bear. The conditions for OMRD (less than or equal to 17 percent), TMRD (less than or equal to 14 percent), and core area (greater than or equal to 72 percent) were set for each BMU when possible to achieve within Forest Service jurisdiction.

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Like Alternative D Modified, the selected alternative contributes toward grizzly bear conservation and avoids jeopardizing the continued existence of the species within the recovery zones in accordance with ESA Sections 7(a)(1) and 7(a)(2) (FSEIS, pp. 92-93). Both alternatives also utilized the best available scientific information and provide high levels of security for grizzly bear (FSEIS, pp. 93-94).

While Alternative D Modified would provide for a higher level of grizzly bear habitat security than the selected alternative (FSEIS, p. 92), it was found to not respond as well to the purpose and need for action or Grizzly Bear Recovery Plan and IGBC direction as did our selected alternative. Specifically, Alternative D Modified did not consider social, valuational, and institutional forces (Grizzly Bear Recovery Plan 1993; IGBC 1994 and 1998b). The Recovery Plan states “that the future of the grizzly bear will depend on integrating, as Kellert (1986) states: “the socioeconomic and utilization values of the general [local] population into the establishment and management of preservation programs... A management system that seeks to integrate all biological, social, valuational, and institutional forces toward a common effort involving grizzly bear conservation will have the highest chance of success.”

In contrast, our selected alternative incorporates IGBC direction for OMRD, TMRD, and core area, and goes beyond research recommended levels for these measures in many BMUs, although not to the higher levels possible as in Alternative D Modified. The selected alternative also incorporates direction from IGBC (1994 and 1998b) and the Grizzly Bear Recovery Plan (1993) to integrate all biological, social, valuational, and institutional forces toward a common effort involving grizzly bear conservation. Based upon the design of the selected alternative, we conclude that the selected alternative best provides for an overall improvement in the habitat security needs of the grizzly bear while considering the social, valuational, and institutional needs necessary for having the highest chance of success of grizzly bear conservation within the recovery zones.

C. Environmentally Preferred Alternative

Previously in this ROD, we have described the selected alternative and given our rationale for choosing Alternative E Updated. Council on Environmental Quality regulations for implementing NEPA also specifies that the alternative or alternatives that are considered to be environmentally preferable be identified (40 CFR Part 1505.2b). The environmentally preferable alternative is not necessarily the alternative that will be implemented, but is ordinarily the alternative that causes the least damage to the biological, physical and cultural environment. The alternative that best meets this definition is the selected alternative (Alternative E Updated). As previously discussed in this ROD, we have selected Alternative E Updated to implement because it best responds to the project’s biological emphasis of conserving and contributing to the recovery of grizzly bears while at the same time addressing the social, valuational, and institutional forces involved in grizzly bear conservation.

VIII. Compliance with Laws and Regulations

Forest Service activities and decisions must comply with many laws. In this section we consider each of the major laws involved in this programmatic level decision.

*Record of Decision***A. National Forest Management Act****1. NFMA Significance of the Amendment**

The purpose of this amendment is to incorporate management direction into plans for the conservation and recovery of grizzly bear.

On December 18, 2009 the Department of Agriculture issued a final rule reinstating the National Forest System Land and Resource Management Planning rule of November 9, 2000, as amended (2000 rule) (74 FR 242 [67059-67075]). The 2000 rule states: Projects implementing land management plans must comply with the transition provisions of 36 CFR §219.35, but not any other provisions of the planning rule. As stated in the Reinstatement of the 2000 Rule Appendix B to 219.35:

“During the transition period, responsible officials may use the provisions of the 1982 rule to prepare plan amendments and revisions.”

“Projects implementing land management plans and plan amendments, as appropriate, must be developed considering the best available science in accordance with §219.35(a).”

This proposal was initiated on May 17, 1999, which is before the transition period; therefore, it is being completed under the requirements of the 1982 regulations.

The National Forest Management Act (NFMA) provides that forest plans may be amended in any manner, but if the management direction results in a significant change in the plan, the same procedure as that required for development and approval of a plan shall be followed. The 1982 regulations at 36 CFR 219.10(f) requires the agency to determine whether or not a proposed amendment will result in a significant change in the plan. If the change resulting from the amendment is determined not to be significant for the purposes of the planning process, then the agency may implement the amendment following appropriate public notification and satisfactory completion of NEPA procedures.

Forest Service Manual (FSM) 1920, section 1926.5 (January 31, 2006) identifies factors to consider in determining whether an amendment is significant or non-significant for those plans using planning regulations in effect before November 9, 2000.

Changes to the land management plan that are not significant can result from:

1. Actions that do not significantly alter the multiple-use goals and objectives for long-term land and resource management.
2. Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis.
3. Minor changes in standards and guidelines.
4. Opportunities for additional projects or activities.

Examples of significant changes include:

1. Changes that would significantly alter the long-term relationship between levels of multiple-use goods and services originally projected.
2. Changes that may have an important effect on the entire land management plan or affect land and resources throughout a large portion of the planning area during the planning period.

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The selected alternative will result in a change in the respective forest plans similar to examples of non-significant changes #1 and #3. The effects of this decision are not similar to either example of significant plan changes. These findings are discussed in further detail below.

Changes in standards are minor

The selected alternative amends existing standards for grizzly bear management within our respective forest plans. The amended standards are consistent with goal(s) in our forest plans and other legal requirements to provide for habitat needs for threatened and endangered species. The changes in access management direction are applicable only to the 30 BMUs for which standards are displayed in Table 2 of this ROD and those areas of identified grizzly bear occupancy outside of the recovery zones. The changes in access management direction will remain in effect until each forest plan is revised (expected to be within 3-4 years). Thus, the change and effects are short-term regarding application to future decisions throughout the planning area under the existing forest plans; thereby supporting a determination that the changes do not constitute a significant amendment of the existing forest plans.

The KNF, LNF, and IPNF are currently in the forest plan revision process. The revised forest plans will include standards to protect grizzly bear. It is expected that the specific provisions of this amendment will be carried forward into the revised forest plans.

The management direction provided by these amendments will work to accomplish an element of the multiple-use desired future condition currently described in our forest plans by providing direction for access management within the grizzly bear recovery zones, consistent with Grizzly Bear Recovery Plan objectives and IGBC access direction (FSEIS pp. 91-92). The amendments will also provide additional tools to help us, as land managers, achieve the desired future conditions described in our existing forest plans. The desired future conditions and land allocations of the three forest plans will not change. As we have discussed in the following section, the long-term levels of goods and services projected in current plans are not substantially changed by the proposed management direction over the next three to four years. This information supports our determination that the proposed changes do not constitute a significant amendment of the forest plans.

Changes would not significantly alter the long-term relationship between levels of multiple-use goods and services originally projected***Changes would not have an important effect on the entire land management plan or affect land and resources throughout a large portion of the planning area during the planning period.***

The planning area is about 6.8 million acres across the three national forests. The amendment is applicable to the 1,189,000 acres within the Kootenai, 163,000 acres within the Lolo, and 806,000 acres within the Idaho Panhandle National Forests that comprise the Cabinet-Yaak and Selkirk Recovery Zones (FEIS, p. 1-2). Our selected alternative also provides standards for approximately an additional 725,000 acres of NFS lands, adjacent to but outside of the designated recovery zones (FSEIS, pp. 22-23). Therefore, the area addressed by this amendment on the three Forests is about 42 percent of their combined land base. Thus, the size of the area projected to be affected during this

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time period (four years or less) is not small when compared to the total in the planning area.

The respective forest plans display the outputs and services that were projected during their planning horizon. Of the categories of outputs listed, the greatest concern relates to timber production. Implementation of the selected alternative could preclude roaded access on up to 100,000 acres of suitable timberland across the national forests. This amounts to about 2.5 percent of the respective national forest's total suitable timber base (final EIS, p. 3-96; FSEIS p. 204). Considering the small area involved, relative to the three forests' total planning area (6.8 million acres) and total suitable timber base, and the fact that some level of commercial timber production will still occur from the recovery zones, no precise change in timber-related outputs can be projected.

Potential impacts to recreational outputs/objectives are also a concern. As previously discussed, this management direction would apply only to proposed or new projects following adoption of this amendment. Site-specific access related decisions made through previous NEPA analyses and with completed USFWS consultation will not be affected by this programmatic decision. The amendments are not expected to have an effect on non-motorized or motorized developed forms of recreation (FSEIS, pp. 215-216). Motorized dispersed recreation will be most affected by these amendments. Though three to nine percent of the total motorized mileage under Forest Service jurisdiction within the recovery zones will eventually no longer be available to motorized uses, only 16 to 48 miles of currently open road will be barriered with our decision. Of the miles of road to be barriered, a large portion is currently non-drivable due to brush, down trees, or other obstacles (FEIS, pp. 3-145 and 3-146). Therefore, we do not expect an appreciable change in motorized access opportunities as a result of this amendment. Opportunities also exist to reopen barriered or gated roads to motorized access when habitat security standards have been met in each recovery zone.

Implementation of these amendments will help achieve existing goals contained in our respective forest plans for the conservation and recovery of threatened and endangered wildlife species. The amendments are designed to provide for increases in the amount of habitat and security for grizzly bear. However, improved habitat and security for other threatened and endangered wildlife species, including woodland caribou (Idaho Panhandle National Forests), and Canada lynx is also expected to be provided (Biological Assessment, pp. 70 and 81).

The amendments will also contribute positively to existing forest plan objectives for maintaining and improving fish habitat capacities across the three national forests. Implementation of these amendments within the recovery zones will provide opportunities to address watershed concerns, thereby providing a benefit to aquatic systems (FSEIS, p. 192).

The management direction provided by these amendments does not significantly alter the long-term relationships between the levels of goods and services projected by the forest plans, thereby supporting our determination that the proposed changes do not constitute a significant amendment of the forest plans.

Finding: On the basis of the information and analysis contained in the FSEIS and all other information available as summarized above, it is our determination that adoption of the management direction reflected in our decision does not result in a significant amendment to the existing forest plans. Though the area covered by these amendments

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amounts to almost one-half of the combined land base of the forests; goals, objectives, and associated outputs will not be substantially altered from existing levels.

This decision is programmatic and does not supersede any direction currently in the forest plans that protects air quality, water quality, cultural resources, farm lands (prime or unique), floodplains, wetlands, Native American religious concerns, environmental justice, hazardous or solid wastes, water quality, wild and scenic rivers, migratory birds, and wilderness.

2. Forest Plan Consistency

The amendment will not change the basic purpose and need of the respective forest plans, nor will it change the goals and objectives originally established in the forest plans. The changes to the forest-wide standards and management area prescriptions are consistent with the direction found in the respective forest plans. The intent of the amendment is to provide direction for implementing site-specific projects on the Kootenai, Lolo, and Idaho Panhandle National Forests. We find that this amendment is consistent with our respective forest plans goals and objectives.

B. Endangered Species Act

The purposes of ESA are to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved and to provide for the conservation of such endangered species and threatened species. Section 7(a)(1) of the Act requires federal agencies to carry out programs for the conservation of listed species. In addition, ESA requires federal agencies to insure that any agency action does not jeopardize the continued existence of the species [ESA Section 7(a)(2)]. ESA also requires the USFWS and Forest Service, respectively, to base the biological opinion and subsequent agency action on the use of best scientific and commercially available data [16 U.S.C. 1536(a)(2)].

As we have previously discussed, our decision is consistent with the goals of contributing to the conservation and recovery of grizzly bear within the Cabinet-Yaak and Selkirk Recovery Zones. The best available scientific information regarding access management in grizzly bear habitat has also been considered in this analysis (see FSEIS, pp. 45-50).

In accordance with Section 7(c) of the Act, USFWS identified the listed and proposed threatened or endangered species that may be present on the three forests. A biological assessment was prepared and concurrence from USFWS was documented regarding threatened and endangered species (Biological Assessment, p.25). The USFWS concurred with our determination that the amendments may effect - not likely to adversely affect the endangered woodland caribou, threatened Canada lynx or its critical habitat.

A biological opinion for grizzly bear and bull trout was issued to the Forest's following review of the project (October 18, 2011).

- 1) *Grizzly Bear* - The design elements of the selected alternative include many of the reasonable and prudent measures and terms and conditions previously required by the 2004 biological opinion (USDI Fish and Wildlife Service 2004). Thus, the 2011 biological opinion did not repeat those features as reasonable and prudent measures or terms and conditions. The conclusions of the biological opinion are based on the design elements being implemented as part of the selected alternative. The selected alternative is not likely to jeopardize the continued existence of grizzly bears in the Selkirk and

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Cabinet-Yaak grizzly bear recovery zones, and therefore is not likely to jeopardize grizzly bears (USDI Fish and Wildlife Service 2011, p. A-80).

- 2) *Bull Trout* – The USFWS was unable to anticipate all possible circumstances related to the implementation of activities necessary to meet the standards; therefore, they were unable to issue an all-encompassing incidental take statement or a comprehensive list of reasonable and prudent measures. While the USFWS determined that the level of anticipated take associated with the activities necessary to meet road density standards are not likely to jeopardize the Columbia River Interim Recovery Unit, they did not authorize incidental take of bull trout for any specific actions carried out by the forests to meet the road density standards. Incidental take, if any, will be authorized at the site-specific action level (USDI Fish and Wildlife Service 2011, p. B-65).

This amendment incorporates appropriate elements of the biological opinion as either modification to existing standards, additions to standards, or additions to the respective forest plan monitoring requirements (see sections V(A) and V(B) and Appendix B). Therefore, we have determined that this amendment is in full compliance with the requirements of ESA.

C. Migratory Bird Treaty Act

Executive Order #13186 (January 10, 2001): “Responsibilities of Federal Agencies to Protect Migratory Birds” was issued by President Bill Clinton in furtherance of the purposes of the Migratory Bird Treaty Act, the Bald and Golden Eagle Protection Acts, the Fish and Wildlife Coordination Act, the Endangered Species Act, and the National Environmental Policy Act. This order requires including effects of federal actions on migratory birds as part of the environmental analysis process. On December 8, 2008, the Forest Service signed a Memorandum of Understanding with the USFWS to complement the Executive Order (USDA Forest Service 2008).

We find that the selected alternative complies with this Executive Order. This amendment is access driven and roads contribute to fragmentation of habitat and potential habitat loss from associated activities using the roads (i.e. firewood cutting, timber sales). Consequently, natural processes will continue to influence vegetative patterns, creating a mosaic of habitat conditions and age classes that are expected to provide a diversity of habitat values for forest birds. This programmatic decision supports access management that reduces the risk of habitat loss. Site-specific analysis will be done at the project scale where effects will be detailed.

D. Clean Water Act and State Water Quality Standards

Full implementation of this amendment is expected to maintain or improve water quality and satisfy all state (Idaho, Montana, and Washington) water quality requirements. We base this finding on the analysis, existing standards and guidelines contained in the respective forest plans, and the application of best management practices (BMPs) specifically designed to protect water quality.

During implementation of this amendment at the project level, road decommissioning activities, as well as restricting motorized access to roads, could result in sediment that would reach some stream systems during the short-term, but BMPs and use of stream buffers are expected to reduce the effects to a minimal level (FSEIS, pp. 188-189).

The forest plans for the Kootenai, Lolo, and Idaho Panhandle National Forests were amended by INFS in 1995 and contain standards and guidelines for road management. Application of

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these measures are expected to provide for identifying areas of concern and appropriate treatments as individual projects are developed in order to protect water quality. Our decision will not affect the current direction for protecting aquatic resources as provided in the respective forest plans.

E. Clean Air Act

Access management activities proposed with this decision are not anticipated to degrade air quality or violate state law. Future site-specific management activities that implement this decision would be required to comply with applicable air quality standards.

F. National Historic Preservation Act

The selected alternative is consistent with the National Historic Preservation Act (NHPA). In accordance with Section 106 of the NHPA, forest plans require integration of cultural resource management into the overall multiple resource management effort. In addition, national forests must work closely with the appropriate scientific community and American Indian Tribes concerning cultural resources. Heritage inventories will be completed prior to any ground disturbing activities associated with project level decisions.

The guidelines of the forest plans and of other jurisdictions were recognized in the development of the selected alternative. In addition, the laws and policies that govern cultural resource protection on Federal lands are coordinated with the State Historic Preservation Officers (SHPO) of Montana and Idaho, who serve in an advisory capacity. The policies of the Forest Service and SHPO are consistent.

G. Environmental Justice

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires that federal agencies make achieving environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of their program, policies, and activities on minority populations and low-income populations.

Social issues associated with this decision were analyzed in Chapter 3, *Social and Economic Effects*, of the FSEIS. The analysis area's economy is heavily dependent upon natural resources of the national forests. Timber harvest has been an important land use for all four counties (FSEIS, p. 226). The reduction in access to the suitable timberland base posed by these amendments will potentially result in reduced timber harvest levels. However, we do not expect the effects on timber harvest levels to be measurable during the time that these amendments to our current forest plans will remain in effect. The specific provisions of this amendment would be carried forward into the revised Forest Plans and addressed during the revision process. The revised Forest Plans may accept or modify the standards adopted in this amendment.

Based on the analysis presented, we conclude that the risk of disproportionate effects on minority or low-income populations from implementation of our decision is very low. Consultation with the Confederated Salish and Kootenai Tribes, the Kootenai Tribe of Idaho, the Kalispel Tribe, and the Cocur d' Alene Tribe has been initiated and is ongoing. The selected alternative is among those alternatives with the lowest risk of adverse environmental effects from land management activities on wildlife and fish habitat and subsistence resources. Site-specific implementation of the selected alternative is expected to maintain or improve big game and fish habitat, thereby improving hunting and fishing opportunities.

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Based upon the analysis, we find our decision will not adversely affect human health or minority and low-income populations. There has been ample opportunity for participation in the analysis process and the implementation of this project will not subject anyone to discrimination because of his or her race, color, or national origin.

H. Roadless Area Conservation Rule and Idaho Roadless Rule (36 CFR §294)

The Roadless Area Conservation Rule, if in effect in Montana, and the Idaho Roadless FEIS and Rule [36 CFR 294, Subpart C (2008c and 2008d)], both constrain future road construction, reconstruction, and timber cutting, sale, and removal more than the Kootenai, Lolo, and Idaho Panhandle National Forests existing forest plans. Neither Roadless Rule affects current wheeled motorized vehicle use on roads and trails where such use is already authorized, but they may cumulatively constrain the ability to expand wheeled motorized vehicle access. These amendments do not conflict with the Roadless Area Conservation Rule and Idaho Roadless Rule. The purpose of the amendments is to include in the respective forest plans a set of motorized access and security guidelines to meet our responsibilities under the Endangered Species Act to conserve and contribute to recovery of grizzly bears. As a result, the amendments will provide direction for gating or barriering existing roads, which should enhance and preserve existing roadless characteristics. In addition, this amendment is not inconsistent with the Idaho Roadless Rule because it does not preclude road construction in areas where it may be allowed under the rule, but does set sideboards or conditions for road construction, when and if it occurs. Therefore, any activities proposed in inventoried roadless areas will comply with the management direction for grizzly bears provided in these amendments.

I. Travel Management Rule (36 CFR §212, 251, 261, and 295)

The 2005 Travel Management Rule (USDA Forest Service 2005) governs motor vehicle use on national forests and grasslands. Under the final rule, each national forest or ranger district will designate those roads, trails, and areas open to motor vehicle use by class of vehicle and, if appropriate, by time of year. As designation is completed on a national forest or ranger district, motor vehicle use off the designated system will be prohibited. Designated routes and areas will be identified on a motor vehicle use map. Motor vehicle use outside of designated routes and areas will be provided for fire, military, emergency, and law enforcement purposes, and for use under Forest Service permit. Valid existing rights are honored. The rule also maintains the status quo for snowmobile use, as determined in individual forest plans. The selected alternative would not conflict with, nor prevent achieving, the requirements of the 2005 Travel Management Rule. Travel management decisions are made under separate travel planning processes and are ongoing.

36 CFR §212.55 directs that the designation of areas and trails for motorized use be based upon in part the minimization of conflicts among the various uses of the lands. It is the purpose of this subpart to provide for procedures that will ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands. The selected alternative will include in the respective forest plans a set of motorized access and security guidelines to meet our responsibilities under the Endangered Species Act to conserve and contribute to recovery of grizzly bears. As a result, the amendment will only provide for gating or barriering existing roads and trails. The selected alternative does not identify roads, trails or areas for changes in motorized access; rather it provides standards and guidance to minimize effects to grizzly bear that would be considered in subsequent site-specific project analyses. In addition, the FSEIS explains that

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subsequent site-specific decisions regarding motorized access on existing roads or trails would meet the NEPA requirements for project-level environmental analysis and public involvement of all interested publics, such that conflicts among the various uses of the land are minimized based on the minimization criteria of the Executive Order.

J. Wetlands and Floodplains (Executive Orders 11988 and 11990)

The selected alternative is a programmatic action and does not authorize site-specific activities. We have determined the selected alternative will not have adverse impacts on wetlands and floodplains and will comply with Executive Orders 11988 and 11990.

K. Invasive Species (Executive Order 13112)

Executive Order 13112 directs federal agencies not to authorize any activities that would increase the spread of invasive species. These forest plan amendments are a programmatic action and do not authorize site-specific activities. We have determined these amendments comply with Executive Order 13112.

IX. Implementation

These amendments will become effective seven calendar days following publication of the legal notice of this decision in the newspapers of record identified in the following section (*Review and Appeal Opportunities*).

X. Review and Appeal Opportunities

As stated in the Reinstatement of the 2000 Rule Appendix A to 219.35: During the transition period, the option to proceed under the 1982 regulations or under the provisions of this subpart specifically includes the option to select either the objection procedures of this subpart or the optional appeal procedures published at 54 FR 3357 (January 23, 1989), as amended at 54 FR 13807 (April 5, 1989); 54 FR 34509 (August 21, 1989); 55 FR 7895 (March 6, 1990); 56 FR 4918 (February 6, 1991); 56 FR 46550 (September 13, 1991); and 58 FR 58915 (November 4, 1993). We have selected the optional appeal procedures as noted above. A written Appeal must be submitted within 45 days following publication of the notice of this decision in the following newspapers: 1) *Coeur d'Alene Press*, Coeur d'Alene, Idaho; 2) *Daily Inter Lake*, Kalispell, Montana; and 3) *Missoulian*, Missoula Montana. Send appeals to:

USDA Forest Service, Northern Region
Attn: Appeals Deciding Officer
P.O. Box 7669
Missoula, MT 59807

It is the responsibility of those who appeal a decision to provide sufficient written evidence and rationale to show why our decision should be changed or reversed. Appeals must meet the content requirements of the optional appeal procedures which state:

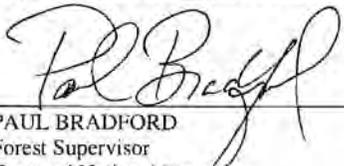
- The document is a Notice of Appeal filed pursuant to the optional appeal procedures;
- List the name, address, and telephone number of the appellant;
- Identify the decision about which the requester objects;
- Identify the document in which the decision is contained by title and subject, date of the decision, and name and title of the Responsible Official(s);
- Identify specifically that portion of the decision or decision document to which the requester objects;

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- State the reasons for objecting, including issues of fact, law, regulation, or policy, and, if applicable, specifically how the decision violates law, regulation, or policy; and,
- Identify the specific change(s) in the decision that the appellant seeks.

Electronic appeals must be submitted to: FS-appeals-northern-regional-office@fs.fed.us. The subject line should contain the name of the project being appealed. There are two acceptable formats for electronically filed appeals: MS Word and rich text format (.rtf).

For additional information concerning this decision, please contact: Karl Dekome, 3815 Schreiber Way, Coeur d'Alene, ID 83815. Additionally, the Final Supplemental EIS and this Record of Decision are available on the Forest Service website at: http://www.fs.fed.us/nepa/project_content.php?project=24882.



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Forest Supervisor
Kootenai National Forest

11/9/2011
Date



MARY FARNSWORTH
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Idaho Panhandle National Forests

11/9/11
Date



DEBORAH L. R. AUSTIN
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Lolo National Forest

11/9/11
Date

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XII. Appendix A – Forest Plan Amendments

CHANGES TO FOREST PLANS FOR THE IDAHO PANHANDLE NATIONAL FORESTS (IPNF), LOLO NATIONAL FOREST (LNF) AND KOOTENAI NATIONAL FOREST (KNF)

The following tables display how the Idaho Panhandle National Forests, Lolo National Forest and Kootenai National Forest Forest Plans are amended by the decision to implement Alternative E Updated, as displayed in the FSEIS and ROD for Motorized Access Management within the Selkirk and Cabinet-Yaak Bear Recovery Areas. Unless noted, changes are identified as only being applicable to lands within the Recovery Zones. Where specifically identified, changes are applicable to identified lands (see Figures 2 and 3 in the ROD) outside of the Recovery Zones.

Idaho Panhandle National Forest (IPNF) - Changes to Forest Plan

The first column of this table displays standards, goals and objectives identified in the 1987 IPNF's Forest Plan. The second column of this table displays attributes of the Interim Rule Set which was utilized from January of 1999 (when it was issued by the Cabinet-Yaak/Selkirk Subcommittee of the Interagency Grizzly Bear Committee) until the settlement agreement with litigants on March 22, 2001 (FSEIS page 10). This column also displays current implementation direction from the 1987 Forest Plan and 2000 Biological Opinion. The final column displays habitat security standards identified in the selected alternative.

Information in the table and footnotes to the table identify changes within and outside of the Recovery Zones resulting from this amendment to the IPNF Forest Plan. See ROD section V for additional information related to this amendment.

Table 13. IPNFs Changes to the Forest Plan

IPNF Forest Plan 1987	12/1/98 Interim Rule Set & 2001 Forest Plan Biological Opinion (BO)	FEIS & ROD Selected Alternative E Updated
<p>Goals & objectives pgs: II-1, II-6 MA(1): 2,3,7,9,10,11 Forest Plan App. U & V</p>	<p>No change to current Implementation Direction Identified in the IPNF Forest Plan included in -Appendix U & V 2001 Forest Plan Biological Opinion</p>	<p>Habitat Security Standards for Individual BMUs</p>
<p>Standards pgs: II-27 Habitat Effectiveness: Strive for at least 70 sq miles Security habitat per/ BMU. IGBC Guides (App U) Use CEM* to analyze effect (App V)</p>	<p>No change No change No change</p>	<p>No Habitat Effectiveness standard No change No change</p>

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Table 13. IPNFs Changes to the Forest Plan

IPNF Forest Plan 1987	12/1/98 Interim Rule Set & 2001 Forest Plan Biological Opinion (BO)	FEIS & ROD Selected Alternative E Updated
<p>Core Area Not identified in Forest Plan. Forest Plan identified “displacement area.”</p>	<p>Interim Rule Set: > or = to 70% HE per BMU</p> <p>2001 Forest Plan BO For BMUs that contain at least 75% federal ownership, by 3/31/04, BMUs will contain 52% core habitat; by 3/31/07 BMUs will contain 55% core habitat. Until all BMU’s achieve 55% core, all actions must result in improvement in core and no decrease in core in BMU’s over 55%.</p>	<p>Numeric standard specific to each BMU. Consider seasonal needs; core fixed in place for 10 years minimum. In BMUs not meeting specific standard, projects affecting core must result in increased post-project core (1).</p>
<p>Total Motorized Route Density (TMRD) No standard identified in Forest Plan</p>	<p>Interim Rule set: No net increase on Forest lands within recovery area.</p> <p>2001 Forest Plan BO For BMUs containing at least 75% federal ownership, by 3/31/04, no more than 30% of each BMU can exceed 2 mi/sq mi; by 3/31/07, no more than 26% of each BMU can exceed 2 mi/sq mi.</p>	<p>Numeric standard specific to each BMU (FSEIS Table 6, p. 31). In BMUs not meeting their specific standard, projects affecting TMRD must result in post-project movement toward the standard.</p>
<p>Open Motorized Route Density (OMRD) No standard identified in Forest Plan</p>	<p>Interim Rule Set No net increase on Forest lands within recovery area.</p> <p>2001 Forest Plan BO For BMUs containing at least 75% federal ownership, by 3/31/04, no more than 36% of each BMU can exceed 1 mi/sq mi; by 3/31/07 no more than 33% of ea BMU can exceed 1 mi/sq mi</p>	<p>Numeric standard specific to each BMU (FSEIS Table 6, p. 31). In BMUs not meeting specific standard, projects affecting OMRD must result in post-project movement toward the standard.</p>
<p>Administrative Use not identified in Forest Plan. Guidance from USFWS was to use 15 days per road per bear year and up to 15 days of equipment use on one road per bear year.</p>	<p>Interim Rule Set 115 round trips divided by season. A 30 day consecutive use period on one Priority 1 road that meets 55% core & in three Priority 2 BMU’s that meet 70% security</p>	<p>Cabinet-Yaak: 60 round trips, divided by season Selkirk: 57 roundtrips, divided by season</p>
<p>Habitat Based Access Mgmt Forest Plan objective pg.11-6: Grizzly bear mgmt will emphasize maintenance of adequate security in conjunction with providing the seasonal vegetative habitat components</p>	<p>Interim Rule Set Explore habitat based access management approach.</p> <p>2001 Forest Plan Provide USFWS with the necessary information to allow completion of RSF* analysis by 1/31/02</p>	<p>Participate in workgroup to pursue habitat analysis</p>
<p>Grizzly Bear Use Outside Recovery Zones</p>	<p>Not Applicable</p>	<p>The ROD incorporates design elements pertaining to linear open and total miles of road (2).</p>

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TABLE NOTES

*App.= Forest Plan Appendix

CEM= Unified Cumulative Effects Model (1990)

HE= Habitat Effectiveness

RSE= Resource Selection Factor

BMU= Bear Management Unit

MA= Management Area

MA2 = Consists of lands designated for timber production within identified grizzly bear habitat .

MA3 = Consists of lands designated for timber production within identified grizzly bear habitat and big game winter range.

MA7 = Consists of lands designated for caribou management within identified caribou habitat.

MA9 = Consists of acres of non-forest lands, lands not capable of producing industrial products, lands physically unsuited for timber production, and lands capable of timber production but isolated by the above type lands or nonpublic ownership. These lands are characterized steep slopes, thin soils and surface rock or rock outcrops.

MA10 = Consists of a cross section of National Forest lands that have high value for semi-primitive recreation. These areas are in blocks of 2,500 acres or more and are part of the roadless resource of the Idaho Panhandle National Forests, with areas scattered throughout the forest. The areas range from dense forest to brush fields to open rocky ridge tops.

MA11 = Consists of existing and proposed wilderness areas on the Idaho Panhandle National Forests. This area includes the IPNF's portions of the existing (9,440 acres) and proposed (17,600 acres) Salmo-Priest Wilderness, proposed (23,900 acres) Scotchman Peaks, proposed Mallard-Larkins (78,500 acres) area and all of the proposed Selkirk Crest (26,700 acres) area.

- (1) BMUs must remain at or above the core standard. Therefore, potential losses to existing core must be compensated with in-kind replacement concurrently or prior to incurring the losses. See ROD Appendix B, section I (B) (3).
- (2) See ROD Appendix B, sections II (A) and (B) for linear road mile standards applicable to areas outside of the Recovery Zones.

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Lolo National Forest (LNF) - Changes to Forest Plan

The first column of this table displays standards, goals and objectives identified in the 1986 LNF Forest Plan. The second column of this table displays standards, goals and objectives identified in the LNF Grizzly Bear Management Strategy, which became effective in 1994. The third column displays attributes of the Interim Rule Set, which was utilized from January of 1999 (when it was issued by the Cabinet-Yaak/Selkirk Subcommittee of the Interagency Grizzly Bear Committee), until the settlement agreement with litigants on March 22, 2001 (FSEIS page 10). The final column displays habitat security standards identified in the selected alternative. The habitat security standards identified in the Lolo Forest Plan are amended as a result of the Access Amendment Decision.

Information in the table and footnotes to the table identify changes within and outside of the Recovery Zones resulting from this amendment to the LNF Forest Plan. See ROD section V for additional information related to this amendment.

Table 14. LNF Changes to the Forest Plan

Lolo Forest Plan 1986	Lolo NF Grizzly Bear Management Strategy 1994	12/1/98 Interim Rule Set	FEIS & ROD Selected Alternative E Updated
Goals and Standards (1) MA20 and 20a (2)	Meets requirements of Forest Plan (pp II-13-14, #24)	Current Implementation Direction- According to Policy Identified in Forest Supervisor Letter (2/28/96) and 5/24/96 BO	Habitat Security Standards for Individual BMUs
Linear Open Road Density Minimize road density, no permanent roads in key grizzly habitat, maintain roadside cover	≤1 mi/sq. mi by BMAA*, ≤0.75 mi/sq mi. on "high value" BMAAs	≤1 mi/sq. mi. by BMAA plus grizzly bear management strategy	No standard
Percent cover No standard identified in Forest Plan	≥ 75% per BMAA	No change	No change (Lolo Strategy stays in place)
Displacement Area No standard identified in Forest Plan.	Required for each BMAA with an ongoing major activity	Replace displacement area with core. See "core area" in this table.	See "core area" in this table
Opening Size is not a Forest Plan standard.	≤40 acres, can be larger if there are no permanent roads within ½ mile of the unit	No change	Existing implementation continues (see column 2)
Activity Scheduling No standard identified in Forest Plan	Major activity cannot occur more than 3 out of 10 years in a BMAA	No change	See core area below

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Table 14. LNF Changes to the Forest Plan

Lolo Forest Plan 1986	Lolo NF Grizzly Bear Management Strategy 1994	12/1/98 Interim Rule Set	FEIS & ROD Selected Alternative E Updated
Core Area No standard identified in Forest Plan.	No standard	No net loss of core on federal ownership in all BMUs. Criteria to replace lost existing core: 1) work to achieve 55% in Priority 1 BMUs, 2) consider seasonal needs, 3) flexibility to make major changes.	Numeric standard specific to each BMU (FSEIS Table 6, p. 31). Consider seasonal needs, core fixed in place for minimum of 10 years. In BMUs not meeting their specific standard, projects affecting core must result in increased post-project core (3).
TMRD No Forest Plan standard identified	No standard	No net increase on Forest lands within recovery area	Numeric standard specific to each BMU (FSEIS Table 6, pg. 31). In BMUs not meeting specific standard, projects affecting TMRD must result in post-project movement toward the standard.
OMRD No Forest Plan standard identified	No standard	No net increase on Forest lands within recovery area	Numeric standard specific to each BMU (FSEIS Table 6, p. 31). In BMUs not meeting specific standard, projects affecting OMRD must result in post-project movement toward the standard.
Administrative Use Seasonal Closures on all roads in spring habitat	<14 days or road is considered open	115 round trips divided by season	60 round trips, divided by season
Grizzly Bear Use Outside Recovery Zones	Not Applicable	Not Applicable	ROD incorporates design elements pertaining to linear open and total miles of road (4).

(1) All Threatened and Endangered Species occurring on the Lolo including the grizzly bear... will be managed for recovery to non-threatened status (Lolo Forest Plan p. II-13).

(2) MA= Management Area
 MA 20=Grizzly bear habitat suitable for timber harvest
 MA 20a=Grizzly bear habitat unsuitable for timber harvest
 *BMAA= Bear Management Analysis Areas
 BMU= Bear Management Unit

(3) BMUs must remain at or above the core standard. Therefore, potential losses to existing core must be compensated with in-kind replacement concurrently or prior to incurring the losses. See ROD Appendix B, section I (B) (3).

(4) See ROD Appendix B, sections II (A) and (B) for linear road mile standards applicable to areas outside of the Recovery Zones.

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Kootenai National Forest (KNF) - Changes to Forest Plan

Table 15. KNF Changes to the Forest Plan

KNF Forest Plan 1987	12/1/98 Interim Rule Set	FEIS & ROD Selected Alternative E
Kootenai Forest Plan 1987 Forest-wide goals MA 14 (1) and Forest Plan Appendix 8	Current Implementation Direction: According to Policy Identified in the 1987 Kootenai Forest Plan Appendix 8, pages 6-9 (2) Plus Biological Opinions (3)	Habitat Security Standards for Individual BMUs
Forest Plan MA 14 Linear Open Road Density standard is ≤ 0.75 mi/sq. mi. by BMU* and BAA* (Forest Plan pg. III-60 and Forest Plan Appendix 8 pg. 12)	≤ 0.75 mi/sq. mi. by BMU and BAA	No standard
Habitat Effectiveness is not a Forest Plan Standard but a measurement to assure compliance with ESA (Forest Plan Goal pg. II-1 #5) Goal is $>70\%$ sq. mi. per BMU	$> 70\%$ per BMU	Used to measure impacts of point source disturbance No HE standard
Displacement area is a Forest Plan standard (Forest Plan pg. III-59 and Appendix 8 pg. 10). Definition not provided in Forest Plan.	Replace displacement area with core. See "core area" in this table.	See "core area" in this table.
Core Area Not identified in Forest Plan. Forest Plan identified "displacement area." See row above in this table.	No net loss of core on federal ownership in all BMUs. Criteria to replace lost existing core: 1) work to achieve 55% in Priority 1 BMUs, 2) consider seasonal needs, 3) flexibility to make major changes.	Numeric standard specific to each BMU (FSEIS Table 6, pg. 31). Consider seasonal needs, core fixed in place for minimum of 10 years. In BMUs not meeting specific standard, projects affecting core must result in increased post-project core (4) (5).
Total Motorized Route Density (TMRD) not identified in Forest Plan	No net increase on Forest lands within recovery area	Numeric standard specific to each BMU (FSEIS Table 6, pg. 31). In BMUs not meeting specific standard, projects affecting TMRD must result in post-project movement toward the standard.
Open Motorized Route Density (OMRD) not identified in Forest Plan	No net increase on Forest lands within recovery area	Numeric standard specific to each BMU (FSEIS Table 6, pg. 31). In BMUs not meeting specific standard, projects affecting OMRD must result in post-project movement toward the standard.

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Table 15. KNF Changes to the Forest Plan

KNF Forest Plan 1987	12/1/98 Interim Rule Set	FEIS & ROD Selected Alternative E
Administrative Use not identified in Forest Plan. Followed Biological Opinion terms which identified 121 trips.	115 round trips divided by season	57 round trips, divided by season
Movement Corridor is a Forest Plan standard (Forest Plan pg. III-59, Appendix 8 p.10). Standard is to maintain at least 600' corridor between harvest units	No Change	No change as a result of Alternative E Updated
Timing Constraint is a Forest Plan standard (Appendix 8 pg. 10)	No Change	No Change as a result of Alternative E Updated
Grizzly Bear Use Outside Recovery Zones	Not Applicable	The ROD incorporates design elements pertaining to linear open road densities (6)

- (1) MA 14= Management Area 14. This MA occurs in the Cabinet Yaak grizzly bear ecosystem and in the Whitefish range. The goal of this MA is to maintain or enhance grizzly bear habitat, reduce grizzly/human conflicts, assist in the recovery of the grizzly bear, realize a programmed level of timber production, and provide for the maintenance or enhancement of other wildlife, especially big game.
- (2) In all situations, strive to develop a grizzly management program which maintains and enhances identified grizzly bear habitat, incorporates relevant research and management information into all applicable activities, and supports the conservation and recovery of the species (Forest Plan Appendix 8 page 8-6).
 - At least annually, the Kootenai will confer with the Fish and Wildlife Service on any changes that are needed in standards and guidelines (Forest Plan Appendix 8 page 8-7).
 - Keep abreast of current research activities and data relating to grizzly bears and their habitat. Ensure that current, applicable data is incorporated in management activities (Forest Plan Appendix 8 page 8-8).
 - Modify standards and guidelines as needed and with the cooperation of the Fish and Wildlife Service (Forest Plan Appendix 8 page 8-9).
- (3) USFWS amended their biological opinion for the 1987 Forest Plan. See the project record for biological opinions providing clarification.
 - *BMU= Bear Management Unit
 - *BAA= Bear Analysis Area
- (4) BMUs must remain at or above the core standard. Therefore, potential losses to existing core must be compensated with in-kind replacement concurrently or prior to incurring the losses. See ROD Appendix B, section I (B) (3).
- (5) Applies to BMUs not meeting standards for core habitat. Term and Condition 1.D applies to those BMUs exceeding the standards for core habitat.
- (6) See ROD Appendix B, sections II (A) and (B) for linear road mile standards applicable to areas outside of the Recovery Zones.

*Record of Decision***XIII. Appendix B – Design Elements**

The design elements of the selected alternative for the Kootenai, Idaho Panhandle, and Lolo National Forests Land and Resource Management Plans Amendment for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones are included below.

Design Elements

- I. The following access management standards would apply to individual BMUs within the Selkirk Recovery Zone on the IPNFs and Cabinet-Yaak Recovery Zone on the KNF, IPNFs and portion of the LNF:
 - A. The OMRD, TMRD, and percent core standards displayed in Table 2 (see page 11) would be established for the BMUs in the Cabinet-Yaak and Selkirk grizzly bear ecosystems.
 - B. Parameters for establishing and managing core habitat in all BMUs:
 1. In accordance with IGBC (1998) and Selkirk/Cabinet-Yaak Ecosystem Subcommittee (1998) direction, core areas shall be established for the purpose of providing secure habitat for grizzly bears.
 - a. Core areas include high quality habitat within a BMU that contains no motorized travel routes or high use trails.
 - b. Core areas do not include any gated or restricted roads but may contain roads that are impassable due to re-growth of vegetation, effective barriers other than gates, or placement of logging or forest debris so as to no longer function as a motorized route.
 - c. When possible, core areas would be delineated by identifying and aggregating the full range of seasonal habitats that are available in the BMU.
 - d. The IGBC anticipated that minimum core area size might be determined for each recovery zone. For the Selkirk/Cabinet-Yaak Grizzly Bear Recovery Zones, no scientifically based minimum effective size polygon for core area has been determined (Wakkinen and Kasworm 1997), though minimum block sizes of 2-8 mi² were suggested. Therefore, discounting small or narrow blocks of core area is not prudent at this time. Individual project analyses would disclose the percent and size of core areas in each BMU.
 - e. Once route closures to create core areas are established and effective, these core areas should remain in place for at least 10 years. Therefore, except for emergencies or other unforeseen circumstances requiring independent section 7 consultation, newly created core area shall not be entered for at least 10 years after creation.
 - f. Roads that are closed, decommissioned, or barriered in the future to create core area would be put in a condition such that a need for motorized access for maintenance is not anticipated for at least 10 years. Until such closed roads are placed in the above-described condition, they would not be considered as contributing to core area.
 2. Entering core area blocks for road decommissioning or stabilization activities:
 - a. Without further section 7 consultation on grizzly bears, the Forest Service may affect underlying core area (i.e., any core habitat that is affected by the subject road and its

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buffer) within a BMU once per 10-year time frame, and not to exceed one bear year for the sole purpose of completing road decommissioning/stabilization activities on existing closed or barriered roads in core area habitat.

- b. Subsequent needs to re-enter individual core areas within a BMU more frequently than once per decade for the purposes of road decommissioning shall be handled on a case-by-case basis through standard section 7 consultation procedures. The effects of additional entries would be analyzed pursuant to such project level consultation. Pending the outcome of each analysis, additional measures to minimize potential effects to grizzly bears may be required.
3. Routine forest management may be proposed in a core area block after 10-years of core area benefit. However, BMUs must remain at or above the core standard. Therefore, potential losses to existing core must be compensated with in-kind replacement concurrently or prior to incurring the losses. Such in-kind replacement of core would be established within the affected BMU in accordance with the direction in Part I.B.1., above. For exceptions, see specialized circumstances outlined in Part I.D. concerning BMUs that exceed standards. Following management, core areas must subsequently be managed undisturbed for 10 years.
- C. Parameters for BMUs currently not meeting core area, OMRD, and/or TMRD standards:
1. These BMUs are anticipated to be brought up to standards in the following manner: 33 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within three years of the amendment decision date; 66 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within 5 years of the amendment decision date, and 100 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within eight years of the amendment decision date.
- D. For those BMUs currently meeting or exceeding (being better than) the standards for core area:
1. Except as provided above for road stabilization projects, no reductions in core habitat without in-kind replacements would be proposed until all BMUs administered by the IPNF, KNF and LNF in the respective ecosystems are up to standard [Table 2 (page 11); which does not include the LeClerc BMU or the Idaho State Lands BMU in the Selkirk recovery zone].
 2. Once all BMUs meet all standards then subsequent projects that propose to permanently reduce core area by roads shall undergo independent section 7 formal consultation.
 3. Reductions of core area within individual BMUs shall not reduce the percent core area below the minimum standards for the affected BMU without compensating with in-kind replacement concurrently or prior to incurring the losses (see Part I.B.3.).
- E. Road use associated with completing administrative activities:
1. In the Selkirk ecosystem (aka Selkirk recovery zone):
 - a. Administrative use shall not exceed 57 vehicle round trips per active bear year per road, apportioned as follows: ≤19 round trips in spring (April 1 through June 15); ≤23 round trips in summer (June 16 through September 15); and ≤15 round trips in fall (September 16 through November 15).

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- b. If the number of trips exceeds 57 trips per active bear year in the Selkirk ecosystem, then that road would be considered "open" for analysis and reporting purposes. Likewise, if the number of trips exceeds the allowable ecosystem-specific seasonal (spring, summer, and fall) vehicle round trips per road, then that road would be considered "open" for analysis and reporting purposes.
 - 2. In the Cabinet-Yaak ecosystem (aka Cabinet-Yaak recovery zone):
 - a. Administrative use shall not exceed 60 vehicle round trips per active bear year per road, apportioned as follows: ≤18 round trips in spring (April 1 through June 15); ≤23 round trips in summer (June 16 through September 15); and ≤19 round trips in fall (September 16 through November 30).
 - b. If the number of trips exceeds 60 trips per active bear year in the Cabinet-Yaak ecosystem, then that road would be considered "open" for analysis and reporting purposes. Likewise, if the number of trips exceeds the allowable ecosystem-specific seasonal (spring, summer, and fall) vehicle round trips per road, then that road would be considered "open" for analysis and reporting purposes.
- II. The following access management applies to seven grizzly bear recurring use areas (i.e., BORZ areas) located outside of the Cabinet-Yaak Grizzly Bear Recovery Zone (KNF and IPNFs) and Selkirk Grizzly Bear Recovery Zone (IPNFs):
- A. The Forests shall ensure no increases in permanent linear miles of open road on National Forest System lands in any individual BORZ, above the baseline conditions identified in Table 4, except in cases where the Forest Service lacks discretion to prevent road building across National Forest System lands due to legal or other obligations (examples include, but are not limited to, ANILCA claims, identification of RS2477 thoroughfares). Potential increases in linear miles of open roads must be compensated for with in-kind reductions in linear miles of open road concurrently with, or prior to, project implementation within the same BORZ.
- Temporary increases in linear miles of open roads are acceptable under the following conditions:
- 1. Roads that are closed to public motorized use or roads created or reconstructed to facilitate land management activities that are otherwise closed to public use may be "opened" to the public immediately following completion of all mechanized harvest and post-harvest slash activities requiring use of the road, to allow motorized public use during the bear summer season prior to the fall bear hunt (i.e., June 16 - August 31) for activities such as personal firewood collection. This public access would only be provided in cases where the mechanized harvest and/or post-harvest slash activities occurred during the same active bear year.
 - B. The Forest shall ensure no net permanent increases in linear miles of total roads in any individual BORZ area above the baseline conditions identified in Table 16, except in cases where the Forest Service lacks discretion to prevent road building across National Forest System lands due to legal or other obligations (examples include, but are not limited to, ANILCA claims, identification of RS2477 thoroughfares, etc.). Otherwise, potential increases in linear miles of total roads must be compensated for with in-kind reductions in linear total road miles concurrently with, or prior to, new road construction or reconstruction of currently benched or barriered roads.

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Temporary increases (not off-set) in linear miles of total roads are acceptable under the following conditions:

- I. Temporary increases in linear miles of total roads are acceptable under the following conditions:
 - a. Newly constructed roads would be effectively gated and would be restricted with a CFR closure clarifying they are not open for public use.
 - b. These roads shall be closed immediately upon completion of activities requiring use of the road, except as described in Part II. A.1., above. Roads must be closed with a berm, guardrail or other measure that effectively prevents motorized access, and put in a condition such that a need for motorized access for maintenance is not anticipated for at least 10 years.
 - c. Upon completion of a land management project, linear miles of total roads would be returned to or below the baseline levels contained in Table 16.
- C. Timber harvest activities that would occur within multiple watersheds shall be scheduled such that disturbance of grizzly bears resulting from road use is minimized. The appropriate scale for scheduling harvest activities would be determined pursuant to project level consultation.

III. To ensure the effective implementation of the open road density parameter, at least 30 percent of closure devices (gates and barriers) would be monitored annually within the respective ecosystems. Monitoring techniques may include visual checks as well as road counters.

Table 16. Habitat conditions for bears outside recovery zone (BORZ) occupancy areas

BORZ Name	Grizzly Bear Ecosystem	Total Size (Acres)	NFS ¹ Lands (Acres)	Total Linear Miles of Roads on NFS Lands	Total Linear Miles of Open Roads on NFS Lands
Priest	Selkirk	80,733	75,793	316.4	314.4
Pack River	Selkirk	33,869	28,097	41.9	37.9
Mission-Moyie	Cabinet-Yaak	71,545	58,472	200.3	167.3
Clark Fork	Cabinet-Yaak	101,899	100,421	256.1	176.9
Cabinet Face	Cabinet-Yaak	28,052	27,093	164.1	128
West Kootenai	Cabinet-Yaak	173,122	169,705	615.3	315.9
Tobacco	Cabinet-Yaak	287,240	266,947	1,123.9	867

¹ National Forest System lands

USFWS Biological Opinion Grizzly Bear Related Reporting Requirements

1. By April 15 each year, the Forests shall submit annual reports to the Service that detail the progress made toward achieving and maintaining the standards for Percent Core Area, OMRD, and TMRD within the Recovery Zones.
2. The Forests shall coordinate with State and federal agency biologists to collect credible grizzly bear observations that occur outside of the Recovery Zone boundaries and add this information to the 6th-order HUC database for inclusion into the annual report.

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3. The annual report shall provide an ongoing list detailing the locations, dates, duration, and circumstances for invoking the allowance for entering core area for the purposes of road decommissioning or stabilizations.

USFWS Biological Opinion Terms and Conditions for bull trout

In order to be exempt from the prohibitions of section 9 of the Act, the Forests must comply with the following terms and conditions. These terms and conditions are non-discretionary.

1. The Forests should assure consistent implementation of measures and standards specified in the Aquatic Conservation strategies as indicated in the 1998 Biological Opinion for the Effects to Bull Trout from the Continued Implementation of Land and Resource Management Plans and Resource Management Plans as Amended by the Interim Strategies for Managing Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana and portions of Nevada (INFISH).
2. The Forests should ensure that the watershed baselines are updated according to the INFISH Biological Opinion's Reasonable and Prudent Measure #2 (U.S. Fish and Wildlife Service 1998b). These baselines should be updated after every project requiring consultation which may affect them until the LRMP for each Forest is revised, or another analysis method is developed in conjunction with the Service.
3. The Forests should assume bull trout are present in a given watershed if it is connected to an area known to be occupied, unless site-specific information indicates otherwise. The Forests should informally consult with the Service to determine the effects of proposed actions upon bull trout prior to initiating formal consultation and to ensure that the necessary site-specific information and technical data is provided in the baseline and effects analysis for biological assessments for the individual projects.
4. The Forests should integrate the value and risk to both bull trout and grizzly bears when deciding where to implement projects stemming from this proposed action. This action may entail increasing the priority for implementation of some BMUs.
5. In the course of planning projects to achieve the grizzly bear access standards, the Forests should conduct site-specific assessments of roads and road-crossings at the 6th code subwatershed scale to identify: road segments that are primary contributors of sediment or at risk of failure; stream crossings at risk of failure or that will not pass a 100-year flood event; culverts or other road crossings that act as fish barriers.

Assessments and corrective actions within any given BMU should follow the prioritization provided in this biological opinion, if practicable, unless new site-specific information changes the priority.
6. The Forests should ensure that all road features, particularly stream crossings on roads or any road that is closed by a barrier (i.e., not a gate) and is intended to be kept closed for at least 5 years is hydrologically neutral (as defined in subsequent project level consultations with the Service) and capable of passing at least a 100-year flood event with minimal erosion. Should the Forests decide to leave a culvert on a road blocked by a barrier, then that crossing should be capable of passing a 100-year event. Crossings that are barriers to fish passage should be removed, unless site-specific analysis contradicts such action. Roads that are intended to be kept closed for less than 5 years should be adequately stabilized so that maintenance is not expected to be required for the duration of the closure.

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7. The Forests should minimize sediment input to the maximum extent practicable from culvert removals and subsequent streambed and streambank restoration activities by following all appropriate best management practices.
8. The Forests should, where practical, time culvert removals to coincide with low flow on perennial streams or no flow on intermittent streams to minimize sediment impacts to bull trout spawning activities and bull trout spawning and rearing habitat.
9. The placement of new roads and reopening of previously closed roads should be done in a manner to reduce or eliminate impacts to bull trout streams and critical habitat. The design of new or replaced culverts should be done in accordance with the Forest Service's Aquatic Organism Passage program, or other design criteria that ensure fish passage at the appropriate life stages.
10. Prior to closing a road by gate or barricade, the Forests should complete an inventory and risk assessment of individual stream crossing structures and features behind the proposed barrier and develop a monitoring plan based on the risk assessment. After closing, periodically monitor and inspect culvert stream crossings, bridges, fords, and other drainage features behind gated or barriered roads in bull trout watersheds which are subject to high erosion risk due to floods or peak storm events and/or are in close proximity to bull trout occupied streams or critical habitat.

*Record of Decision***XIV. Appendix C – Compliance Strategy****Kootenai National Forests**

As of the end of 2009, there are eight BMUs solely managed by the Kootenai National Forest and one BMU co-managed with the Idaho Panhandle National Forests that would not be in compliance with the standards set forth in Alternative E Updated. One of these, Keno (13), will have achieved compliance in 2010. The estimated timeline is to achieve desired conditions in the remaining BMUs as follows: Vermillion (8), Pulpit (10), and Roderick (11) (33%) within three years of the amendment decision date; Wanless (6), Silver Butte (7), and East Fork Yaak (16) (66%) within five years of the amendment decision date; and Bull (4) and St. Paul (5) (100%) within eight years of the amendment decision date. Where tentative plans are available, the implementation strategy to show improvements and/or achieve desired conditions for each BMU on the Kootenai National Forest is outlined below:

NOTE: *Italicized* type is current condition; **bold** type is Alternative E Updated standard

BMU 4-Bull (Priority 2): No specific project on the Cabinet District planned at this time. This BMU does not currently meet Alternative E Updated OMRD [*37 (36)*], TMRD [*29 (26)*] or core [*62 (63)*].

BMU 5-St. Paul (Priority 1): Improvements in standards could start with implementation of the Montanore Mine project on the Libby District. NEPA analysis is on-going at this time. This BMU does not currently meet Alternative E Updated core [*58 (60)*].

BMU 6-Wanless (Priority 1): Improvements in standards could start with implementation of the Miller-West Fisher and Montanore Mine projects on the Libby District. NEPA analysis on the Montanore mine project is on-going at this time. This BMU does not currently meet Alternative E Updated TMRD [*34 (32)*] or core [*53 (55)*].

BMU 7-Silver Butte (Priority 2): No specific project on the Libby District is planned at this time that would improve bear habitat. OMRD and core levels met standards in place at the time during the recent NEPA analysis for Miller-West Fisher, so no additional changes were proposed. This BMU does not currently meet Alternative E Updated OMRD [*32 (26)*] or core [*62 (63)*].

BMU 8-Vermillion (Priority 3): Planned under the Cabinet District Travel Management Planning effort and separate major watershed restoration effort. Anticipate most work being done by changing gated roads to barrier with associated long-term storage or decommissioning. This BMU does not currently meet Alternative E Updated OMRD [*33 (32)*] or TMRD [*24 (20)*].

BMU 10-Pulpit (Priority 2): The recent BPA Libby-Troy Powerline EIS ROD on the Three Rivers District included road management decisions that will bring this BMU up to standards when it is implemented. There are no other specific projects planned at this time. This BMU does not currently meet Alternative E Updated core [*51 (52)*].

BMU 11-Roderick (Priority 1): Road management decisions planned as part of the Grizzly Project on the Three Rivers District will be implemented in the next year or two and will bring standards into compliance. This BMU does not currently meet Alternative E Updated TMRD [*28 (26)*] or core [*54 (55)*].

BMU 13-Keno (Priority 1): No specific project on the Three Rivers District is planned at this time, but gate installation on Bonners Ferry District was implemented in the fall of 2009 to achieve a 1%

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reduction in OMRD in 2010. Hence, based on 2009 baseline conditions, it does not currently meet Alternative E Updated OMRD [34 (33)] but it does as of this writing.

BMU 16-East Fork Yaak (Priority 1): Planned as part of the Northeast Yaak project on the Three Rivers District. This project has been in litigation but was recently resolved by the court. Implementation is expected within the next few years and standards will be met. This BMU does not currently meet Alternative E Updated TMRD [27 (26)] or core [54 (55)].

Idaho Panhandle National Forests

As of 2009, there are seven BMUs managed by the Idaho Panhandle National Forests (3 in the SRZ; 4 in the CYRZ) that are not in compliance with the standards set forth in Alternative E Updated. The Idaho Panhandle National Forests estimates bringing two additional BMUs into compliance in the first timeframe (three years), three in the second timeframe (five years), and two in the last timeframe (eight years).

While importance was given to achieving standards by order of BMU priority other factors such as the time needed to achieve standards was a factor considered in scheduling BMU compliance. Where tentative plans are available, the implementation strategy to show improvements and/or achieve desired conditions for each BMU on the Idaho Panhandle National Forests is outlined below:

NOTE: *Italicized* type is current condition; **bold** type is Alternative E Updated standard

Blue-Grass BMU (Priority 1): No specific projects planned at this time. Decisions will address restricted roads and require coordination between the Priest Lake and Bonners Ferry Ranger Districts (IPNFs), as well as between the USFS and other agencies. This BMU does not currently meet Alternative E Updated TMRD [28 (26)] or core [50 (55)].

Kalispell-Granite BMU (Priority 1): Implementation of the Lakeview Reeder vegetation project and related watershed restoration decisions (e.g., Road 308 reroute). These projects will bring the BMU into full compliance with the proposed standards. This BMU does not currently meet Alternative E Updated OMRD [31 (33)] TMRD [28 (26)] or core [49 (55)].

Lakeshore BMU (Priority 1): Implementation of the Lakeview Reeder vegetation project will bring the BMU into full compliance with the proposed standards. This BMU does not currently meet Alternative E Updated core [19 (20)].

North Lightning BMU (Priority 1): Implementation of the Lightning Creek watershed restoration decision. The decision includes the decommissioning of open and restricted roads, the conversion of an open road segment to a non-motorized trail and the conversion of a motorized trail to non-motorized. This project will bring the BMU into full compliance with the proposed standards. This BMU does not currently meet Alternative E Updated OMRD [36 (35)].

Scotchman BMU (Priority 1): Implementation of the Lightning Creek watershed restoration decision on the Sandpoint District. The decision includes the decommissioning of open and restricted roads, and the conversion of a segment of open road to a non-motorized trail. This project will bring the BMU into full compliance with the proposed standards. This BMU does not currently meet Alternative E Updated TMRD [27 (26)].

Grouse BMU (Priority 3): No specific projects planned at this time. Strategy will likely require a Habitat Conservation Plan between USFWS and private landowners, coordination between Sandpoint and Bonners Ferry Ranger Districts (IPNF), and changes in road use agreements. This

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BMU does not currently meet Alternative E Updated OMRD [*61* (**59**)], TMRD [*59* (**55**)], or core [*32* (**37**)].

Boulder BMU (Priority 3): Implement existing road closure decisions (Katka Peak EIS) in 2011-12. Leonia EA (expected decision in 2011) will improve core area and TMRD. This BMU does not currently meet Alternative E Updated TMRD [*35* (**29**)] or core [*50* (**55**)].

Lolo National Forest

BMU 22-Mt. Headley (Priority 3): The Plains/Thompson Falls Ranger District completed an EIS for the Fishtrap Project in 2008. This project will decrease OMRD by 0.1 % (to 38.0 %), decrease TMRD by 2.9 % (to 33.8 %) and increase core area by 2.3 % (to 53.7 %). This project may be completed in 2015 to 2017 and will achieve the TMRD standard. The District plans to begin a travel management project with a dual purpose of meeting the BMU 22 Core Area and OMRD standards and providing Off-Highway Vehicle (OHV) opportunities on the district in the next few years. It is likely that the planning portion of the travel plan will take 2 to 5 years and the implementation of road closures will take an additional 3 years; however, these activities are dependent on funding.

NOTE: *Italicized* type is current condition; **bold** type is Alternative E Updated standard

The LNF estimates bringing BMU 22 (Mt. Headley) into compliance within eight years of the amendment decision date. This BMU does not currently meet Alternative E Updated OMRD [*38* (**33**)] TMRD [*37* (**35**)] or core [*51* (**55**)].



Department of
Agriculture

Forest
Service

November 2011



Addendum to Forest Plan Appendix 8. Motorized Access Management Direction Kootenai National Forest

Forest Plan Amendments for Motorized Access Management within the Selkirk and Cabinet-Yaak Grizzly Bear Recovery Zones



Addendum to Appendix 8. Motorized Access Management Direction Kootenai National Forest

Addendum to Forest Plan Appendix 8. Motorized Access Management Direction

Replace the Forest Plan standard for linear open road density (Forest Plan, p. III-60 and Forest Plan Appendix 8, p. 12) and the Forest Plan goal for Habitat Effectiveness with the following.

Activities in grizzly bear habitat and in the BORZ shall follow the management direction in the addendum to Appendix 8 (Motorized Access Management Direction).

Design Elements

- I. The following access management standards would apply to individual BMUs within the Cabinet-Yaak Recovery Zone on the KNF:
 - A. The OMRD, TMRD, and percent core standards displayed in Table 1 would be established for the BMUs in the Cabinet-Yaak Ecosystem.
 - B. Parameters for establishing and managing core habitat in all BMUs:
 - I. In accordance with IGBC (1998) and Selkirk/Cabinet-Yaak Ecosystem Subcommittee (1998) direction, core areas shall be established for the purpose of providing secure habitat for grizzly bears.
 - a. Core areas include high quality habitat within a BMU that contains no motorized travel routes or high use trails.
 - b. Core areas do not include any gated or restricted roads but may contain roads that are impassable due to re-growth of vegetation, effective barriers other than gates, or placement of logging or forest debris so as to no longer function as a motorized route.
 - c. When possible, core areas would be delineated by identifying and aggregating the full range of seasonal habitats that are available in the BMU.
 - d. The IGBC anticipated that minimum core area size might be determined for each recovery zone. For the Selkirk/Cabinet-Yaak Grizzly Bear Recovery Zones, no scientifically based minimum effective size polygon for core area has been determined (Wakkinen and Kasworm 1997), though minimum block sizes of 2-8 mi² were suggested. Therefore, discounting small or narrow blocks of core area is not prudent at this time. Individual project analyses would disclose the percent and size of core areas in each BMU.
 - e. Once route closures to create core areas are established and effective, these core areas should remain in place for at least 10 years. Therefore, except for emergencies or other unforeseen circumstances requiring independent section 7 consultation, newly created core area shall not be entered for at least 10 years after creation.
 - f. Roads that are closed, decommissioned, or barriered in the future to create core area would be put in a condition such that a need for motorized access for maintenance is not anticipated for at least 10 years. Until such closed roads are

Addendum to Appendix 8. Motorized Access Management Direction Kootenai National Forest

placed in the above-described condition, they would not be considered as contributing to core area.

2. Entering core area blocks for road decommissioning or stabilization activities:
 - a. Without further section 7 consultation on grizzly bears, the Forest Service may affect underlying core area habitat within a BMU once per 10-year time frame for the sole purpose of completing road decommissioning/stabilization activities on existing closed or barriered roads in core habitat.
 - b. Subsequent needs to re-enter individual core areas within a BMU more frequently than once per decade for the purposes of road decommissioning shall be handled on a case-by-case basis through standard section 7 consultation procedures. The effects of additional entries would be analyzed pursuant to such project level consultation. Pending the outcome of each analysis, additional measures to minimize potential effects to grizzly bears may be required.
 3. Routine forest management may be proposed in a core area block after 10-years of core area benefit. However, BMUs must remain at or above the core standard. Therefore, potential losses to existing core must be compensated with in-kind replacement concurrently or prior to incurring the losses. Such in-kind replacement of core would be established within the affected BMU in accordance with the direction in Part I.B.1., above. For exceptions, see specialized circumstances outlined in Part I.D. concerning BMUs that exceed standards. Following management, core areas must subsequently be managed undisturbed for 10 years.
- C. Parameters for BMUs currently not meeting core area, OMRD, and/or TMRD standards:
1. These BMUs are anticipated to be brought up to standards in the following manner: 33 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within three years of the amendment decision date; 66 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within 5 years of the amendment decision date, and 100 percent of those BMUs currently not meeting one or more standard within each ecosystem are estimated to meet all standards within eight years of the amendment decision date.
- D. For those BMUs currently meeting or exceeding (being better than) the standards for core area:
1. Except as provided above for road stabilization projects, no reductions in core habitat without in-kind replacements would be proposed until all BMUs administered by the IPNF, KNF and LNF in the respective ecosystems are up to standard (Table 1).
 2. Once all BMUs meet all standards then subsequent projects that propose to permanently reduce core area by roads shall undergo independent section 7 formal consultation.
 3. Reductions of core area within individual BMUs shall not reduce the percent core area below the minimum standards for the affected BMU without compensating with in-kind replacement concurrently or prior to incurring the losses (see Part I.B.3.).

Addendum to Appendix 8. Motorized Access Management Direction Kootenai National Forest

E. Road use associated with completing administrative activities:

I. In the Cabinet-Yaak Ecosystem:

- a. Administrative use shall not exceed 60 vehicle round trips per active bear year per road, apportioned as follows: ≤18 round trips in spring (April 1 through June 15); ≤23 round trips in summer (June 16 through September 15); and ≤19 round trips in fall (September 16 through November 30).
- b. If the number of trips exceeds 60 trips per active bear year in the Cabinet-Yaak ecosystem, then that road would be considered "open" for analysis and reporting purposes. Likewise, if the number of trips exceeds the allowable ecosystem-specific seasonal (spring, summer, and fall) vehicle round trips per road, then that road would be considered "open" for analysis and reporting purposes.

II. The following access management applies to four grizzly bear recurring use areas (i.e., BORZ areas) located outside of the Cabinet-Yaak Grizzly Bear Recovery Zone on the KNF:

- A. The Forest shall ensure no increases in permanent linear miles of open road¹ on National Forest System lands in any individual BORZ, above the baseline conditions identified in Table 2, except in cases where the Forest Service lacks discretion to prevent road building across National Forest System lands due to legal or other obligations (examples include, but are not limited to, ANILCA claims, identification of RS2477 thoroughfares). Potential increases in linear miles of open roads must be compensated for with in-kind reductions in linear miles of open road concurrently with, or prior to, project implementation within the same BORZ.

Temporary increases in linear miles of open roads are acceptable under the following conditions:

1. Roads closed² to public motorized use or roads created or reconstructed to facilitate land management activities that are otherwise closed to public use may be "opened" to the public immediately following completion of all mechanized harvest and post-harvest slash activities requiring use of the road, to allow motorized public use during the bear summer season prior to the fall bear hunt (i.e., June 16 - August 31) for activities such as personal firewood collection. This public access would only be provided in cases where the mechanized harvest and/or post-harvest slash activities occurred during the same active bear year.
- B. The Forest shall ensure no net permanent increases in linear miles of total roads³ in any individual BORZ area above the baseline conditions identified in Table 2, except in cases where the Forest Service lacks discretion to prevent road building across National Forest System lands due to legal or other obligations (examples include, but are not limited to, ANILCA claims, identification of RS2477 thoroughfares, etc.). Otherwise, potential increases in linear miles of total roads must be compensated for with in-kind reductions in linear total road miles concurrently with, or prior to, new road construction or reconstruction of currently bermed or barriered roads.

¹ Open roads are roads that are open for all or part of the active bear year.

² Closed with a closure order and/or some type of closure device such as a gate.

³ Includes roads that do not have restrictions on motorized use and roads that are closed to public motorized use.

Addendum to Appendix 8. Motorized Access Management Direction Kootenai National Forest

Temporary increases (not off-set) in linear miles of total roads are acceptable under the following conditions:

- I. Temporary increases in linear miles of total roads are acceptable under the following conditions:
 - a. Newly constructed roads would be effectively gated and would be restricted with a CFR closure clarifying they are not open for public use.
 - b. These roads⁴ shall be closed immediately upon completion of activities requiring use of the road, except as described in Part II, A.1., above. Roads must be closed with a berm, guardrail or other measure that effectively prevents motorized access, and put in a condition such that a need for motorized access for maintenance is not anticipated for at least 10 years.
 - c. Upon completion of a land management project, linear miles of total roads would be returned to or below the baseline levels contained in Table 2.
- C. Timber harvest activities that would occur within multiple watersheds shall be scheduled such that disturbance of grizzly bears resulting from road use is minimized. The appropriate scale for scheduling harvest activities would be determined pursuant to project level consultation.
- III. To ensure the effective implementation of the open road density parameter, at least 30 percent of closure devices (gates and barriers) will be monitored annually within the Cabinet-Yaak ecosystem. Monitoring techniques may include visual checks as well as road counters.

⁴ Includes temporary roads built to facilitate the completion of the project and not intended to be left on the landscape—i.e. typically for 10 years or less) as well as the re-opening of existing bermed or barred road prisms.

Addendum to Appendix 8 Motorized Access Management Direction Kootenai National Forest

Table 1. KNF BMU status and standards

BMU	BMU Priorities	OMRD ≥ 1 mi/mi ² (percent)		TMRD ≥ 2 mi/mi ² (percent)		Core Area (percent)		Percent NFS Land
		2009 Status	Proposed Standard (max)	2009 Status	Proposed Standard (max)	2009 Status	Proposed Standard (min.)	
1-Cedar	2	14	15	10	15	83	80	99
2-Snowshoe	2	20	20	16	18	75	75	94
3-Spar	3	27	33	26	26	62	59	95
4-Bull	2	37	36	29	26	62	63	84
5-St Paul	1	28	30	23	23	58	60	97
6-Wanless	1	29	34	34	32	53	55	85
7-Silver Butte-Fisher	2	32	26	23	23	62	63	92
8-Vermillion	3	33	32	24	21	55	55	93
9-Callahan	2	27	33	26	26	59	55	90
10-Pulpit	2	44	44	29	34	51	52	95
11-Roderick	1	28	28	28	26	54	55	96
12-Newton	1	42	45	29	31	58	55	92
13-Keno	1	34	33	25	26	59	59	99
14-NW Peaks	1	28	31	26	26	56	55	99
15-Garver	1	29	33	25	26	55	55	94
16-East Fork Yaak	1	29	33	27	26	54	55	96
17-Big Creek	2	30	33	16	26	58	55	99

Table 2. KNF habitat conditions for bears outside recovery zone (BORZ) occupancy areas

BORZ Name	Grizzly Bear Ecosystem	Total Size (Acres)	NFS ¹ Lands (Acres)	Total Linear Miles of Roads on NFS Lands	Total Linear Miles of Open Roads on NFS Lands
Clark Fork	Cabinet-Yaak	101,899	100,421	258.1	176.9
Cabinet Face	Cabinet-Yaak	27,140	26,177	164.1	128
West Kootenai	Cabinet-Yaak	173,122	169,705	615.3	315.9
Tobacco	Cabinet-Yaak	287,240	266,947	1,123.9	867

INLAND NATIVE FISH STRATEGY SELECTED INTERIM DIRECTION

USDA Forest Service, 1995. Inland native fish strategy: Interim strategies for managing fish-producing watersheds in eastern Oregon and Washington, Idaho, western Montana and portions of Nevada. USDA Forest Service, Intermountain, Northern, and Pacific Northwest Regions.

INLAND NATIVE FISH STRATEGY SELECTED INTERIM DIRECTION

Management Direction

Under the selected Alternative D, the Inland Native Fish Strategy will apply the following management direction to all 22 Forests except where PACFISH or the President's Plan apply. This is approximately 24.9 million acres.

The adoption of Alternative D as the Inland Native Fish Strategy could lead to deferring or suspending some resource management projects and activities within priority watersheds within the Riparian Habitat Conservation Areas (RHCAs, described below) or that degrade RHCAs during the interim period. Adoption of these requirements during the interim period is *not* to be considered a "lockout" of any project or activity from the RHCAs. However, proper analysis is required prior to initiation of projects. See the discussion below on priority watersheds and watershed analysis.

In addition, we will be testing the concepts and philosophies of alternatives C and E as described in the Decision Notice for this project. The direction for alternatives C and E are included with this package but are only to be used within the watersheds assigned for the testing. More detail will be sent out as to how and where the testing will be accomplished.

Riparian Goals

The goals establish an expectation of the characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. Since the quality of water and fish habitat in aquatic systems is inseparably related to the integrity of upland and riparian areas within the watersheds, The strategy identifies several goals for watershed, riparian, and stream channel conditions. The goals are to maintain or restore:

- (1) water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems;
- (2) stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed;
- (3) instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
- (4) natural timing and variability of the water table elevation in meadows and wetlands;
- (5) diversity and productivity of native and desired non-native plant communities in riparian zones;

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- (6) riparian vegetation, to:
 - (a) provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;
 - (b) provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and
 - (c) help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.
- (7) riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geo-climatic region; and
- (8) habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.

Riparian Management Objectives

In the development of PACFISH, landscape-scale interim Riparian Management Objectives (RMOs) describing good habitat for anadromous fish were developed, using stream inventory data for pool frequency, large woody debris, bank stability and lower bank angle, and width to depth ratio. Applicable published and non-published scientific literature was used to define favorable water temperatures. All of the described features may not occur in a specific segment of stream within a watershed, but all generally should occur at the watershed scale for stream systems of moderate to large size (3rd to 6th order streams).

This material was reviewed in regard to its applicability to inland native fish. It has been determined that the Riparian Management Objectives described in PACFISH are good indicators of ecosystem health. The analysis that led to development of the RMO's involved watersheds in Oregon, Washington, and Idaho that include inland native fish as well as anadromous fish. With the exception of the temperature objective, which has been modified, the RMO's represented a good starting point to describe the desired condition for fish habitat.

Under the Inland Native Fish Strategy, these interim RMO's would apply where watershed analysis has not been completed. The components of good habitat can vary across specific geographic areas. Interim RMO's are considered to be the best watershed scale information available; National Forest managers would be encouraged to establish site-specific RMO's through watershed analysis or site specific analysis.

RMOs should be refined to better reflect conditions that are attainable in a specific watershed or stream reach based on local geology, topography, climate, and potential vegetation. Establishment of RMO's would require completion of watershed analysis to provide the ecological basis for the change. However, interim RMO's may be modified by amendment in the absence of watershed analysis where watershed or stream reach specific data support the change. In all cases, the rationale supporting RMO's and their effects would be documented.

The interim RMOs for stream channel conditions provide the criteria against which attainment or progress toward attainment of the riparian goals is measured. Interim RMOs provide the target toward which managers aim as they conduct resource management activities across the landscape. It is not expected

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that the objectives would be met instantaneously, but rather would be achieved over time. However, the intent of interim RMOs is not to establish a ceiling for what constitutes good habitat conditions. Actions that reduce habitat quality, whether existing conditions are better or worse than objective values, would be inconsistent with the purpose of this interim direction. Without the benchmark provided by measurable RMOs, habitat suffers a continual erosion.

As indicated below, some of the objectives would apply to only forested ecosystems, some to non-forested ecosystems, and some to all ecosystems regardless of whether or not they are forested. Objectives for six environmental features have been identified, including one key feature and five supporting features. These features are good indicators of ecosystem health, are quantifiable, and are subject to accurate, repeatable measurements. They generally apply to 3rd to 6th order watersheds.

Under the strategy, interim RMO's would apply to watersheds occupied by inland native fish. Application of the interim RMOs would require thorough analysis. That is, if the objective for an important feature such as pool frequency is met or exceeded, there may be some latitude in assessing the importance of the objectives for other features that contribute to good habitat conditions. For example, in headwater streams with an abundance of pools created by large boulders, fewer pieces of large wood might still constitute good habitat. The goal is to achieve a high level of habitat diversity and complexity through a combination of habitat features, to meet the life-history requirements of the fish community inhabiting a watershed.

Many people commented on the draft what it meant to not retard the attainment of the RMOs. For the purposes of analysis, to 'retard' would mean to slow the rate of recovery below the near natural rate of recovery if no additional human caused disturbance was placed on the system. This obviously will require professional judgement and should be based on watershed analysis of local conditions.

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Table A-1. Interim Riparian Management Objectives.

Habitat Feature	Interim Objectives
Pool Frequency (kf ¹) (all systems)	Varies by channel width (see Table A-2).
Water Temperature (sf ²)	No measurable increase in maximum water temperature (7-day moving average of daily maximum temperature measured as the average of the maximum daily temperature of the warmest consecutive 7-day period). Maximum water temperatures below 59F within adult holding habitat and below 48F within spawning and rearing habitats.
Large Woody Debris (sf) (forested systems)	East of Cascade Crest in Oregon, Washington, Idaho, Nevada and western Montana: >20 pieces per mile; >12 inch diameter; >35 foot length.
Bank Stability (sf) (non-forested systems)	>80 percent stable.
Lower Bank Angle (sf) (non-forested systems)	>75 percent of banks with <90 degree angle (i.e., undercut).
Width/Depth Ratio (sf) (all systems)	<10, mean wetted width divided by mean depth

¹ Key feature.
² Supporting feature.

Table A-2. Interim objectives for pool frequency.

Wetted width (feet)	10	20	25	50	75	100	125	150	200
Pools per mile	96	56	47	26	23	18	14	12	9

Riparian Habitat Conservation Areas

Interim Riparian Habitat Conservation Areas (RHCA) would be delineated in every watershed on National Forest System lands within the geographic range of the strategy.

Riparian Habitat Conservation Areas are portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific standards and guidelines. Riparian Habitat Conservation Areas 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 (Naiman et al. 1992).

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The Riparian Habitat Conservation Areas under the strategy would be nearly identical to those under the Idaho Conservation Strategy (Idaho Department of Fish & Game Commission's Bull Trout Conservation Strategy, 1995). The main difference is that, under the Idaho Conservation Strategy, Riparian Habitat Conservation Areas would apply only in key watersheds. Since their key watersheds are large and cover much of the National Forest System lands in Idaho, there would be little difference between the two strategies in regard to Riparian Habitat Conservation Areas within occupied bull trout habitat.

Widths of interim Riparian Habitat Conservation Areas that are adequate to protect streams from non-channelized sediment inputs should be sufficient to provide other riparian functions, including delivery of organic matter and woody debris, stream shading, and bank stability (Brazier and Brown 1973, Gregory et al. 1984, Steinblums et al. 1984, Beschta et al. 1987, McDade et al. 1990, Sedell and Beschta 1991, Belt et al. 1992). The effectiveness of riparian conservation areas in influencing sediment delivery from non-channelized flow is highly variable. A review by Belt et al. (1992) of studies in Idaho (Haupt 1959a and 1959b, Ketcheson and Megehan 1990, Burroughs and King (1985 and 1989) and elsewhere (Trimble and Sartz 1957, Packer 1967, Swift 1986) concluded that non-channelized sediment flow rarely travels more than 300 feet and that 200-300 foot riparian "filter strips" are generally effective at protecting streams from sediment from non-channelized flow.

Interim RHCA widths would apply where watershed analysis has not been completed. Site-specific widths may be increased where necessary to achieve riparian management goals and objectives, or decreased where interim widths are not needed to attain RMOs or avoid adverse effects. Establishment of RHCA's would require completion of watershed analysis to provide the ecological basis for the change. However, interim RHCAs may be modified by amendment in the absence of watershed analysis where stream reach or site-specific data support the change. In all cases, the rationale supporting RHCA widths and their effects would be documented.

Standard Widths Defining Interim RHCAs

The four categories of stream or water body and the standard widths for each are:

Category 1 - Fish-bearing streams: Interim RHCAs consist of the stream and the area on either 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, including both sides of the stream channel), whichever is greatest.

Category 2 - Permanently flowing non-fish-bearing streams: Interim RHCAs consist of the stream and the area on either 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 flood plain, 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, including both sides of the stream channel), whichever is greatest.

Category 3 - Ponds, lakes, reservoirs, and wetlands greater than 1 acre: Interim RHCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or to the extent of moderately and highly 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 maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest.

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Category 4 - Seasonally flowing or Intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone areas: This category includes features with high variability in size and site-specific characteristics. At a minimum the interim RHCAs must include:

- a. the extent of landslides and landslide-prone areas
- b. the intermittent stream channel and the area to the top of the inner gorge
- c. the intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation
- d. for Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest
- e. for watersheds not identified as Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one-half site potential tree, or 50 feet slope distance, whichever is greatest

In non-forested rangeland ecosystems, the interim RHCA width for permanently flowing streams in categories 1 and 2 is the extent of the 100-year flood plain.

Standards and Guidelines

Project and site-specific standards and guidelines listed below would apply to all RHCAs and to projects and activities in areas outside RHCAs that are identified through NEPA analysis as potentially degrading RHCAs. The combination of the standards and guidelines for RHCAs specified below with the standards and guidelines of existing forest plans and Land Use Plans would provide a benchmark for management actions that reflects increased sensitivities and a commitment to ecosystem management.

Under the strategy, the standards and guidelines listed below would be applied to the entire geographic area for the project. Due to the short-term duration of this interim direction, provisions for development and implementation of road/transportation management plans and the relocation, elimination, or reconstruction of existing roads, facilities, and other improvements (i.e., RF-2 c, RF-3 a and c, RF-4, RF-5, GM-2, RM-1, and MM-2) would be initiated but would be unlikely to be completed during the interim period. Where existing roads, facilities, and other improvements found to be causing an unacceptable risk cannot be relocated, eliminated, or reconstructed, those improvements would be closed. Also, due to the short-term duration of this direction, adjustments to management not within the sole discretion of the Agencies (i.e., RF-1, LH-3, RA-1, WR-2, FW-3, and FW-4) would be initiated but would be unlikely to be completed during the interim period.

The standards and guidelines under the Inland Native Fish Strategy have the same intent as the 38 standards and guidelines under the Idaho Conservation Strategy. The Inland Native Fish Strategy has one additional standard and guideline (RA-4), related to storage of fuels and refueling in RHCA's.

Many people commented on the draft what it meant to not retard the attainment of the RMOs. For the purposes of analysis, to "retard" would mean to slow the rate of recovery below the near natural rate of recovery if no additional human caused disturbance was placed on the system. This obviously will require professional judgement and should be based on watershed analysis of local conditions.

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Timber Management

- TM-1** Prohibit timber harvest, including fuelwood cutting, in Riparian Habitat Conservation Areas, except as described below.
- a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting in Riparian Habitat Conservation Areas only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other Riparian Management Objectives, and where adverse effects can be avoided to inland native fish. For priority watersheds, complete watershed analysis prior to salvage cutting in RHCAs.
 - b. Apply silvicultural practices for Riparian Habitat Conservation Areas to acquire desired vegetation characteristics where needed to attain Riparian Management Objectives. Apply silvicultural practices in a manner that does not retard attainment of Riparian Management Objectives and that avoids adverse effects on inland native fish.

Roads Management

- RF-1** Cooperate with Federal, Tribal, State, and county agencies, and cost-share partners to achieve consistency in road design, operation, and maintenance necessary to attain Riparian Management Objectives.
- RF-2** For each existing or planned road, meet the Riparian Management Objectives and avoid adverse effects to inland native fish by:
- a. completing watershed analyses prior to construction of new roads or landings in Riparian Habitat Conservation Areas within priority watersheds.
 - b. minimizing road and landing locations in Riparian Habitat Conservation Areas.
 - c. initiating development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, address the following items in the plan:
 1. Road design criteria, elements, and standards that govern construction and reconstruction.
 2. Road management objectives for each road.
 3. Criteria that govern road operation, maintenance, and management.
 4. Requirements for pre-, during-, and post-storm inspections and maintenance.
 5. Regulation of traffic during wet periods to minimize erosion and sediment delivery and accomplish other objectives.
 6. Implementation and effectiveness monitoring plans for road stability, drainage, and erosion control.

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- 7. Mitigation plans for road failures.
 - d. avoiding sediment delivery to streams from the road surface.
 - 1. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe.
 - 2. Route road drainage away from potentially unstable stream channels, fills, and hillslopes.
 - e. avoiding disruption of natural hydrologic flow paths.
 - f. avoiding sidecasting of soils or snow. Sidecasting of road material is prohibited on road segments within or abutting RHCAs in priority watersheds.
- RF-3 Determine the influence of each road on the Riparian Management Objectives. Meet Riparian Management Objectives and avoid adverse effects on inland native fish by:
- a. reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, or that have been shown to be less effective than designed for controlling sediment delivery, or that retard attainment of Riparian Management Objectives, or do not protect priority watersheds from increased sedimentation.
 - b. prioritizing reconstruction based on the current and potential damage to inland native fish and their priority watersheds, the ecological value of the riparian resources affected, and the feasibility of options such as helicopter logging and road relocation out of Riparian Habitat Conservation Areas.
 - c. closing and stabilizing or obliterating, and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to inland native fish in priority watersheds, and the ecological value of the riparian resources affected.
- RF-4 Construct new, and improve existing, culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris, where those improvements would/pose a substantial risk to riparian conditions. Substantial risk improvements include those that do not meet design and operation maintenance criteria, or that have been shown to be less effective than designed for controlling erosion, or that retard attainment of Riparian Management Objectives, or that do not protect priority watersheds from increased sedimentation. Base priority for upgrading on risks in priority watersheds and the ecological value of the riparian resources affected. Construct and maintain crossings to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.
- RF-5 Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.

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Grazing Management

- GM-1 Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of Riparian Management Objectives or are likely to adversely affect inland native fish. Suspend grazing if adjusting practices is not effective in meeting Riparian Management Objectives.
- GM-2 Locate new livestock handling and/or management facilities outside of Riparian Habitat Conservation Areas. For existing livestock handling facilities inside the Riparian Habitat Conservation Areas, assure that facilities do not prevent attainment of Riparian Management Objectives. Relocate or close facilities where these objectives cannot be met.
- GM-3 Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that would not retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish.
- GM-4 Adjust wild horse and burro management to avoid impacts that prevent attainment of Riparian Management Objectives or adversely affect inland native fish.

Recreation Management

- RM-1 Design, construct, and operate recreation facilities, including trails and dispersed sites, in a manner that does not retard or prevent attainment of the Riparian Management Objectives and avoids adverse effects on inland native fish. Complete watershed analysis prior to construction of new recreation facilities in Riparian Habitat Conservation Areas within priority watersheds. For existing recreation facilities inside Riparian Habitat Conservation Areas, assure that the facilities or use of the facilities would not prevent attainment of Riparian Management Objectives or adversely affect inland native fish. Relocate or close recreation facilities where Riparian Management Objectives cannot be met or adverse effects on inland native fish can not be avoided.
- RM-2 Adjust dispersed and developed recreation practices that retard or prevent attainment of Riparian Management Objectives or adversely affect inland native fish. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting Riparian Management Objectives and avoiding adverse effects on inland native fish, eliminate the practice or occupancy.
- RM-3 Address attainment of Riparian Management Objectives and potential effect on inland native fish in Wild and Scenic Rivers, Wildmess, and other Recreation Management plans.

Minerals Management

- MM-1 Minimize adverse effects to inland native fish species from mineral operations. If a Notice of Intent indicates that a mineral operation would be located in a Riparian Habitat Conservation Area, consider the effects of the activity on inland native fish in the determination of significant surface disturbance pursuant to 36 CFR 228.4. For operations in a Riparian Habitat Conservation Area ensure operators take all practicable measures to maintain, protect, and rehabilitate fish and wildlife habitat which may be affected by the operations. When bonding

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is required, consider (in the estimation of bond amount) the cost of stabilizing, rehabilitating, and reclaiming the area of operations.

- MM-2** Locate structures, support facilities, and roads outside Riparian Habitat Conservation Areas. Where no alternative to siting facilities in Riparian Habitat Conservation Areas exists, locate and construct the facilities in ways that avoid impacts to Riparian Habitat Conservation Areas and streams and adverse effects on inland native fish. Where no alternative to road construction exists, keep roads to the minimum necessary for the approved mineral activity. Close, obliterate and revegetate roads no longer required for mineral or land management activities.
- MM-3** Prohibit solid and sanitary waste facilities in Riparian Habitat Conservation Areas. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in Riparian Habitat Conservation Areas exists, and releases can be prevented and stability can be ensured, then:
- a. analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.
 - b. locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in Riparian Habitat Conservation Areas.
 - c. monitor waste and waste facilities to confirm predictions of chemical and physical stability, and make adjustments to operations as needed to avoid adverse effects to inland native fish and to attain Riparian Management Objectives.
 - d. reclaim and monitor waste facilities to assure chemical and physical stability and revegetation to avoid adverse effects to inland native fish, and to attain the Riparian Management Objectives.
 - e. require reclamation bonds adequate to ensure long-term chemical and physical stability and successful revegetation of mine waste facilities.
- MM-4** For leasable minerals, prohibit surface occupancy within Riparian Habitat Conservation Areas for oil, gas, and geothermal exploration and development activities where contracts and leases do not already exist, unless there are no other options for location and Riparian Management Objectives can be attained and adverse effects to inland native fish can be avoided. Adjust the operating plans of existing contracts to (1) eliminate impacts that prevent attainment of Riparian Management Objectives and (2) avoid adverse effects to inland native fish.
- MM-5** Permit sand and gravel mining and extraction within Riparian Habitat Conservation Areas only if no alternatives exist, if the action(s) would not retard or prevent attainment of Riparian Management Objectives, and adverse effects to inland native fish can be avoided.
- MM-6** Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply the results of inspection and monitoring to modify mineral plans, leases, or permits as needed to eliminate impacts that prevent attainment of Riparian Management Objectives and avoid adverse effects on inland native fish.

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Fire/Fuels Management

- FM-1** Design fuel treatment and fire suppression strategies, practices, and actions so as not to prevent attainment of Riparian Management Objectives, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function or inland native fish.
- FM-2** Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of Riparian Habitat Conservation Areas. If the only suitable location for such activities is within the Riparian Habitat Conservation Area, an exemption may be granted following a review and recommendation by a resource advisor. The advisor would prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects to inland native fish a primary goal. Use an interdisciplinary team, including a fishery biologist, to predetermine incident base and helibase locations during presuppression planning.
- FM-3** Avoid delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor and a fishery biologist, when the action agency determines an escape fire would cause more long-term damage to fish habitats than chemical delivery to surface waters.
- FM-4** Design prescribed burn projects and prescriptions to contribute to the attainment of the Riparian Management Objectives.
- FM-5** Immediately establish an emergency team to develop a rehabilitation treatment plan to attain Riparian Management Objectives and avoid adverse effects on inland native fish whenever Riparian Habitat Conservation Areas are significantly damaged by a wildfire or a prescribed fire burning out of prescription.

Lands

- LH-1** Require instream flows and habitat conditions for hydroelectric and other surface water development proposals that maintain or restore riparian resources, favorable channel conditions, and fish passage, reproduction, and growth. Coordinate this process with the appropriate State agencies. During relicensing of hydroelectric projects, provide written and timely license conditions to the Federal Energy Regulatory Commission (FERC) that require fish passage and flows and habitat conditions that maintain/restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate State agencies.
- LH-2** Locate new hydroelectric ancillary facilities outside Riparian Habitat Conservation Areas. For existing ancillary facilities inside the RHCA that are essential to proper management, provide recommendations to FERC to assure that the facilities would not prevent attainment of the Riparian Management Objectives and that adverse effects on inland native fish are avoided. Where these objectives cannot be met, provide recommendations to FERC that such ancillary facilities should be relocated. Locate, operate, and maintain hydroelectric facilities that must be located in Riparian Habitat Conservation Areas to avoid effects that would retard or prevent attainment of the Riparian Management Objectives and avoid adverse effects on inland native fish.

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- LH-3** Issue leases, permits, rights-of-way, and easements to avoid effects that would retard or prevent attainment of the Riparian Management Objectives and avoid adverse effects on inland native fish. Where the authority to do so was retained, adjust existing leases, permits, rights-of-way, and easements to eliminate effects that would retard or prevent attainment of the Riparian Management Objectives or adversely affect inland native fish. If adjustments are not effective, eliminate the activity. Where the authority to adjust was not retained, negotiate to make changes in existing leases, permits, rights-of-way, and easements to eliminate effects that would prevent attainment of the Riparian Management Objectives or adversely affect inland native fish. Priority for modifying existing leases, permits, rights-of-way, and easements would be based on the current and potential adverse effects on inland native fish and the ecological value of the riparian resources affected.
- LH-4** Use land acquisition, exchange, and conservation easements to meet Riparian Management Objectives and facilitate restoration of fish stocks and other species at risk of extinction.

General Riparian Area Management

- RA-1** Identify and cooperate with Federal, Tribal, State and local governments to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.
- RA-2** Trees may be felled in Riparian Habitat Conservation Areas when they pose a safety risk. Keep felled trees on site when needed to meet woody debris objectives.
- RA-3** Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of Riparian Management Objectives and avoids adverse effects on inland native fish.
- RA-4** Prohibit storage of fuels and other toxicants within Riparian Habitat Conservation Areas. Prohibit refueling within Riparian Habitat Conservation Areas unless there are no other alternatives. Refueling sites within a Riparian Habitat Conservation Area must be approved by the Forest Service or Bureau of Land Management and have an approved spill containment plan.
- RA-5** Locate water drafting sites to avoid adverse effects to inland native fish and instream flows, and in a manner that does not retard or prevent attainment of Riparian Management Objectives.

Watershed and Habitat Restoration

- WR-1** Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of Riparian Management Objectives.
- WR-2** Cooperate with Federal, State, local, and Tribal agencies, and private landowners to develop watershed-based Coordinated Resource Management Plans (CRMPs) or other cooperative agreements to meet Riparian Management Objectives.

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Fisheries and Wildlife Restoration

- FW-1** Design and implement fish and wildlife habitat restoration and enhancement actions in a manner that contributes to attainment of the Riparian Management Objectives.
- FW-2** Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of the Riparian Management Objectives or adversely affect inland native fish. For existing fish and wildlife interpretive and other user-enhancement facilities inside Riparian Habitat Conservation Areas, assure that Riparian Management Objectives are met and adverse effects on inland native fish are avoided. Where Riparian Management Objectives cannot be met or adverse effects on inland native fish avoided, relocate or close such facilities.
- FW-3** Cooperate with Federal, Tribal, and State wildlife management agencies to identify and eliminate wild ungulate impacts that prevent attainment of the Riparian Management Objectives or adversely affect inland native fish.
- FW-4** Cooperate with Federal, Tribal, and State fish management agencies to identify and eliminate adverse effects on native fish associated with habitat manipulation, fish stocking, fish harvest, and poaching.

Priority Watersheds

Priority watersheds have been designated in Oregon, Idaho, Montana, Nevada, and Washington. Criteria considered to designate priority watersheds in the 22 National Forests were:

1. *Watersheds with excellent habitat or strong assemblages of inland native fish, with a priority on bull trout populations.*
2. *Watersheds that provide for meta-population objectives.*
3. *Degraded watersheds with a high restoration potential.*

The intent of designating priority watersheds is to provide a pattern of protection across the landscape where habitat for inland native fish would receive special attention and treatment. Areas in good condition would serve as anchors for the potential recovery of depressed stocks, and also would provide colonists for adjacent areas where habitat had been degraded by land management or natural events. Those areas of lower quality habitat with high potential for restoration would become future sources of good habitat with the implementation of a comprehensive restoration program. Priority watersheds would have the highest priority for restoration, monitoring and watershed analysis.

Within priority watersheds, ongoing activities have been screened. This screening effort is a way to monitor ongoing activities to categorize the extent of risk they represent to bull trout habitat or populations. Projects determined to be a high or medium risk must be reviewed by Forest Supervisors and, subject to valid existing rights, they have three options to pursue:

1. *Modify the action to reduce the risk.*
2. *Postpone the action until the final direction is issued.*
3. *Cancel the action.*

Forest Supervisors will submit to their respective Regional Foresters an action plan for how high and moderate risk projects will be modified to avoid an unacceptable risk. This action plan will be submitted

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within one month. Modifications for moderate and high risk projects should be initiated within two months with high risk projects having the highest priority. If there are compelling reasons why a project can not be modified, delayed, or cancelled, the Forest Supervisor will include in the action plan written documentation of the rationale for such action and what other mitigating measures will be implemented to assure there is not an unacceptable risk. For low risk projects, Forest Supervisors must provide an action plan by March 1, 1996 for means to assure there is not an unacceptable risk.

Watershed Analysis

Watershed analysis is a systematic procedure for determining how a watershed functions in relation to its physical and biological components. This is accomplished through consideration of history, processes, landform, and condition. Generally, watershed analysis would be initiated where the interim RMOs and the interim RHCA widths do not adequately reflect specific watershed capabilities, or as required in the standards and guidelines before specific projects are initiated. The guidelines and procedural manuals being developed by the Interagency Watershed Analysis Coordination Team and other potentially relevant procedures (e.g., the Cumulative Watershed Effects Process for Idaho, etc.) would be considered and used, where appropriate, in development of a watershed analysis protocol. Eventually, any watershed analysis would follow the final *Ecosystem Analysis at a Watershed Scale*. Additional information will be sent out when it is available.

Watershed analysis is a prerequisite for determining which processes and parts of the landscape affect fish and riparian habitat, and is essential for defining watershed- specific boundaries for Riparian Habitat Conservation Areas and for Riparian Management Objectives. Watershed analysis can form the basis for evaluating cumulative watershed effects; defining watershed restoration needs, goals and objectives; implementing restoration strategies; and monitoring the effectiveness of watershed protection measures, depending upon the issues to be addressed in the watershed analysis. Watershed analysis employs the perspectives and tools of multiple disciplines, especially geomorphology, hydrology, geology, aquatic and terrestrial ecology, and soil science. It is the framework for understanding and carrying out land use activities within a geomorphic context, and is a major component of the evolving science of ecosystem analysis. Forests should utilize local fish and game department, tribal staff, or other local groups whenever possible to increase the knowledge base and expertise for watershed analysis.

Watershed analysis consists of a sequence of activities designed to identify and interpret the processes operating in a specific landscape. Since the concept of watershed analysis was first introduced, there has been much discussion as to the procedures and detail that a watershed analysis should complete. It is recognized that the components and intensity of the analysis would vary depending on level of activity and significance of issues involved. Following are the general process steps for watershed analysis currently being considered:

1. **Characterization of the Watershed.**
 - a. *Place the watershed in a broader geographic context.*
 - b. *Highlight dominant features and processes with the watershed.*

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2. **Identification of Issues and Key Questions.**
 - a. *Key questions and resource components.*
 - b. *Determine which issues are appropriate to analyze at this scale.*
3. **Description of Current Condition.**
4. **Description of Reference Conditions.**
 - a. *Establish ecologically and geomorphically appropriate reference conditions for the watershed.*
5. **Interpretation of Information.**
 - a. *Provide a comparison and interpretation of the current, historic, and reference conditions.*
6. **Recommendations.**
 - a. *Provide conclusions and recommendations to management.*

The process described above is significantly streamlined to allow managers to focus watershed analysis to address specific issues and management needs. This can include modification of RMO's, RHCA's, or identification of restoration and monitoring needs. The state-of-the art for watershed analysis is still developing and the processes would need to be flexible.

Watershed Restoration

Watershed restoration comprises actions taken to improve the current conditions of watersheds to restore degraded habitat, and to provide long-term protection to natural resources, including riparian and aquatic resources. The strategy does not attempt to develop a restoration strategy given the short time period for implementation of this interim direction. It is expected that Forests would utilize the information from watershed analysis and project development to initiate restoration projects where appropriate and funds are available. Priority watersheds would have the highest priority for restoration efforts.

Monitoring

Monitoring is an important component of the proposed interim direction. The primary focus is to verify that the standards and guidelines were applied during the project implementation. Monitoring to assess whether those protective measures are effective to attain Riparian Goals and Management Objectives would be a lower priority given the short time frame for this interim direction. Complex ecological processes and long time frames are inherent in the RMOs, and it is unrealistic to expect that the planned monitoring would generate conclusive results within 18 months. Nevertheless, it is critical to begin monitoring. Forests are urged to utilize current Forest Plan monitoring efforts, and Section 7 Monitoring results from PACFISH areas where on the same Forest to establish a baseline for determining the effectiveness of these standards and guidelines. Priority watersheds would have the highest priority for monitoring efforts.

A third type of monitoring (validation monitoring) is intended to ascertain the validity of the assumptions used in developing the interim direction. Because of the short-term nature of the management direction, no specific requirements are included for validation monitoring.

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ALTERNATIVE C

The following information on Alternative C is supplied for the testing efforts. It is not for general application.

Alternative C is based on the "National Forest Riparian and Aquatic Habitat Management Strategy (FISH 2000)" developed by the Northwest Forest Resource Council in January, 1995. FISH 2000 was submitted by many commentors as an alternative that should be evaluated in detail. Following are the key elements of the strategy. FISH 2000 is included in the planning record.

This alternative does not establish generalized Riparian Management Objectives or Riparian Habitat Conservation Areas. Rather these are established through assessment of key processes related to the forest canopy and shade, large woody debris recruitment, sediment from surface erosion, sediment from mass failures, and gravel recruitment. As described in FISH 2000 (page iv), the process is implemented in three steps:

1. *Watershed scale riparian function assessment would establish current riparian conditions, riparian input processes, areas not functioning within ecological potential, and appropriate riparian goals.*
2. *Project and site-specific assessment determines the extent to which riparian functions are currently provided and identify management actions that would maintain them.*
3. *Where riparian function relationships and management needs remain unclear, FISH 2000 requires a more comprehensive watershed analysis be conducted to adjust RHCA's, RMO's, and Standards and Guidelines.*

This alternative articulated several goals for watershed, riparian, and stream channel conditions. These goals are the same as those described for the strategy and are listed above.

FISH 2000 provides standards and guidelines only for the management of resources within the RHCA's. For the purposes of this alternative, the current Forest Plan management direction for other resources and any existing State Best Management Practices would be considered the management direction to be applied.

Refer to Table A-3, below, for the Standards and Guidelines guiding project development under Alternative C.

ALTERNATIVE E

The following information on Alternative E is supplied for the testing efforts. It is not for general application.

Alternative E would be similar to the strategy, in that it would apply the same riparian goals, interim Riparian Management Objectives, Riparian Habitat Conservation Areas, and standards and guidelines for the entire area of the project. Based on the results of scoping, it was determined that another alternative was needed to provide stronger direction in the following areas:

1. *A Riparian Management Objective for sediment substrate would be established to be less than 20 percent fine sediment in spawning habitat.*

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2. *A Riparian Management Objective for streambank stability would be established ensuring that at least 90 percent of all streambanks would be stable.*
3. *Watershed analysis, although conducted as described for the strategy, must be completed in Priority Watersheds prior to initiation of any new projects and activities therein.*
4. *Subject to valid existing rights, prohibit all road construction and timber sales in unroaded areas 1,000 acres or larger or unroaded areas smaller than 1,000 acres that are biologically significant.*
5. *All watershed analysis findings that would change Resource Management Objectives, Riparian Habitat Conservation Areas, or standards and guidelines would undergo peer review.*

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Table A-3. Interim standards and guidelines design considerations.

Function	RHCA Requirements	Activity	Timber Management Considerations
Water/bank stability: constrained channels	Up to 20 feet	Harvesting, Grazing ¹	20-ft. no-cut zone around all fish-bearing streams; selectively harvest 20 ft. up to 100 ft. Small streams, leave trees <8 inches dbh ²
Water/bank stability: unconstrained channels	Up to 1 effective tree height around all active channel migration zones.	Harvesting, Grazing	20-ft. no-cut zone around all fish-bearing streams; selectively harvest 20 ft. up to 100 ft. Small streams, leave trees <8 inches dbh
Canopy	Up to 75 feet	Harvesting, Grazing	Selectively harvest trees not required for shade and temperature control according to locally applicable models (e.g., WA canopy-elev-temp model for E. WA).
Large Woody Debris (LWD)	Up to 1 effective tree height. Around all active channel migration zones.	Harvesting	Selectively harvest trees not required for LWD recruitment. For example, see Oregon Forest Practices Rules for standing leave-tree needs.
Litter	100 feet for medium to large streams, 50 feet for small streams. Around all active channel migration zones.	Harvesting	Selectively harvest trees in accordance with requirements for shade and LWD.
Nutrients	100 feet for medium to large streams, 50 feet for small streams. Around all active channel migration zones.	Harvesting, Grazing, Roads, Slash Disposal	No piling and burning of slash. Minimize broadcast burning consistent with ecosystem management fire ecology. Minimize soil disturbance.
Sediment from Surface Erosion	Roads: 150 feet. Ground-based skidding: 50 feet.	Harvesting, Grazing, Roads	Selectively harvest within 75 ft. of large streams, 20 ft. of small streams. No ground-skidding equipment within 50 ft. Minimize subsoil disturbance. Minimize location of roads within 150 ft. and mitigate erosion.
Sediment from Mass Failures	High risk sites.	Harvesting, Grazing, Roads	Stabilize fills, carefully maintain culverts and drainage systems. Locate and construct roads only when failures will not occur. Remove trees when slope instability will not result.
Fuel Loads/Wildfires Vegetative Community	Riparian and stream-adjacent sites	Harvesting, Thinning, Prescribed Burning	Prevent catastrophic wildfires. Return RHCA's to a more healthy species mix, density and lower fuel load.
Gravel	Bank erosion and mass failure sites.	Harvesting, Grazing, Roads	Conduct management activities so as not to prevent natural process from providing necessary gravels.

¹ Grazing is a key riparian management consideration, but grazing standards and guidelines are not included within this table.

² Diameter at breast height.

BULL TROUT BIOLOGICAL OPINION

USDI Fish and Wildlife Service, 1998. Consultation on effects to bull trout from continued implementation of USFS LRMPs and BLM RMPs, as amended by PACFISH and INFISH. USDI Fish and Wildlife Service, Regions 1 and 6.



IN REPLY REFER TO: 1-7-98-F-324 (OSO)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
911 NE. 11th Avenue
Portland, Oregon 97232-4181

Salmon — Challis National Forest

AUG 19 1998

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AUG 14 1998

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RECEIVED
AUG 17 1998
Forest Service

Subject: Consultation on effects to bull trout from continued implementation of USFS LRMPs and BLM RMPs, as amended by PACFISH and INFISH

Dear Mr. Blackwell, Mr. Bosworth, Ms. Hahn, Mr. Hamilton, Mr. Williams and Ms. Zielinski:

Enclosed is the final biological opinion addressing effects to the threatened bull trout (*Salvelinus confluentus*) from continued implementation of U.S. Forest Service (USFS) Land and Resource Management Plans (LRMPs) and Bureau of Land Management (BLM) Resource Management Plans (RMPs) as amended by the Interim Strategy for Managing Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana and Portions of Nevada (INFISH) and the Interim Strategy for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH). In a letter dated June 15, 1998, which conveyed your biological assessment (BA) to the Service, your offices determined that implementation of the LRMPs and RMPs, as amended by the Records of Decision for PACFISH and INFISH, is likely to adversely affect the Columbia River and Klamath River distinct population segments (DPSs) of bull trout. No critical habitat has been designated for this

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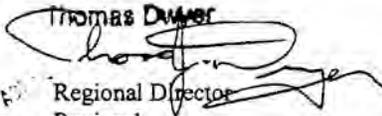
REGIONAL FORESTER

species, therefore, none was determined to be affected. The completed BA was received by the Service on June 16, 1998, with a request for formal consultation. A letter amending that BA was received by the Service on June 19, 1998, providing additional commitments as part of the proposed action.

Because this opinion deals with implementation of an ecosystem approach at the plan-level, this consultation does not address the specific effects of individual ongoing or future actions, therefore no incidental take authorization has been provided through this opinion. However, the Level 1 consultation teams, through the streamlined consultation process and guidance provided in the incidental take statement of this opinion, will evaluate effects of specific ongoing and future actions to bull trout and their habitats. Authorization of incidental take will be addressed during these subsequent consultations. The Service will strive to meet the time frames in the streamlining approach, but, due to staffing limitations, this may not always be feasible. The Service will continue to work with the USFS and BLM to develop consultation priorities and determine how to meet these priorities.

We look forward to continuing our work with your agencies in the cooperative spirit in which this process has been undertaken. If you have any questions regarding this opinion, please contact Ron Rhew (Oregon: 503-231-6179); Susan Martin (Idaho: 208-378-5243); Linda Hallock (Washington: 509-921-0160); or Kemper McMaster or Dale Harms (Montana: 406-449-5225).

Sincerely,


Thomas Dwyer
Regional Director
Region 1

encl.

cc: FWS (Reg. Director, Region 6, Denver, CO)
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FWS (R. Peterson - Portland, OR)
FWS (N. Gloman - Lacey, WA)

BIOLOGICAL OPINION

for the

Effects to Bull Trout from Continued Implementation of Land and Resource Management Plans and Resource Management Plans as Amended by the Interim Strategy for Managing Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana, and Portions of Nevada (INFISH), and the Interim Strategy for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH).

Agencies

U.S. Forest Service (Regions 1,4, and 6)
Bureau of Land Management (OR, WA, ID, MT)

Consultation Conducted

by

U.S. Fish and Wildlife Service (Regions 1 and 6)

BIOLOGICAL OPINION
for the

Effects to Bull Trout from Continued Implementation of Land and Resource Management Plans and Resource Management Plans as Amended by the Interim Strategy for Managing Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana, and Portions of Nevada (INFISH), and the Interim Strategy for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH).

Agencies: U.S. Forest Service (Regions 1,4, and 6)
Bureau of Land Management (OR, WA, ID, MT)

Consultation Conducted By: U.S. Fish and Wildlife Service (Regions 1 and 6)

Date Issued: AUG 14 1992

Approved By: 
Regional Director, Region 1


Deputy Regional Director, Region 6

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Biological Opinion
for the
EFFECTS TO BULL TROUT FROM CONTINUED IMPLEMENTATION OF LAND AND
RESOURCE MANAGEMENT PLANS AND RESOURCE MANAGEMENT PLANS AS
AMENDED BY THE INTERIM STRATEGY FOR MANAGING FISH-PRODUCING
WATERSHEDS IN EASTERN OREGON AND WASHINGTON, IDAHO, WESTERN
MONTANA, AND PORTIONS OF NEVADA (INFISH), AND THE INTERIM STRATEGY
FOR MANAGING ANADROMOUS FISH-PRODUCING WATERSHEDS IN EASTERN
OREGON AND WASHINGTON, IDAHO, AND PORTIONS OF CALIFORNIA (PACFISH).

INTRODUCTION

The U.S. Fish and Wildlife Service (Service) has reviewed the biological assessment (BA) addressing effects to the threatened bull trout (*Salvelinus confluentus*) from continued implementation of U.S. Forest Service (USFS) Land and Resource Management Plans (LRMPs) and Bureau of Land Management (BLM) Resource Management Plans (RMPs) as amended by the Interim Strategy for Managing Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, Western Montana and Portions of Nevada (INFISH: USDA and USDI 1995a) and the Interim Strategy for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH: USDA and USDI 1995b). A June 15, 1998 request for consultation from the USFS and BLM was received on June 16, 1998. Activities administered by the USFS are carried out under the existing direction of LRMPs. BLM activities are administered under the direction of RMPs or Management Framework Plans. For convenience, all plan documents are referred to in this document as LRMPs.

This document represents the Service's biological opinion (BO) on the effects of continued implementation of the LRMPs as amended by PACFISH and INFISH on listed bull trout in accordance with section 7 of the Endangered Species Act of 1973, as amended (ESA)(16 U.S.C. 1531 et seq.). This BO is based on the information provided in the June 15, 1998 BA (USDA and USDI 1998a) and a June 19, 1998 letter amending the BA (USDA and USDI 1998b). In the BA, the USFS and BLM determined that the action is not likely to jeopardize the continued existence of the listed species, but that it may affect and likely adversely affect the bull trout. No critical habitat has been designated for this species, therefore, none was determined to be affected.

In addition to the information contained in the BA, the best available information from several other sources was used in this analysis. A list of those sources is included in Appendix I. A complete administrative record of this consultation is on file in the Service's Oregon State Office, 2600 S.E. 98th Avenue, Suite 100, Portland, Oregon 97266.

The BA and transmittal letter also requested consultation on the effects of the LRMPs on proposed critical habitat for the Lost River (*Deltistes luxatus*) and shortnose suckers (*Chasmistes brevirostris*). However, the Service, USFS and BLM subsequently agreed to confine this opinion to bull trout, and evaluate the effects to proposed critical habitats for the two sucker

species in a separate conference opinion to be prepared at a later date. In addition, the analysis in the BA addressed the effects of the LRMPs on the Jarbidge River population of bull trout, which was proposed for listing as threatened on June 10, 1998 (USDI 1998b). Conferencing on bull trout for this DPS will also be addressed in a separate conference opinion.

In a separate plan-level programmatic BO, the Service is providing similar analyses of the effects of continued implementation of the USFS LRMPs and BLM RMPs, as amended by the Northwest Forest Plan Record of Decision (USDA and USDI 1994).

I. BACKGROUND/CONSULTATION HISTORY

The bull trout was proposed for listing as threatened in the Columbia River Basin and endangered in the Klamath River Basin on June 13, 1997 (USDI 1997). The final rule listing the Klamath and Columbia River Basin distinct population segments (DPSs) of bull trout as threatened was published on June 10, 1998 (USDI 1998a). The effective date of the listing was July 10, 1998.

Section 7 regulations (50 CFR §402.16) require reinitiation of formal consultation where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and a new species is listed or critical habitat designated that may be affected by the action. This BO addresses the effects of continued implementation of the LRMPs as amended by PACFISH and INFISH standards and guidelines where listed DPSs of bull trout occur in Idaho, Montana, Oregon, and Washington.

II. BIOLOGICAL OPINION

DESCRIPTION OF THE PROPOSED ACTION

Recent decisions by the USFS and BLM have resulted in the addition of interim aquatic strategies to LRMPs within the geographic range of the Columbia and Klamath River bull trout DPSs. Forests and BLM Districts with anadromous fish have modified their LRMPs either through amendment (USFS) or instruction memorandum (BLM) by the PACFISH. The USFS, through the INFISH, amended LRMPs where PACFISH was not already in place. The BLM, via instructional memoranda, applied INFISH direction to bull trout watersheds. The agencies also consult on site-specific actions conducted under the direction of the LRMPs that may affect listed species. This BO addresses LRMPs, as modified by PACFISH and INFISH, for the Columbia and Klamath River bull trout DPSs. Additional features of the proposed action were provided by letter dated June 19, 1998 (USDA and USDI 1998b) and considered as part of the proposed action. Among the DPSs, this BO considers the effects to bull trout from 24 USFS and 16 BLM LRMPs in the states of Washington, Oregon, Idaho, Montana, and Nevada.

Purpose and Function of LRMPs

Within the range of the DPSs of bull trout, LRMPs provide direction and standards for broad classes of project activities and land and water management practices that may affect bull trout. LRMPs provide policy guidance for various federal activities carried out on the forest or

management area. While all of the USFS and BLM administrative units implement many of the same land-use practices, the level of activities and outputs will vary depending on local conditions. Although LRMPs set important parameters for authorization of specific projects, with some exceptions, LRMPs do not themselves authorize the projects. Actual authorization of projects depends on analysis of site-specific effects, and consistency with appropriate management direction and applicable legal requirements.

The action area encompasses all or parts of the following National Forests (NF) of the USFS, and Resource Areas (RA) of the BLM for the Columbia River and Klamath River DPSs of bull trout (USDA and USDI 1998a). These are:

Agency	DPS	Administrative unit (region or state)
USFS	Columbia River	Colville NF, Deschutes NF, Malheur NF, Ochoco NF, Okanogan NF, Umatilla NF, Wallowa-Whitman NF, Wenatchee NF, and Columbia River Gorge National Scenic Area (Pacific Northwest Region); Bitterroot NF, Clearwater NF, Flathead NF, Helena NF, Kootenai NF, Lolo NF, Beaverhead-Deerlodge NF, Idaho Panhandle NF, Nez Perce NF (Northern Region); Boise NF, Payette NF, Salmon-Challis NF, Sawtooth NF (Intermountain Region)
	Klamath River	Fremont NF, Winema NF (Pacific Northwest Region)
BLM	Columbia River	Baker RA, Central Oregon RA, Deschutes RA, Three Rivers RA, Malheur RA, Border RA, Wenatchee RA, (Washington-Oregon); Cascade RA, Cottonwood RA, Emerald Empire RA, Shoshone RA, Big Butte RA, Lemhi RA, Challis RA (Idaho); Garnet RA (Montana)
	Klamath River	Klamath Falls RA (Washington-Oregon)

LRMPs provide direction and standards for a large variety of projects and types of activities, including forest management, recreation, range management, mining, watershed restoration, fish and wildlife habitat management, fire and fuels management, land exchanges and acquisitions, and a variety of special uses. Specific actions associated with these program activities are described below.

Forest management generally consists of two categories of activities: timber harvest and associated actions, and silvicultural treatments used to develop desirable stand characteristics. Timber harvest and associated actions can include: road construction, landing construction, renovation and use, including quarry operation; yarding and skidding logs; clear-cutting or thinning treatments; salvage of dead or dying trees, and maintenance of existing roads. Road maintenance includes surface maintenance (blading), surface replacement, drainage maintenance and repair, vegetation management (brushing, limbing, seeding and mulching along roadways),

slide repair, sign maintenance and repair, and maintenance, replacement and repair of major structures (bridges and major culverts). Silvicultural treatments include planting, prescribed burning, plantation maintenance and release (density management, precommercial thinning and control of competing vegetation), animal damage control, and fertilization.

Recreation consists of activities that provide for a wide range of developed and dispersed recreational opportunities. Developed recreation actions include campground maintenance, and recreation site and trail construction/maintenance. Dispersed activities include general public use of Federal lands (hunting, fishing, camping, hiking, etc), environmental education, and management of off-highway vehicles.

Range management activities on Federal lands include livestock grazing, and rangeland improvements (fencing, water development, livestock handling facilities, and vegetation management). Noxious weed control programs may be implemented in association with range management or other actions, such as silvicultural treatments.

Mining consists of two broad categories based on the method of extraction. Surface mining includes dredging, dispersed gold panning, and pit mining while underground mining utilizes tunnels or shafts to extract minerals. Activities associated with mining include roads and supporting structures and facilities, hazardous chemicals, water use and treatment.

Watershed restoration actions on Federal lands are an integral part of management to aid in the recovery of watershed health and water quality. Road decommissioning, road drainage improvement, surfacing, culvert upgrades, and sediment source stabilization through seeding and planting are typical restoration actions.

Fish and wildlife management actions on Federal lands may include stream and riparian habitat surveys; surveys for fish (smolt traps, snorkling, spawning ground counts, electrofishing), amphibians, and fish habitat projects such as direct habitat improvements to increase habitat complexity, riparian planting, channel and bank stabilization, and fish passage improvements. Typical wildlife management activities include winter range burning, access management, snag management, tree topping and falling, and water developments.

Fire and fuels management actions include the suppression of wildfire and prescribed fire used to meet resource management objectives. Prescribed burning is used for fuels management for wildfire hazard reduction (underburning), restoration of desired vegetation conditions, management of habitat and silvicultural treatments, i.e., site preparation (broadcast burning or pile burning). Pump chances, or water withdrawal sites, are created as water sources for fire suppression. Usually located next to roads, these sites are typically small excavated ponds or short spurs for vehicle access to streams or lakes.

Land exchanges and acquisitions are made to benefit a variety of uses and values. Land tenure adjustments are made to improve public access, acquire important habitats or resources and improve the efficiency of managing Federal lands.

Because Federal lands are a source of forest products for domestic and commercial uses, a

variety of special uses occur on Federal lands. Some products include Christmas trees, firewood, mushrooms, ferns, boughs, mosses and similar products. Both the USFS and BLM administrative units issue permits for the collection of these products.

The USFS and BLM also issue a variety of permits for the use of Federal lands. Permits may be issued for utility and powerline corridors, communications sites, domestic and municipal water lines and diversions, and hydroelectric facilities. Road use permits are issued to allow for the transportation of commercial commodities on FS and BLM managed roads. Road right-of-ways are issued to private individuals and companies for the construction and use of access roads across Federal lands.

Because a wide variety of activities and projects are directed by the amended LRMPs, and many of these require interdisciplinary team development, watershed analysis, compliance with the National Forest Management Act (NFMA) and National Environmental Policy Act (NEPA) and other analysis and documentation before they can proceed, it is not the Service's intent to fully evaluate effects of individual projects in this BO. This BO focuses primarily (and necessarily quite broadly) on the land management direction, standards and guidelines (S&Gs), objectives, assumptions, and major components of LRMPs, PACFISH and INFISH ACS components, and individual LRMP standards that may affect bull trout. Individual projects that may affect bull trout are subject to Endangered Species Act requirements, and will be addressed as agreed to in the January 27, 1998 letter of direction.

Amended LRMP Direction For PACFISH and INFISH

PACFISH and INFISH provide programmatic direction for management of lands administered by the USFS and BLM. Both are interim strategies intended to provide protection against extinction or further endangerment of fish stocks and to maintain long-term management options, such as those being considered by the Interior Columbia Basin Ecosystem Management Project (ICBEMP) Draft Environmental Impact Statement.

PACFISH and INFISH share similar goals, objectives, standards, and guidelines, which are collectively considered the ACS. For PACFISH, management direction is applied to all proposed and ongoing management activities for the mitigation of environmental effects relative to the ACS. Seven general components of the ACS are:

1. Establish riparian goals and objectives to maintain and restore fish habitat.
2. Delineate Riparian Habitat Conservation Areas (RHICAs).
3. Establish standards and guidelines for the management of RHICAs.
4. Establish criteria and process to designate key watersheds.
5. Establish criteria and process to guide watershed analysis.
6. Emphasize the need for watershed restoration actions
7. Establish requirements for effectiveness and implementation monitoring.

Similar components are included in INFISH. However, application of PACFISH and INFISH strategies differs between the USFS and BLM. For the USFS, the strategies are amended to

regional guides and LRMPs, whereas the BLM addresses the strategies through instruction memoranda for individual states.

LRMP Protections that Exceed Plan Standards

Some USFS and BLM administrative units had existing LRMP management direction specific to aquatic resources that was more stringent than that contained in the INFISH and PACFISH ACS. Based on USDA and USDI (1998a), the majority of the National Forests (16) reported standards and guidelines or specific management direction that were more stringent than those provided by amendment with the ACS. These specific measures came about either through actions implemented to benefit other threatened, endangered or sensitive species, such as salmon and grizzly bear, or specific standards for aquatic habitat management. The majority of the BLM administrative units that responded to requests indicated no specific standards or guidelines more stringent than exists in LRMPs amended by the aquatic strategies. Those BLM units reporting more restrictive management guidelines (4) indicated they were a result of specific management area plans prior to the implementation of the ACS and measures brought about through consultation for listed salmon stocks.

ACS Strategy - Components and Objectives

The ACS strategy includes aspects designed to provide for protection of aquatic species and their habitats.

- I. Riparian Goals—Riparian goals establish an expectation of the characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. Because the quality of water and fish habitat in aquatic systems is inseparably related to the integrity of upland and riparian areas within the watersheds, the goals encompass both aquatic and terrestrial processes. The goals are to maintain or restore:
 - (1) water quality, to a degree that provides for stable and productive riparian and aquatic ecosystems;
 - (2) stream channel integrity, channel processes, and the sediment regime (including the elements of timing, volume, and character of sediment input and transport) under which the riparian and aquatic ecosystems developed;
 - (3) instream flows to support healthy riparian and aquatic habitats, the stability and effective function of stream channels, and the ability to route flood discharges;
 - (4) natural timing and variability of the water table elevation in meadows and wetlands;
 - (5) diversity and productivity of native and desired non-native plant communities in riparian zones;
 - (6) riparian vegetation, to:
 - (a) provide an amount and distribution of large woody debris characteristic of natural aquatic and riparian ecosystems;
 - (b) provide adequate summer and winter thermal regulation within the riparian and aquatic zones; and
 - (c) help achieve rates of surface erosion, bank erosion, and channel migration characteristic of those under which the communities developed.

- (7) riparian and aquatic habitats necessary to foster the unique genetic fish stocks that evolved within the specific geo-climatic region; and
 - (8) habitat to support populations of well-distributed native and desired non-native plant, vertebrate, and invertebrate populations that contribute to the viability of riparian-dependent communities.
2. Riparian Management Objectives (RMOs)--In the development of PACFISH, landscape-scale interim RMOs describing good habitat for anadromous fish were developed, using stream inventory data for pool frequency, large woody debris, bank stability and lower bank angle, and width to depth ratio. Applicable published and unpublished scientific literature was used to define favorable water temperatures. All of the described features may not occur in a specific segment of stream within a watershed, but all generally should occur at the watershed scale for stream systems of moderate to large size (3rd to 6th order streams).

This material was reviewed in regard to its applicability to inland native fish. It has been determined that the RMOs described in PACFISH are good indicators of ecosystem health. The analysis that led to development of the RMOs involved watersheds in Oregon, Washington, and Idaho that include inland native fish as well as anadromous fish. With the exception of the temperature objective, which has been modified, the RMOs represented a good starting point to describe the desired condition for fish habitat.

Under INFISH, these interim RMOs apply where watershed analysis has not been completed. The components of good habitat can vary across specific geographic areas. Interim RMOs are considered to be the best watershed scale information available; Federal land managers are encouraged to establish site-specific RMOs through watershed analysis or site-specific analysis.

RMOs should be refined to better reflect conditions that are attainable in a specific watershed or stream reach based on local geology, topography, climate, and potential vegetation. Establishment of RMO's requires completion of watershed analysis to provide the ecological basis for the change. However, interim RMOs may be modified by amendment in the absence of watershed analysis where watershed or stream reach specific data support the change. In all cases, the rationale supporting RMOs and their effects are documented.

The interim RMOs for stream channel conditions provide the criteria against which attainment or progress toward attainment of the riparian goals is measured. Interim RMOs provide the target toward which managers aim as they conduct resource management activities across the landscape. It is not expected that the objectives would be met instantaneously, but rather would be achieved over time. However, the intent of interim RMOs is not to establish a ceiling for what constitutes good habitat conditions. In addition, interim RMOs are meant to lead to watershed specific RMOs developed through watershed analysis. Actions that reduce habitat quality, whether existing conditions are better or worse than objective values, would be inconsistent with the purpose of this interim direction. Without the benchmark provided by measurable

RMOs, habitat may suffer continual erosion.

As indicated below, some of the objectives would apply to only forested ecosystems, some to non-forested ecosystems, and some to all ecosystems regardless of whether or not they are forested. Objectives for relevant environmental features have been identified, including one key feature and five supporting features. These features are good indicators of ecosystem health, are quantifiable, and are subject to accurate, repeatable measurements. They generally apply to 3rd to 6th order watersheds.

Under the ACS, interim RMOs would apply to watersheds occupied by anadromous and inland native fish. Application of the interim RMOs would require thorough analysis. That is, if the objective for an important feature such as pool frequency is met or exceeded, there may be some latitude in assessing the importance of the objectives for other features that contribute to good habitat conditions. For example, in headwater streams with an abundance of pools created by large boulders, fewer pieces of large wood might still constitute good habitat. The goal is to achieve a high level of habitat diversity and complexity through a combination of habitat features to meet the life-history requirements of the fish community inhabiting a watershed. Specific RMOs address pool frequency that varies by channel width, water temperature, large woody debris, bank stability, lower bank angle, and stream width/depth ratio, as examples.

3. Riparian Habitat Conservation Areas (RHCAs)--Interim RHCAs would be delineated in every watershed on USFS and BLM lands within the geographic range of bull trout. RHCAs are portions of watersheds where riparian-dependent resources receive primary emphasis, and management activities are subject to specific S&Gs. RHCAs 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 (Naiman et al. 1992).

The RHCAs under the ACS strategy would be nearly identical to those under the Idaho Conservation Strategy (Idaho Department of Fish and Game (IDFG) 1995). The main difference is that, under the Idaho Conservation Strategy, RHCAs would apply only in key watersheds. However, since their key watersheds are large and cover much of the National Forest System lands in Idaho, there would be little difference between the two strategies in regard to RHCAs in Conservation Areas within occupied bull trout habitat.

Widths of interim RHCAs that are adequate to protect streams from non-channelized sediment inputs should be sufficient to provide other riparian functions, including delivery of organic matter and woody debris, stream shading, and bank stability (Brazier and Brown 1973, Gregory et al. 1984, Steinblums et al. 1984, Beschta et al. 1987, McDade et al. 1990, Sedell and Beschta 1991, Belt et al. 1992). The effectiveness of riparian conservation areas in influencing sediment delivery from non-channelized flow is highly variable. A review by Belt et al. (1992) of studies in Idaho (Haupt 1959a, 1959b; Ketcheson and Megehan 1996; Burroughs and King 1985, 1989; and elsewhere (Trimble

and Sartz 1957, Packer 1967, Swift 1986) concluded that non-channelized sediment flow rarely travels more than 300 feet and that 200-300 foot riparian "filter strips" are generally effective at protecting streams from sediment from non-channelized flow.

Interim RHCA widths apply where watershed analysis has not been completed. Site-specific widths may be increased where necessary to achieve riparian management goals and objectives, or decreased where interim widths are not needed to attain RMOs or avoid adverse effects. Establishment of RHCAs would require completion of watershed analysis to provide the ecological basis for the change. However, interim RHCAs may be modified by amendment in the absence of watershed analysis where stream reach or site-specific data support the change. In all cases, the rationale supporting RHCA widths and their effects are documented.

The standard widths of interim RHCAs fall into four categories of stream or water bodies:

Category 1 - Fish-bearing streams: Interim RHCAs consist of the stream and the area on either 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, including both sides of the stream channel), whichever is greatest.

Category 2 - Permanently flowing non-fish-bearing streams: Interim RHCAs consist of the stream and the area on either 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 flood plain, 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, including both sides of the stream channel), whichever is greatest.

Category 3 - Ponds, lakes, reservoirs, and wetlands greater than 1 acre: Interim RHCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or to the extent of the seasonally saturated soil, or to the extent of moderately and highly 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 maximum pool elevation of constructed ponds and reservoirs or from the edge of the wetland, pond or lake, whichever is greatest.

Category 4 - Seasonally flowing or intermittent streams, wetlands less than 1 acre, landslides, and landslide-prone areas: This category includes features with high variability in size and site-specific characteristics.

At a minimum, the interim RHCAs must include:

- a. the extent of landslides and landslide-prone areas;

- b. the intermittent stream channel and the area to the top of the inner gorge;
- c. the intermittent stream channel or wetland and the area to the outer edges of the riparian vegetation;
- d. for Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one site-potential tree, or 100 feet slope distance, whichever is greatest;
- e. for watersheds not identified as Priority Watersheds, the area from the edges of the stream channel, wetland, landslide, or landslide-prone area to a distance equal to the height of one-half site potential tree, or 50 feet slope distance, whichever is greatest.

In non-forested rangeland ecosystems, the interim RHCA width for permanently flowing streams in categories 1 and 2 is the extent of the 100-year flood plain.

4. Standards and Guidelines— S&Gs of the ACS apply to all RHCAs and to projects and activities in areas outside of RHCAs that would degrade conditions in RHCAs. The S&Gs address ten management issues in RHCAs and associated areas: timber management, roads management, grazing management, recreation management, minerals management, fire and fuels management, lands, general riparian area management, watershed and habitat restoration, and fisheries and wildlife restoration.

Timber Management

- TM-1. Prohibit timber harvest, including fuelwood cutting, in RHCAs, except as described below. Do not include RHCAs in the land base used to determine the Allowable Sale Quantity, but any volume harvested can contribute to the timber sale program.
- a. Where catastrophic events such as fire, flooding, volcanic, wind, or insect damage result in degraded riparian conditions, allow salvage and fuelwood cutting in RHCAs only where present and future woody debris needs are met, where cutting would not retard or prevent attainment of other Riparian Management Objectives, and where adverse effects on listed anadromous fish can be avoided. For watersheds with listed salmon or designated critical habitat, complete Watershed Analysis prior to salvage cutting in RHCAs.
 - b. Apply silvicultural practices for RHCA to acquire desired vegetation characteristics where needed to attain RMOs. Apply silvicultural practices in a manner that does not retard attainment of RMOs and that avoids adverse effects on listed anadromous fish.

Roads Management

- RF-1. Cooperate with Federal, Tribal, State, and county agencies, and cost-share partners to

achieve consistency in road design, operation, and maintenance necessary to attain RMOs.

- RF-2. For each existing or planned road, meet the RMOs and avoid adverse effects on listed anadromous fish by:
- a. completing Watershed Analyses prior to construction of new roads or landings in RHCA.
 - b. minimizing road and landing locations in RHCA.
 - c. initiating development and implementation of a Road Management Plan or a Transportation Management Plan. At a minimum, address the following items in the plan:
 1. Road design criteria, elements, and standards that govern construction and reconstruction.
 2. Road management objectives for each road.
 3. Criteria that govern road operation, maintenance, and management.
 4. Requirements for pre-, during-, and post-storm inspections and maintenance.
 5. Regulation of traffic during wet periods to minimize erosion and sediment delivery and accomplish other objectives.
 6. Implementation and effectiveness monitoring plans for road stability, drainage, and erosion control.
 7. Mitigation plans for road failures.
 - d. avoiding sediment delivery to streams from the road surface.
 1. Outsloping of the roadway surface is preferred, except in cases where outsloping would increase sediment delivery to streams or where outsloping is infeasible or unsafe.
 2. Route road drainage away from potentially unstable stream channels, fills, and hillslopes.
 - e. avoiding disruption of natural hydrologic flow paths.
 - f. avoiding sidecasting of soils or snow. Sidecasting of road material is prohibited on road segments within or abutting RHCA in watersheds containing designated

critical habitat for listed anadromous fish.

- RF-3. Determine the influence of each road on the RMOs. Meet RMOs and avoid adverse effects on listed anadromous fish by:
- a. reconstructing road and drainage features that do not meet design criteria or operation and maintenance standards, or that have been shown to be less effective than designed for controlling sediment delivery, or that retard attainment of RMOs, or do not protect designated critical habitat for listed anadromous fish from increased sedimentation.
 - b. prioritizing reconstruction based on the current and potential damage to listed anadromous fish and their designated critical habitat, the ecological value of the riparian resources affected, and the feasibility of options such as helicopter logging and road relocation out of RHCA.
 - c. closing and stabilizing or obliterating, and stabilizing roads not needed for future management activities. Prioritize these actions based on the current and potential damage to listed anadromous fish and their designated critical habitat, and the ecological value of the riparian resources affected.
- RF-4. Construct new, and improve existing, culverts, bridges, and other stream crossings to accommodate a 100-year flood, including associated bedload and debris, where those improvements would/pose a substantial risk to riparian conditions. Substantial risk improvements include those that do not meet design and operation maintenance criteria, or that have been shown to be less effective than designed for controlling erosion, or that retard attainment of RMOs, or that do not protect designated critical habitat from increased sedimentation. Base priority for upgrading on risks to listed anadromous fish and their designated critical habitat and the ecological value of the riparian resources affected. Construct and maintain crossings to prevent diversion of streamflow out of the channel and down the road in the event of crossing failure.

- RF-5. Provide and maintain fish passage at all road crossings of existing and potential fish-bearing streams.

Grazing Management

- GM-1. Modify grazing practices (e.g., accessibility of riparian areas to livestock, length of grazing season, stocking levels, timing of grazing, etc.) that retard or prevent attainment of RMOs or are likely to adversely affect listed anadromous fish. Suspend grazing if adjusting practices is not effective in meeting RMOs and avoiding adverse effects on listed anadromous fish.
- GM-2. Locate new livestock handling and/or management facilities outside of RHCA. For existing livestock handling facilities inside the RHCA, assure that facilities do not prevent attainment of RMOs or adversely affect listed anadromous fish. Relocate or close facilities where these objectives cannot be met.

- GM-3. Limit livestock trailing, bedding, watering, salting, loading, and other handling efforts to those areas and times that will not retard or prevent attainment of RMOs or adversely affect listed anadromous fish.
- GM-4. Adjust wild horse and burro management to avoid impacts that prevent attainment of RMOs or adversely affect listed anadromous fish.

Recreation Management

- RM-1. Design, construct, and operate recreation facilities, including trails and dispersed sites, in a manner that does not retard or prevent attainment of the RMOs and avoids adverse effects on listed anadromous fish. Complete Watershed Analysis prior to construction of new recreation facilities in RHCA. For existing recreation facilities inside RHCA, assure that the facilities or use of the facilities will not prevent attainment of RMOs or adversely affect listed anadromous fish. Relocate or close recreation facilities where RMOs cannot be met or adverse effects on listed anadromous fish avoided.
- RM-2. Adjust dispersed and developed recreation practices that retard or prevent attainment of RMOs or adversely affect listed anadromous fish. Where adjustment measures such as education, use limitations, traffic control devices, increased maintenance, relocation of facilities, and/or specific site closures are not effective in meeting RMOs and avoiding adverse effects on listed anadromous fish, eliminate the practice or occupancy.
- RM-3. Address attainment of RMOs and potential effect on listed anadromous fish and designated critical habitat in Wild and Scenic Rivers, Wilderness, and other Recreation Management plans.

Minerals Management

- MM-1. Avoid adverse effects to listed species and designated critical habitat from mineral operations. If the Notice of Intent indicates a mineral operation would be located in a RHCA, or could affect attainment of RMOs, or adversely affect listed anadromous fish, require a reclamation plan, approved Plan of Operations (or other such governing document), and reclamation bond. For effects that cannot be avoided, such plans and bonds must address the costs of removing facilities, equipment, and materials; recontouring disturbed land to near pre-mining topography; isolating and neutralizing or removing toxic or potentially toxic materials; salvage and replacement of topsoil; and seed bed preparation and revegetation to attain RMOs and avoid adverse effects on listed anadromous fish. Ensure Reclamation Plans contain measurable attainment and bond release criteria for each reclamation activity.
- MM-2. Locate structures, support facilities, and roads outside RHCA. Where no alternative to siting facilities in RHCA exists, locate and construct the facilities in ways that avoid impacts to RHCA and streams adverse effects on listed anadromous fish. Where no alternative to road construction exists, keep roads to the minimum necessary for the approved mineral activity. Close, obliterate and revegetate roads no longer required for mineral or land management activities.

MM-3. Prohibit solid and sanitary waste facilities in RHCAs. If no alternative to locating mine waste (waste rock, spent ore, tailings) facilities in RHCA exists, and releases can be prevented and stability can be ensured, then:

- a. analyze the waste material using the best conventional sampling methods and analytic techniques to determine its chemical and physical stability characteristics.
- b. locate and design the waste facilities using the best conventional techniques to ensure mass stability and prevent the release of acid or toxic materials. If the best conventional technology is not sufficient to prevent such releases and ensure stability over the long term, prohibit such facilities in RHCA.
- c. monitor waste and waste facilities to confirm predictions of chemical and physical stability, and make adjustments to operations as needed to avoid adverse effects to listed anadromous fish and to attain RMOs.
- d. reclaim and monitor waste facilities to assure chemical and physical stability and revegetation to avoid adverse effects to listed anadromous fish and to attain the RMOs.
- e. require reclamation bonds adequate to ensure long-term chemical or physical stability and successful revegetation of mine waste facilities.

MM-4 For leasable minerals, prohibit surface occupancy within RHCA for oil, gas, and geothermal exploration and development activities where contracts and leases do not already exist, unless there are no other options for location and RMOs can be attained and adverse effects to listed anadromous fish can be avoided. Adjust the operating plans of existing contracts to (1) eliminate impacts that prevent attainment of RMOs and (2) avoid adverse effects to listed anadromous fish.

MM-5 Permit sand and gravel mining and extraction within RHCA only if no alternatives exist, if the action(s) will not retard or prevent attainment of RMOs, and adverse effects to listed anadromous fish can be avoided.

MM-6 Develop inspection, monitoring, and reporting requirements for mineral activities. Evaluate and apply the results of inspection and monitoring to modify mineral plans, leases, or permits as needed to eliminate impacts that prevent attainment of RMOs and avoid adverse effects on listed anadromous fish.

Fire/Fuels Management

FM-1. Design fuel treatment and fire suppression strategies, practices, and actions so as not to prevent attainment of RMOs, and to minimize disturbance of riparian ground cover and vegetation. Strategies should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function, listed anadromous fish, or designated critical habitat.

- FM-2. Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RHCA. If the only suitable location for such activities is within the RHCA, an exemption may be granted following a review and recommendation by a resource advisor. The advisor will prescribe the location, use conditions, and rehabilitation requirements, with avoidance of adverse effects to listed anadromous fish a primary goal. Use an interdisciplinary team, including a fishery biologist, to predetermine incident base and helibase locations during pre-suppression planning, with avoidance of potential adverse effects to listed anadromous fish a primary goal.
- FM-3. Avoid delivery of chemical retardant, foam, or additives to surface waters. An exception may be warranted in situations where overriding immediate safety imperatives exist, or, following a review and recommendation by a resource advisor, and a fishery biologist, when the action agency determines an escape fire would cause more long-term damage to anadromous fish habitats than chemical delivery to surface waters.
- FM-4. Design prescribed burn projects and prescriptions to contribute to the attainment of the RMOs.
- FM-5. Immediately establish an emergency team to develop a rehabilitation treatment plan to attain RMOs and avoid adverse effects on listed anadromous fish whenever RHCA are significantly damaged by a wildfire or a prescribed fire burning out of prescription.

Lands

- LH-1. Require instream flows and habitat conditions for hydroelectric and other surface water development proposals that maintain or restore riparian resources, favorable channel conditions, and fish passage, reproduction, and growth. Coordinate this process with the appropriate State agencies. During relicensing of hydroelectric projects, provide written and timely license conditions to the Federal Energy Regulatory Commission (FERC) that require fish passage and flows and habitat conditions that maintain/restore riparian resources and channel integrity. Coordinate relicensing projects with the appropriate State agencies.
- LH-2. Locate new hydroelectric ancillary facilities outside RHCA. For existing ancillary facilities inside the RHCA that are essential to proper management, provide recommendations to FERC to assure that the facilities will not prevent attainment of the RMOs and that adverse effects on listed anadromous fish are avoided. Where these objectives cannot be met, provide recommendations to FERC that such ancillary facilities should be relocated. Locate, operate, and maintain hydroelectric facilities that must be located in RHCA to avoid effects that would retard or prevent attainment of the RMOs and avoid adverse effects on listed anadromous fish.
- LH-3. Issue leases, permits, rights-of-way, and easements to avoid effects that would retard or prevent attainment of the RMOs and avoid adverse effects on listed anadromous fish. Where the authority to do so was retained, adjust existing leases, permits, rights-of-way, and easements to eliminate effects that would retard or prevent attainment of the RMOs or adversely affect listed anadromous fish. If adjustments are not effective, eliminate the

activity. Where the authority to adjust was not retained, negotiate to make changes in existing leases, permits, rights-of-way, and easements to eliminate effects that would prevent attainment of the RMOs or adversely affect listed anadromous fish. Priority for modifying existing leases, permits, rights-of-way, and easements will be based on the current and potential adverse effects on listed anadromous fish and the ecological value of the riparian resources affected.

- LH-4. Use land acquisition, exchange, and conservation easements to meet RMOs and facilitate restoration of fish stocks and other species at risk of extinction.

General Riparian Area Management

- RA-1. Identify and cooperate with Federal, Tribal, State and local governments to secure instream flows needed to maintain riparian resources, channel conditions, and aquatic habitat.
- RA-2. Trees may be felled in RHCA when they pose a safety risk. Keep felled trees on site when needed to meet woody debris objectives.
- RA-3. Apply herbicides, pesticides, and other toxicants, and other chemicals in a manner that does not retard or prevent attainment of RMOs and avoids adverse effects on listed anadromous fish.
- RA-4. Prohibit storage of fuels and other toxicants within RHCA. Prohibit refueling within RHCA unless there are no other alternatives. Refueling sites within a RHCA must be approved by the USFS or BLM and have an approved spill containment plan.
- RA-5. Locate water drafting sites to avoid adverse effects to listed anadromous fish and instream flows, and in a manner that does not retard or prevent attainment of RMOs.

Watershed and Habitat Restoration

- WR-1. Design and implement watershed restoration projects in a manner that promotes the long-term ecological integrity of ecosystems, conserves the genetic integrity of native species, and contributes to attainment of RMOs.
- WR-2. Cooperate with Federal, State, local, and Tribal agencies, and private landowners to develop watershed-based Coordinated Resource Management Plans (CRMPS) or other cooperative agreements to meet RMOs.
- WR-3. Do not use planned restoration as a substitute for preventing habitat degradation (i.e., use planned restoration only to mitigate existing prob not to mitigate the effects of proposed activities).

Fisheries and Wildlife Restoration

- FW-1. Design and implement fish and wildlife habitat restoration and enhance actions in a

manner that contributes to attainment of the RMOs.

- FW-2. Design, construct, and operate fish and wildlife interpretive and other user-enhancement facilities in a manner that does not retard or prevent attainment of the RMOs or adversely affect anadromous fish. For existing fish and wildlife interpretive and other user-enhancement facilities inside RHCA assure that RMOs are met and adverse effects on listed anadromous fish are avoided. Where RMOs cannot be met or adverse effects on listed anadromous fish avoided, relocate or close such facilities.
- FW-3. Cooperate with Federal, Tribal, and State wildlife management agencies to identify and eliminate wild ungulate impacts that prevent attainment of RMOs or adversely affect listed anadromous fish.
- FW-4. Cooperate with Federal, Tribal, and State fish management agencies to identify and eliminate adverse effects on native anadromous fish associated with habitat manipulation, fish stocking, fish harvest, and poaching.
- 5. Key and Priority Watersheds--Key and priority watersheds are important to "at risk" fish. These watersheds are considered to be currently in good condition, or have a high potential for restoration. Both key (PACFISH) and priority watersheds (INFISH) are equivalent in the ACS relative to bull trout.

In both PACFISH and INFISH, the ACS is designed to conserve fish populations by protecting and recovering aquatic habitat on Federal lands. All watersheds with listed anadromous fish or critical habitat for listed anadromous fish are designated as key watersheds in the PACFISH area. Therefore, the key watershed designations due to Federal listings under ESA include the Snake River salmon and steelhead Evolutionarily Significant Units (ESUs) and the Upper Columbia River steelhead ESU. The Middle Columbia River portion of the PACFISH area has no Federally listed anadromous fish, thus no key watershed designations. The INFISH priority watersheds were designated to protect and conserve inland native fish habitat and populations, although a priority was extended to bull trout populations within the INFISH area. As a result of this prioritization, priority watersheds are only located where bull trout are currently distributed.

The key or priority watershed networks were established for the conservation of habitat for anadromous fish or resident fish, specifically Federally listed salmon ESUs and bull trout populations for the PACFISH and INFISH, respectively. An analysis of the key and priority watershed networks within the DPSs or specific analysis areas addressed in the BA found the Federal land designated as key or priority watersheds ranges from 0 to 41 percent. The Columbia River and Klamath River bull trout DPSs have 41 and 20 percent of the Federal land designated as key or priority watersheds within their range, respectively.

- 6. Watershed Analysis Watershed analysis is a systematic procedure for determining how a watershed functions in relation to its physical and biological components. This is

accomplished through consideration of history, processes, landform, and condition.

Generally, watershed analysis would be initiated where the interim RMOs and the interim RHCAs widths do not adequately reflect specific watershed capabilities, or as required in the S&Gs before specific projects are initiated. The guidelines and procedural manuals being developed by the Interagency Watershed Analysis Coordination Team and other potentially relevant procedures (e.g., the Cumulative Watershed Effects Process for Idaho, etc.) would be considered and used, where appropriate, in development of a watershed analysis protocol. Eventually, any watershed analysis would follow the final guidance on "Ecosystem Analysis at a Watershed Scale, Federal Guide for Watershed Analysis" (often referred to as the "Federal Guide": USDA et al. 1995). Currently there are two memoranda available (dated November 1, 1995 and October 16, 1996) that include new information and modules to be used. In addition, there is a draft riparian module (February 1997) specific to intermittent streams, but which suggests use also on perennial streams. At this time, the modules that accompany the Federal Guide are optional and USFS and BLM units often opt to use different techniques of analysis, depending on their time frames and budgets for analysis.

Watershed analysis is a prerequisite for determining which processes and parts of the landscape affect fish and riparian habitat, and is essential for defining watershed-specific boundaries for RHCAs and for RMOs. Watershed analysis can form the basis for evaluating cumulative watershed effects; defining watershed restoration needs, goals and objectives; implementing restoration strategies; and monitoring the effectiveness of watershed protection measures, depending upon the issues to be addressed in the watershed analysis. Watershed analysis employs the perspectives and tools of multiple disciplines, especially geomorphology, hydrology, geology, aquatic and terrestrial ecology, and soil science. It is the framework for understanding and carrying out land use activities within a geomorphic context, and is a major component of the evolving science of ecosystem analysis.

Watershed analysis consists of a sequence of activities designed to identify and interpret the processes operating in a specific landscape. Since the concept of watershed analysis was first introduced, there has been much discussion as to the procedures and detail that a watershed analysis should complete. Under the Northwest Forest Plan, watershed analysis has been conducted, and there are varying levels of analysis completed in those analyses. It is recognized that the components and intensity of the analysis would vary depending on level of activity and significance of issues involved. Following are the general process steps for watershed analysis:

1. Characterization of the Watershed.
 - a. Place the watershed in a broader geographic context.
 - b. Highlight dominant features and processes within the watershed.
2. Identification of Issues and Key Questions.
 - a. Key questions and resource components.
 - b. Determine which issues are appropriate to analyze at this scale.

3. Description of Current Condition.
4. Description of Reference Conditions.
 - a. Establish ecologically and geomorphically appropriate reference conditions for the watershed.
5. Interpretation of Information.
 - a. Provide a comparison and interpretation of the current, historic, and reference conditions.
6. Recommendations.
 - a. Provide conclusions and recommendations to management.

The process described above is significantly streamlined to allow managers to focus watershed analysis to address specific issues and management needs. This can include modification of RMOs, RHCAs, or identification of restoration and monitoring needs. The state-of-the-art for watershed analysis is still developing and the processes are flexible.

7. Watershed Restoration--Watershed restoration comprises actions taken to improve the current conditions of watersheds to restore degraded habitat, and to provide long-term protection to natural resources, including riparian and aquatic resources.

The approach did not attempt to develop a restoration strategy given the short time period for implementation of the interim direction in the ACS. It was expected that land managers would utilize the information from watershed analysis and project development to initiate restoration projects where appropriate and funds were available. Priority watersheds have the highest priority for restoration efforts.

8. Monitoring Monitoring is an important component of the INFISH and PACFISH interim direction. The primary focus is to verify that the S&Gs are applied during the project implementation.

Monitoring to assess whether protective measures are effective to attain riparian goals and management objectives has been considered a lower priority given the initial, short time frame for the interim direction of the ACS. Complex ecological processes and long time frames are inherent in the RMOs, and that type of monitoring would not likely generate conclusive results within the initial 18 months the ACS was to be in place. Nevertheless, monitoring is a critical to component of the ACS. Land managers have been urged to utilize current monitoring efforts, and section 7 monitoring results from PACFISH areas where on the same land management unit to establish a baseline for determining the effectiveness of these S&Gs. Priority watersheds have the highest priority for monitoring efforts.

A third type of monitoring (validation monitoring) is intended to ascertain the validity of the assumptions used in developing the interim direction. Because of the initial,

short-term nature of the management direction, no specific requirements were included in the ACS for validation monitoring.

Summary of Management Area Categories

Each LRMP describes the level of goods and services provided with implementation. There is considerable variability between plans as to the level of production. Even within a single plan the range of goods and services is expected to vary with budget and natural changes in the capability of the land. In order to display the total level of goods and services represented by all the LRMPs in the BA, some of the geographic information system data themes developed for the ICBEMP Plan were used (USDA and USDI 1998a). The Management Area Categories (MACs) layer was developed for BLM and USFS lands within the project area in an effort to provide a consistent display of management direction and support assessing the overall effects on the ecosystem. The focus of the categories is to describe existing management direction. These categories were used to display current conditions and assess effects of planned management activities to the species covered in this assessment. Potential roadless areas and predicted road density data layers were also used as another indicator of management activity.

The eight MACs identified are:

1. Natural, Unmodified Environments
2. Special Natural Areas
3. Essentially Unmodified Forested and Grassland Ecosystems
4. Natural Appearing, but Modified for Human Use and Occupancy
5. Modified Forest Ecosystems
6. Modified Rangelands
7. Areas Modified by Human Occupation and Activities
8. Modified Non-Sustainable Areas

For the analysis in the BA, the eight categories were collapsed into three areas of management activities: Undeveloped Areas, categories 1, 2, and 3; Developed Areas, categories 4, 5, and 6; and Highly Developed Areas, categories 7 and 8. In order to assess effects, the management activity areas were then compared against species presence, represented by known strong and depressed populations of bull trout in the three DPSs. Bull trout were also compared against potential roadless areas, areas having no or very low predicted road density in contiguous blocks greater than 5,000 acres in size, and predicted road density categories.

Monitoring and Adaptive Management Provisions

A specific monitoring plan was developed as a part of the PACFISH decision (PACFISH Record of Decision, Appendix E-1 through E-12). This monitoring strategy was framed around three aspects of monitoring: 1) implementation monitoring to determine if the S&Gs are followed; 2) effectiveness monitoring to see if the implementation of S&Gs achieved the desired goals and objectives; and 3) validation monitoring to determine if there is a cause-and-effect relationship between management activities and the fish habitat being managed. A proposal for effectiveness monitoring was submitted by technical staff to the Regional Executives of the USFS and BLM in

June of 1995. The Regional Executives chose not to implement the effectiveness or validation monitoring portion of the plan. They did, however, recommend to the ICBEMP science team the effectiveness portion of the PACFISH plan for consideration in the ICBEMP monitoring package. An interagency implementation monitoring network was established in 1995 and was comprised of technical staff and line officers for the BLM, USFS, Service, and National Marine Fisheries Service (NMFS). Summary reports and individual site visit information are available for 1995, 1996, and 1997. The 1996 and 1997 PACFISH review also included a limited review of some INFISH areas.

The INFISH decision also stressed the importance of monitoring to ensure proper implementation and effectiveness of the S&Gs in the aquatic strategy. Instead of establishing a specific monitoring strategy, the Forests were "urged to utilize current Forest Plan monitoring efforts, and Section 7 monitoring results from PACFISH areas where on the same Forest..." (INFISH Record of Decision, Appendix A-15). A special request to the Forests for their monitoring results was initiated in January 1995. This request went to all INFISH Forests and was the only coordinated gathering of monitoring data for INFISH for all USFS units. In 1996, the Northern Region of the USFS requested monitoring data of its Forests and this data is also available. A similar request was not made in USFS Pacific Northwest and Intermountain Regions. No coordinated gathering of monitoring data was made for the BLM.

Provisions for adaptive management are not specifically addressed in either PACFISH or INFISH. Although existing data and data generated from forest plans and section 7 activities may be available for evaluation, the action does not provide for monitoring the efficacy or evaluating assumptions of activities implemented pursuant to the action. Moreover, the action does not provide a framework for identifying areas of uncertainty concerning management activities, formulating testable hypotheses, generating additional data for performing tests of hypotheses, and evaluating the results of the tests relative to the management activities.

Additional Agency Commitments

In a letter to the Service, the USFS and BLM adopted commitments in implementing the ACS and requested that they be amended to the BA for this action (USDA and USDI 1998b). The Service has included the commitments in developing this BO and they are summarized below:

1. Restoration and improvement: The USFS and BLM, in cooperation with the NMFS and the Service, will develop and implement strategies that will integrate and coordinate restoration, protection and evaluation measures (construction/maintenance, flood repair, watershed, and fish habitat improvements, etc.) to expeditiously achieve restoration objectives at multiple scales (DPS, metapopulation, watershed). Restoration opportunities will be identified through an agreed upon approach using existing funding, information and programs, and incorporating new information as it becomes available. Initial strategy development will be completed by March 1, 1999.
2. Standards and guidelines: The USFS and BLM will complete prior commitments in the PACFISH and INFISH decisions, and use the conclusions in the PACFISH/INFISH reviews and the land management plan BA for bull trout and suckers.

Prior commitments to be emphasized are:

- a. Road evaluation and Planning (PACFISH and INFISH) standards RF-2 and RF-3). Implementation of these existing standards in PACFISH/INFISH is necessary to understand and begin reducing impacts from roads on streams with habitat for ESA listed and proposed fish. Achievement of PACFISH/INFISH RF-2 and RF-3 will be a priority.
 - i) Using existing information and road definitions, the Service will be provided with road inventories on the management units in the three bull trout DPSs within 120 days of BO signature. This information should include a description of road definitions and survey methodology used. Information gaps will be identified and a schedule will be developed to provide information to the Service within two years.
 - ii) As part of watershed analyses, road inventories, and other appropriate information will be used to collaborate with NMFS and Service in developing restoration strategies. Restoration strategies will be used to identify key processes needing attention, prioritize key locations and project types, address implementation and scheduling issues and provide a preliminary estimate of costs. These strategies will serve as the primary framework for implementation of integrated restoration activities.
 - iii) continue updating the road inventories. Incorporate new information consistent with 2.a.i. (above).
 - b. To complete the commitments made in the aquatic strategies for culvert replacement, fish passage, grazing facilities in RHCAs, recreation facilities, and minerals management the implementation of these existing standards in PACFISH/INFISH are necessary to understand and begin reducing impacts from these management activities on streams with habitat for ESA listed and proposed fish. Achievement of PACFISH/INFISH RF-4 and RF-5, GM-2, RM-1, and MM-2 will be a priority.
3. Key and priority watershed networks: reexamine the structure and function of INFISH priority and PACFISH key watershed networks to ensure the protection and recovery of bull trout and listed sucker metapopulations.
- a) Identify and clarify the primary functions of key, priority, and special emphasis watershed.
 - b) Identify special emphasis watersheds (within 60 days of BO signature) to ensure a comprehensive refugia network for the protection and recovery of bull trout and listed suckers.
 - c) Completing watershed analysis in existing INFISH priority watersheds, and special emphasis watersheds as identified in 3b above, is a priority (required in PACFISH and INFISH standards, TM-1, RF-2, RM-1). Project decisions will be guided by the results

of watershed analysis.

d. Priorities and schedules for watershed analysis will be developed concurrently with #1 (above) and updated annually.

4. Watershed analysis: Watershed analysis will be conducted according to “Ecosystem Analysis at the Watershed Scale”, Field Guide for Watershed Analysis, 1995, as updated (USDA et al. 1995). In general watershed analysis will not be project-driven but undertaken to generate an information base and recommendations for use in project planning.

5. Monitoring: To improve monitoring efforts, to make the level of monitoring commensurate with the level of on-the-ground activities, and to provide feedback on the effects of activities, the USFS and BLM will develop a mechanism for improved monitoring accountability and oversight. Interagency collaboration in the development of this mechanism is necessary to ensure a common understanding of expectations.

a. Consider NMF’S’ expectations for monitoring in the 1995 LRMP Opinion (section IX.I. and Appendix A-10), when updating the PACFISH monitoring strategy.

b. Activate the PACFISH interagency effectiveness monitoring subgroup including areas covered by INFISH, (within 120 days of signature) to develop a monitoring strategy including a range of monitoring alternatives commensurate with anticipated land management activity levels, funding, and staffing levels.

c. Incorporate INFISH areas into PACFISH implementation monitoring efforts.

d. Improve the current implementation monitoring process by expanding regional/state level USFS/BLM line officer involvement in PACFISH/INFISH implementation oversight and review.

6. Long-term Conservation and Recovery: USFS and BLM will use their authorities in carrying out programs for the conservation of endangered and threatened species as consistent with section 7(a)(1) of ESA.

a. Using PACFISH, INFISH, watershed analysis and other information, develop a conservation approach to protect and restore existing high quality habitats and the connectivity between them. The USFS and BLM will review existing roadless and low density areas (as defined in ICBEMP science assessment team) to assess their importance to listed species habitat.

b. As a foundation for the development of a long-term conservation and recovery strategy, the USFS and BLM will develop a mechanism for improved accountability and oversight to ensure PACFISH and INFISH direction is fully implemented. Interagency collaboration in the development of this mechanism is necessary to ensure a common understanding of expectations.

1. Provide a mechanism (within 120 days of signature), that ensures full implementation of programmatic aquatic conservation measures at all organizational levels for the bull trout and sucker species addressed in the BA.

2. Provide a strategy which will be used if funding or priorities prevent full implementation of the aquatic conservation measures. Annually, upon receipt of the initial budget, review the fiscal year priorities and program of work for attainment of fish conservation measures. Identify highest priority work for available funds and identify and document significant shortfalls in funding or staffing.

7. The USFS and BLM, in coordination with the Service, will complete section 7 consultation at the watershed level by May 1999. The watershed consultation will follow the approach agreed to in the January 27, 1998, letter of direction on bull trout conferencing, with modifications as agreed to by the agencies. After the effective date of the bull trout listing, and until the watershed consultations are completed, all ongoing and proposed actions must conform to INFISH and PACFISH guidelines and these seven commitments.

III. STATUS OF THE SPECIES

Listing History

On October 30, 1992, the Service received a petition to list the bull trout (*Salvelinus confluentus*) as an endangered species throughout its range. On June 6, 1994, the Service concluded that listing of bull trout throughout its range was not warranted due to unavailable or insufficient data regarding threats to, and status and population trends of, the species within Canada and Alaska. However, the Service determined that sufficient information on the biological vulnerability and threats to the species, along with higher priority listing efforts, were available to support a warranted but precluded finding to list the bull trout within the coterminous United States.

On November 1, 1994, a suit was filed in the Federal District Court of Oregon (Court) arguing that the warranted but precluded finding was arbitrary and capricious. The Service again issued the 12-month finding for the coterminous population of bull trout on June 12, 1995. On November 13, 1996, the Court issued an order and opinion remanding the original finding to the Service for further consideration, and included requirements that the Service limit its review to the 1994 Administrative Record. The reconsidered 12-month finding based on the 1994 Administrative Record was delivered to the Court on March 13, 1997. In that reconsidered 12-month finding, the Service concluded that the 1994 Administrative Record provided evidence of discreteness and significance for five DPSs: 1) Coastal/Puget Sound; 2) Klamath River; 3) Columbia River; 4) Jarbidge River; and 4) Saskatchewan River. Bull trout were delineated into distinct population segments because bull trout occur in widespread but fragmented habitats and have several life history patterns. In addition, the threats to the fish are diverse, and the quantity and quality of information regarding the population status and trends of bull trout varies greatly. The Columbia River population segment includes the entire Columbia River basin and all its tributaries, excluding the isolated bull trout populations found in the Jarbidge River in Nevada. The reconsidered 12-month finding based on the 1994 Administrative Record concluded that

listing was warranted for the Columbia River and Klamath River population segments, and not warranted for the Coastal/Puget Sound, Jarbidge River, and Saskatchewan River population segments.

In a stipulation between the Service and plaintiffs filed with the Court on April 11, 1997, the Service agreed to issue a proposed rule in 60 days to list the Klamath River population of bull trout as endangered and the Columbia River population of bull trout as threatened based solely on the 1994 record. The Service published the proposed rule on June 13, 1997 (USDI 1997). On June 10, 1998, the Service published the final rule listing the Klamath River and Columbia River DPSs as threatened (USDI 1998a), with an effective date of July 10, 1998.

Description

For years, the bull trout and Dolly Varden (*Salvelinus malma* Girard) were combined under one name, the Dolly Varden (*Salvelinus malma* Walbaum). In 1991, with the support of the American Fisheries Society, they were recognized as two distinct species. Two of the most useful characteristics in separating the two species are the shape and size of the head (Cavender 1978). The head of a bull trout is more broad and flat on top, being hard to the touch, unlike Dolly Varden. Bull trout have an elongated body, somewhat rounded and slightly compressed laterally, and covered with cycloid scales numbering 190-240 along the lateral line. The mouth is large with the maxilla extending beyond the eye and with well developed teeth on both jaws and head of the vomer (none on the shaft). Bull trout have 11 dorsal fin rays, 9 anal fins, and the caudal fin is slightly forked. Although they are often olive green to brown with paler sides, color is variable with locality and habitat. Their spotting pattern is easily recognizable showing pale yellow spots on the back, and pale yellow and orange or red spots on the sides. Bull trout fins are tinged with yellow or orange, while the pelvic, pectoral, and anal fins have white margins. Bull trout have no black or dark markings on the fins.

Status

The Service recognizes 141 subpopulations in the Columbia River DPS within Idaho, Montana, Oregon, and Washington with additional subpopulations in British Columbia. Bull trout in this DPS are threatened by habitat loss and degradation, passage restrictions at dams, and competition from non-native brook trout (*Salmo fontinalis*) and lake trout (*S. namaycush*).

The State of Washington classifies bull trout as a State Priority Species. This Priority designation is given to those wildlife species that are of concern due to their population status and their sensitivity to habitat alteration (Mongillo 1993). Oregon has classified the bull trout as a sensitive/critical species, whose existence is being threatened in Oregon (Oregon Department of Fish and Wildlife 1993; Oregon Department of Fish and Wildlife 1995). California listed bull trout as an endangered species in October 1980 (USDI 1998a), however, they are now considered to be extinct within California. The American Fisheries Society listed bull trout as a species of concern in all of its range (California, Idaho, Montana, Nevada, Oregon, Washington; Alberta and British Columbia) except Alaska, as a result of present or threatened destruction, modification, or curtailment of its habitat or range and introduction of exotic species (Williams et al. 1989). Bull trout have been categorized by some as an indicator species of forest and

ecosystem health, since many biologists believe bull trout to be particularly sensitive to environmental change (Mongillo 1993; Rieman and McIntyre 1993).

Rangewide, populations are generally isolated and remnant. Migratory life histories have been lost or limited throughout the range (Goetz 1994; Jakober 1995; Montana Bull Trout Scientific Group (MBTSG) 1998; Pratt and Huston 1993; Ratliff and Howell 1992; Rieman and McIntyre 1993, 1995) and fluvial bull trout populations in the upper Columbia River portion of the DPS appear to be nearly extirpated. Resident populations existing in headwater tributary reaches are isolated and generally low in abundance (Thomas 1992). Bull trout in Flathead Lake and Lake Pend Oreille appear to be declining, while the Swan Lake adfluvial population appears to be the healthiest remaining population and is increasing (USDI 1997). Generally, where status is known and population data exists, bull trout populations in the entire Columbia River DPS are declining (Thomas 1992; Pratt and Huston 1993; Schill 1992). Presently bull trout in the Columbia basin occupy about 45 percent of their estimated historic range (Quigley and Arbelbide 1997). Of the 141 subpopulations, 75 are at risk of natural extirpation through physical isolation. Many of the remaining bull trout occur as isolated subpopulations in headwater tributaries, or in tributaries where the migratory corridors have been lost or restricted. Few bull trout subpopulations are considered "strong" in terms of relative abundance and subpopulation stability. Those few remaining strongholds are generally associated with large areas of contiguous habitats such as portions of the Snake River basin in Central Idaho, the Upper Flathead Rivers in Montana, and the Blue Mountains in Washington and Oregon.

Historic and Current Distribution

The historic range of bull trout was restricted to North America (Cavender 1978; Haas and McPhail 1991). Bull trout have been recorded from the McCloud River in northern California, the Klamath River basin in Oregon and throughout much of interior Oregon, Washington, Idaho, western Montana, and British Columbia, and extending into Hudson Bay and the St. Mary's River in Saskatchewan.

Bull trout are believed to be a glacial relict (McPhail and Lindsey 1986), and their broad distribution has probably contracted and expanded periodically with natural climate change (Williams et al. 1997). Genetic variation suggests an extended and evolutionarily important isolation between populations in the Klamath and Malheur Basins and those in the Columbia River basin (Leary et al. 1993). Populations within the Columbia River basin are more closely allied and are thought to have expanded from common glacial refugia or to have maintained higher levels of gene flow among populations in recent geologic time (Williams et al. 1997).

Bull trout are now extinct in California and only remnant populations are found in much of Oregon (Ratliff and Howell 1992). A small population still exists in the headwaters of the Jarbidge River, Nevada, which represents the present southern limit of the species' range.

It is unlikely that bull trout occupied all of the accessible streams at any one time. Distribution of existing populations is often patchy even where numbers are still strong and habitat is in good condition (Rieman and McIntyre 1993, 1995). Habitat preferences or selection is likely important (Dambacher and Jones 1997; Goetz 1994; Rieman and McIntyre 1995) but more stochastic

extirpation and colonization processes may influence distribution even within suitable habitats (Rieman and McIntyre 1995).

Even though bull trout may move throughout entire river basins seasonally, spawning and juvenile rearing appear to be limited to the coldest streams or stream reaches. The lower limits of habitat used by bull trout are strongly associated with gradients in elevation, longitude, and latitude, that likely approximate a gradient in climate across the Basin (Goetz 1994). The patterns indicate that spatial and temporal variation in climate may strongly influence habitat available to bull trout (see Meisner 1990 for an example with another char). While temperatures are probably suitable throughout much of the northern portion of the range, predicted spawning and rearing habitat are restricted to increasingly isolated high elevation or headwater “islands” toward the south (Goetz 1994; Rieman and McIntyre 1995).

Life History Characteristics

Two distinct life-history forms, migratory and resident, occur throughout the range of bull trout (Pratt 1992; Rieman and McIntyre 1993). Migratory forms rear in natal tributaries before moving to larger rivers (fluvial form), lakes (adfluvial form), or the ocean (anadromous) to mature. Migratory bull trout may use a wide range of habitats ranging from 1st to 6th order streams and varying by season and life stage.

Most bull trout spawning occurs between late August and early November (McPhail and Murray 1979; Pratt 1992). Hatching occurs in winter or early spring, and alevins may stay in the gravel for extended periods. Growth is variable with different environments, but first spawning is often noted after age four, and the fish may live 10 or more years (Mc Phail and Murray 1979; Pratt 1992, Rieman and McIntyre 1993). Although spawning typically occurs in 2nd to 5th order streams, juveniles may move upstream of reaches used by adults for spawning, presumably to forage in other accessible waters (Fraley and Shepard 1989; Ratliff 1992). Seasonal movements by adult bull trout may range up to 300 kilometers (km) as migratory fish move from spawning and rearing areas into overwinter habitat in the downstream reaches of large basins (Bjornn and Mallet 1964; Fraley and Shepard 1989).

Habitat Requirements

Bull trout are sensitive to environmental disturbance at all life stages, and have very specific habitat requirements. Bull trout growth, survival, and long-term population persistence appear to be dependent upon five habitat characteristics: cover, channel stability, substrate composition, temperature, and migratory corridors (Rieman and McIntyre 1993). Cover includes undercut banks, large woody debris, boulders, and pools which are used as rearing, foraging and resting habitat, and protection from predators (USDI 1997). Deep pools also help minimize and moderate stream temperatures and offer refuge from warmer water temperatures during summer low-flow conditions. Stream temperatures and substrate types are especially important to bull trout.

Temperature

Cold water temperatures are required for successful bull trout spawning and development of embryos and juveniles; cold water temperature also influence the distribution of juveniles (Bjornn and Reiser 1991; Goetz 1989; McPhail and Murray 1979; Pratt 1992; Fraley and Shepard 1989). Bull trout are associated with the coldest stream reaches within basins.

Bull trout spawning typically occurs in areas influenced by groundwater (Allan 1980; Shepard et al. 1984; Ratliff 1992; Fraley and Shepard 1989). In a recent investigation in the Swan River drainage, bull trout spawning site selection occurred primarily in stream reaches directly influenced by groundwater upwellings or directly downstream of these upwelling reaches (Baxter and Hauer, *in prep.*). In addition, warmer summer stream temperatures, as well as extreme winter cold temperatures that can result in anchor ice, may be moderated by cold water upwellings.

In one study by Goetz (1994) juvenile bull trout were not found in water temperatures above 12 degrees Celsius (degrees C). Many studies show that temperatures must drop below 9 or 10 degrees C before spawning occurs (McPhail and Murray 1979; Riehle 1993). Egg survival decreases as water temperature increases, with higher survival levels documented at 2-4 degrees C (McPhail and Murray 1979). The best bull trout habitat in several Oregon streams have temperatures which seldom exceed 15 degrees C (Buckman et al. 1992; Ratliff 1992; Ziller 1992).

Fine Sediment

Preferred spawning habitat includes low gradient streams with loose, clean gravels (Fraley and Shepard 1989). Fine sediments fill spaces between the gravel that are needed by incubating eggs and fry. Because bull trout eggs incubate about seven months in the gravel they are especially vulnerable to fine sediments and water quality degradation (Fraley and Shepard 1989). Juveniles are similarly affected, as they also live on or within the stream bed cobble (Oliver 1979; Pratt 1984).

Bull trout are more strongly tied to the stream bottom and substrate than other salmonids (Pratt 1992). Substrate composition has repeatedly been correlated with the occurrence and abundance of juvenile bull trout (Rieman and McIntyre 1993) and spawning site selection by adults (Graham et al. 1981; McPhail and Murray 1979). Fine sediments can influence incubation survival and emergence success (Weaver and White 1985) but may also limit access to substrate interstices that are important cover during rearing and overwintering (Goetz 1994; Jakober 1995).

Migratory Corridors

Migratory bull trout ensure interchange of genetic material between populations, thereby promoting genetic variability. Unfortunately, migratory bull trout have been restricted or eliminated due to stream habitat alterations, including seasonal or permanent obstructions, detrimental changes in water quality, increased temperatures, and the alteration of natural stream flow patterns. Migratory corridors tie seasonal habitat together for anadromous, adfluvial, and fluvial forms, and allow for dispersal of resident forms for recolonization of recovering habitats (Rieman and McIntyre 1993). Dam and reservoir construction and operation have altered major

portions of bull trout habitat throughout the Columbia River Basin. Dams without fish passage create barriers to fluvial and adfluvial bull trout which isolates populations, and dams and reservoirs alter the natural hydrograph, thereby affecting forage, water temperature, and water quality (USDI 1997).

Channel Stability and Stream Flow

Bull trout are exceptionally sensitive to activities that directly or indirectly affect stream channel integrity. Juvenile and adult bull trout frequently inhabit areas of reduced water velocity, such as side channels, stream margins, and pools. These areas can be eliminated or degraded by management activities (Rieman and McIntyre 1993).

Bull trout are also sensitive to activities that alter stream flow. Incubation to emergence may take up to 200 days during winter and early spring. The fall spawning period and strong association of juvenile fish with stream channel substrates make bull trout vulnerable to flow pattern changes and associated channel instability (Fraley and Shepard 1989; Pratt 1992; Pratt and Huston 1993; Rieman and McIntyre 1993).

Patterns of stream flow and the frequency of extreme flow events that influence substrates are anticipated to be important factors in population dynamics (Rieman and McIntyre 1993). With overwinter incubation and a close tie to the substrate, embryos and juveniles may be particularly vulnerable to flooding and channel scour associated with the rain-on-snow events common in some parts of the range (Rieman and McIntyre 1993). Channel dewatering tied to low flows and bed aggradation has also blocked access for spawning fish resulting in year class failures (Weaver 1992).

Surface/groundwater interaction zones, which are typically selected by bull trout for redd construction, are increasingly recognized as having high dissolved oxygen; constant cold water temperatures; and increased macro-invertebrate production (R. Edwards, University of Washington, pers. comm. 1998).

IV. ENVIRONMENTAL BASELINE

Regulations implementing the ESA (50 CFR 402.02) define the environmental baseline as the past and present impacts of all Federal, state, or private actions and other human activities in the action area. Also included in the environmental baseline are the anticipated impacts of all proposed Federal projects in the action area which have undergone section 7 consultation, and the impacts of state and private actions which are contemporaneous with the consultation in progress. Such actions include, but are not limited to, previous timber harvests and other land management activities.

Status of the Species Within the Action Area

The Service evaluated the status and distribution of bull trout for each subpopulation in the Klamath River and Columbia River distinct population segments. The complete review of this evaluation is found in a status summary compiled by the Service (USDI 1998b), and a synopsis

of the summary is presented here.

To facilitate evaluation of current bull trout distribution and abundance for both the Klamath River and Columbia River DPSs, the Service analyzed data on bull trout relative to subpopulations because fragmentation and barriers have isolated bull trout throughout their current range. A subpopulation is considered a reproductively isolated group of bull trout that spawns within a particular area of a river system. In areas where two groups of bull trout are separated by a barrier (e.g., an impassable dam or waterfall, or reaches of unsuitable habitat) that allows only individuals upstream access to those downstream (i.e., one-way passage), both groups were considered subpopulations. In addition, subpopulations were considered at risk of extirpation from naturally occurring events if they were: 1) unlikely to be reestablished by individuals from another subpopulation (i.e., functionally or geographically isolated from other subpopulations); 2) limited to a single spawning area (i.e., spatially restricted); and either 3) characterized by low individual or spawner numbers; or 4) primarily of a single life-history form. For example, a subpopulation of resident fish isolated upstream of an impassable waterfall would be considered at risk of extirpation from naturally occurring events because the subpopulation had low numbers of fish that spawn in a restricted area. In such cases, a natural event such as a fire or flood affecting the spawning area could eliminate the subpopulation, and reestablishment from fish downstream would be prevented by the impassable waterfall. However, a subpopulation residing downstream of the waterfall would not be considered at risk of extirpation from naturally occurring events because there would be establishment potential by fish from the subpopulation upstream. Because resident bull trout may exhibit limited downstream movement (Nelson 1996), the Service's determination of subpopulations at risk of extirpation from naturally occurring events may overestimate the number of subpopulations that are likely to be reestablished.

The status of subpopulations was based on modified criteria of Rieman et al. (1997), including the abundance, trends in abundance, and the presence of life-history forms of bull trout. The Service considered a subpopulation "strong" if 5,000 individuals or 500 spawners likely occur in the subpopulation, abundance appears stable or increasing, and life-history forms were likely to persist; and "depressed" if less than 5,000 individuals or 500 spawners likely occur in the subpopulation, abundance appears to be declining, or a life-history form historically present has been lost. If there was insufficient abundance, trend, and life-history information to classify the status of a subpopulation as either "strong" or "depressed", the status was considered "unknown."

Based on abundance, trends in abundance, and the presence of life-history forms, bull trout were considered strong in 13 percent of the occupied range in the interior Columbia River basin (Quigley and Arbelbide 1997). Using various estimates of bull trout range, Rieman et al. (1997) estimated that bull trout were strong in 6 to 24 percent of the subwatersheds in the Columbia River basin. Bull trout declines have been attributed to the effects of land and water management activities, including forest management and road building, mining, agricultural practices, livestock grazing (Furniss et al. 1991; Meehan 1991; Nehlsen et al. 1991; Craig and Wissmar 1993; Frissell 1993; McIntosh et al. 1994; Platts et al. 1995); isolation and habitat fragmentation from dams and agricultural diversions (Rode 1990; Mongillo 1993; Jakober 1995); fisheries management practices, poaching and the introduction of non-native species (Rode 1990; Bond 1992; Howell and Buchanan 1992; Washington Department of Wildlife [WDW] 1992;

Donald and Alger 1993; Leary et al 1993; Pratt and Huston 1993; Rieman and McIntyre 1993; MBTSG 1996a; Palmisano and Kaczynski, Northwest Forest Resources Council (NFRC), *in litt.* 1997).

Klamath River Distinct Population Segment

Historical records suggest that bull trout were once widely distributed and exhibited diverse life-history traits in the Klamath River basin (Gilbert and Evermann 1894; Dambacher et al. 1992; Ziller 1992; Oregon Chapter of the American Fisheries Society (OCAFS) 1993). The earliest records of bull trout in the basin are from Fort Creek (formerly Linn Creek), a tributary to the Wood River (L. Dunsmoor and C. Bienz, Klamath Tribe, *in litt.* 1997). Records from the late 1800s suggest that migratory fish (adfluvial) inhabited Klamath Lake (OCAFS 1993). Other migratory bull trout (i.e., fluvial) were evidently present in some of the larger streams in the basin as recently as the early 1970s (Ziller 1992). Bull trout are thought to have been extirpated from the Sycan River, the South Fork of the Sycan River, and four streams in the Klamath River basin (Cherry, Sevenmile, Coyote, and Callahan creeks) since the 1970s.

Currently, bull trout in the Klamath River basin occur only as resident forms isolated in higher elevation headwater streams (Goetz 1989) within three watersheds: Upper Klamath Lake, Sprague River, and Sycan River (Light et al. 1996). Factors contributing to isolation include habitat degradation, water diversion, and habitat fragmentation (OCAFS 1993; Light et al. 1996). In addition, long distances separate each isolated subpopulation (Schroeder and Weeks, OCAFS, *in litt.* 1997). According to Light et al. (1996), bull trout occupy approximately 38.2 km (22.9 mi) of streams in the Klamath River basin. More recently, Buchanan et al. (1997) indicated that bull trout occupy approximately 34.1 km (20.5 mi) of streams. The risk of extinction for Klamath River bull trout over the next 100 years was recently estimated at 70 to 90 percent (K. Schroeder and H. Weeks, OCAFS, *in litt.* 1997). The Service identified seven bull trout subpopulations in three watersheds (number of subpopulations in each watershed): Upper Klamath Lake (2), Sycan River (1), and Sprague River (4). The Service considers six of the subpopulations at risk of extirpation caused by naturally occurring events due to their isolation, single life-history form and spawning area, and low abundance (USDI 1998a).

Columbia River Distinct Population Segment

The Columbia River DPS includes bull trout residing in portions of Oregon, Washington, Idaho, and Montana. Bull trout are estimated to have occupied about 60 percent of the Columbia River Basin, and presently occur in 4 percent of the estimated historical range (Quigley and Arbelbide 1997). The Columbia River population segment is composed of 141 subpopulations. For discussion and analysis, the Service considered four geographic areas of the Columbia River basin: 1) lower Columbia River (downstream of the Snake River confluence), 2) mid-Columbia River (Snake River confluence to Chief Joseph Dam), 3) upper Columbia River (upstream from Chief Joseph Dam), and 4) Snake River and its tributaries (including the Lost River drainage).

Lower Columbia River Geographical Area

The lower Columbia River area includes all tributaries in Oregon and Washington downstream of the Snake River confluence near the town of Pasco, Washington. The Service identified 20

subpopulations in watersheds of nine major tributaries of the lower Columbia River (number of subpopulations in each watershed): the Lewis River (2), Willamette River (3), White Salmon River (1), Klickitat River (1), Hood River (2), Deschutes River (3), John Day River (3), Umatilla River (2), and Walla Walla River (3). The present distribution of bull trout in the lower Columbia River basin is less than their historic range (Buchanan et al. 1997; Oregon Department of Fish and Wildlife (ODFW) 1993). Bull trout are thought to be extirpated from several tributaries in five river systems in Oregon: the Middle Fork Willamette River, the North and South Forks of the Santiam River, the Clackamas River, the upper Deschutes River (upstream of Bend, Oregon) and the Crooked River (tributary to the Deschutes River) (Buchanan et al. 1997).

Hydroelectric facilities and large expanses of unsuitable, fragmented habitat have isolated these subpopulations. Large dams, such as McNary, John Day, The Dalles, and Bonneville, separate four reaches of the lower Columbia River. Although fish may pass each facility in both upstream and downstream directions, the extent to which bull trout use the Columbia River is unknown. In addition, the nine major tributaries have numerous facilities, many of which do not provide upstream passage.

Migratory bull trout are present either with resident fish or exclusively in at least 13 of the 20 subpopulations in the lower Columbia River. Many migratory fish are adfluvial and inhabit reservoirs created by dams. However, this area includes the only extant adfluvial subpopulation in Oregon, which exists in Odell Lake in the Deschutes River basin (Ratliff and Howell 1992; Buchanan et al. 1997). The Metolious River-Lake Billy Chinook subpopulation is also found in the Deschutes River basin. It is the only subpopulation considered "strong" and exhibits an increasing trend in abundance. The Service considers 5 of the 20 subpopulations at risk of extirpation caused by naturally occurring events due to isolation, single life-history form and spawning area, and low abundance.

Mid-Columbia River Geographical Area

The mid-Columbia River area includes watersheds of four major tributaries of the Columbia River in Washington, between the confluence of the Snake River and Chief Joseph Dam. The Service identified 16 bull trout subpopulations in the four watersheds (number of subpopulations in each watershed): Yakima River (8), Wenatchee River (3), Entiat River (1), and Methow River (4). Historically, bull trout occurred in larger areas of the four tributaries and the Columbia River. Bull trout are thought to have been extirpated in 10 streams within the area: Satus Creek, Nile Creek, Orr Creek, Little Wenatchee River, Napecqua River, Lake Chelan, Okanogan River, Eightmile Creek, South Fork Beaver Creek, and the Hanford Reach of the Columbia River. Most bull trout in the mid-Columbia River geographic area are isolated by dams or unsuitable habitat created by water diversions.

Bull trout in the mid-Columbia River area are most abundant in Rimrock Lake of the Yakima River basin and Lake Wenatchee of the Wenatchee River basin. Both subpopulations are considered "strong" and either increasing or stable. The remaining 14 subpopulations are relatively low in abundance, exhibit "depressed" or unknown trends, and primarily have a single life-history form. The Service considers 10 of the 16 subpopulations at risk of extirpation because of naturally occurring events due to isolation, single life-history form and spawning area, and low abundance.

Upper Columbia River Geographic Area

The upper Columbia River geographic area includes the mainstem Columbia River and all tributaries upstream of Chief Joseph Dam in Washington, Idaho, and Montana. Bull trout are found in two large basins, the Kootenai River and Pend Oreille River, which include the Clark Fork River. Historically, bull trout were found in larger portions of the area. Numerous dams and degraded habitat have fragmented bull trout habitat and isolated fish into 71 subpopulations in 9 major river basins (number of subpopulations in each basin): Spokane River (1), Pend Oreille River (3), Kootenai River (5), Flathead River (24), South Fork Flathead River (3), Swan River (3), Clark Fork River (4), Bitterroot River (27), and Blackfoot River (1). Bull trout are thought to be extirpated in 64 streams and lakes of various sizes: Nespelam, Sanpoil, and Kettle rivers; Barnaby, Hall, Stranger, and Wilmont Creeks; 8 tributaries to Lake Pend Oreille; 5 tributaries to Pend Oreille River below Albeni Falls Dam; Lower Stillwater Lake; Arrow Lake (Montana); upper Clark Fork River, 12 streams in the Coeur d'Alene River basin; and approximately 25 streams in the St. Joe River basin (IDFG, *in litt.* 1995).

The upper Columbia River area contains “strongholds” for bull trout. Bull trout are considered strong in Hungry Horse Reservoir and Swan Lake. Trends in abundance are stable in Hungry Horse Reservoir, and increasing in Swan Lake. Although high numbers of bull trout are found in Lake Pend Oreille and the upper Kootenai River, trends in abundance are either negative or unknown. The high number of subpopulations (27) in the Bitterroot River basin, Montana, indicates a high degree of habitat fragmentation where numerous groups of resident bull trout are restricted primarily to headwaters. The Service considers 50 of the 71 subpopulations at risk of extirpation because of naturally occurring events due to isolation, single life-history form and spawning area, and low abundance.

Snake River Geographical Area

Bull trout occupy portions of 14 major tributaries in the Snake River basin of Idaho, Oregon, and Washington. The Service identified 34 bull trout subpopulations in the Snake River basin. The area consists of two primary portions separated by Hells Canyon Dam. Downstream of Hells Canyon Dam, major tributaries that support bull trout include (number of subpopulations in each tributary): Tucannon River (2), Clearwater River (3), Asotin Creek (2), Grande Ronde River (1), Imnaha River (4), and Salmon River (2). Upstream of Hells Canyon Dam, major tributaries that support bull trout include: Pine Creek (4), Powder River (3), Malheur River (2), Payette River (4), Weiser River (2), and Boise River (2). Although bull trout distribution upstream of Hells Canyon Dam is limited primarily to the basin downstream of Shoshone Falls in southern Idaho, three geographically isolated bull trout subpopulations occur upstream of Shoshone Falls in the Little Lost River drainage. Bull trout subpopulations upstream of Hells Canyon Dam are generally low in abundance, fragmented, and isolated. The current distribution of bull trout in the Snake River basin is less than historically (Ratliff and Howell 1992; Batt 1996; Buchanan et al. 1997; Quigley and Arbelbide 1997), with recent extirpations documented in Eagle Creek (Powder River basin) and Wallowa Lake (Grande Ronde River basin) (Ratliff and Howell 1992; Batt 1996; Buchanan et al. 1997); and possibly in South Fork Asotin Creek (WDFW 1997). Numerous impassable dams and large expanses of unsuitable habitat have isolated subpopulations within the historic range. Isolation is most prominent upstream of Hells Canyon Dam (southwest Idaho and southeast Oregon). The basin downstream of Hells Canyon Dam is

relatively intact, and connectivity among bull trout subpopulations may still occur.

Bull trout occupy large areas of contiguous habitat in the Snake River basin downstream of Hell's Canyon Dam, such as in the Clearwater River and Salmon River basins. High numbers of bull trout have been observed in the Tucannon River, Imnaha River, Clearwater River, Salmon River, and Malheur River subpopulations, however, trends in abundance are largely unknown or declining. The Service considers 10 of the 34 subpopulations at risk of extirpation because of naturally occurring events due to isolation, single life-history form and spawning area, and low abundance.

In summary, the Columbia River population segment of bull trout has declined in overall range and numbers of fish. Though still widespread, there have been numerous local extirpations reported throughout the Columbia River basin. In Idaho, for example, bull trout have been extirpated from 119 reaches in 28 streams (IDFG *in litt.* 1995). The population segment is composed of 141 subpopulations indicating habitat fragmentation, isolation, and barriers that limit bull trout distribution and migration within the basin. Although some strongholds still exist, bull trout, generally, occur as isolated subpopulations in headwater lakes or tributaries where migratory fish have been lost.

Threats to the Species

Forest Practices/Road Impacts: Perhaps the greatest threat to bull trout involving forest practices and roads stems from the ongoing and latent adverse effects caused by over a century of logging. Latent threats are illustrated by approximately 2,300 land slides correlated with high logging road density on national forest lands in the Clearwater and Spokane rivers basins during high runoff events in 1995 and 1996 (L. McLaud, Idaho Conservation League, *in litt.* 1997; R. Patten, Panhandle National Forest, *in litt.* 1997). The same runoff events also triggered an estimated 2,000 land slides on adjacent non-Federal timber lands in the Clearwater River basin (McLaud, Idaho Conservation League, *in litt.* 1997). On over half of the non-wilderness lands within National Forests across northern Idaho and western Montana, the environmental effects of past forest practices now constrain forest management (USFS map, *in litt.* 1994). For example, 70 percent of stream miles on the Wallowa-Whitman National Forest are degraded beyond LRMP standards for fine sediment and temperature parameters on the forest (Wissmar et al. 1994). On the Panhandle National Forest, Idaho, pool volumes, quality and frequency in managed watersheds (mainly watersheds with past timber extraction and road construction) were reduced compared to non-managed watersheds. Further, decreases in pool volume and frequency were correlated with decreases in the distribution and abundance of bull trout (Cross and Everest 1995). In the Lake Pend Oreille and Priest River basins of Idaho, 31 percent of streams in National Forest lands are degraded beyond LRMP standards, and 51 percent of streams are in the most degraded category (B. Kasun, USFS, *in litt.* 1993). Streams in the most degraded category generally do not support bull trout because of stream morphology changes, increased cobble embeddedness and high summer temperatures. Jones and Espinosa (1992) determined that 71 percent of the stream or watershed areas in the managed portion of the Clearwater National Forest, Idaho did not meet LRMP standards, and that streams in poor condition generally did not support bull trout. Similarly, 67 percent of the non-wilderness portion of the Nez Perce National Forest, Idaho did not meet LRMP standards, and streams in the most degraded category increased 12 percent over a five year period between 1987 and 1992 (Gloss and Gerhardt 1992).

In the Wenatchee National Forest, Washington, bull trout spawning and rearing is correlated with streams not subject to past timber harvest (Brown 1992). Timber harvest activities were responsible in the decline and isolation of bull trout in Pataha Creek, Washington (WDFW 1997), a tributary in the Tucannon River drainage. In the North Fork Boise River basin, Idaho, the majority of bull trout spawning and rearing habitat for the Arrowrock Reservoir subpopulation exists in the roadless headwaters of the Crooked, Bear, and North Fork Boise Rivers (USDA 1994).

The long-lasting effects of past timber management activities on aquatic habitats is illustrated by conditions in the 3,289 km² (1,270 mi²) South Fork Salmon River watershed, Idaho. The watershed was first logged in the 1940's and logging activity peaked in 1961 (Chapman et al. 1991). Sedimentation in the South Fork Salmon River increased approximately 350 percent above pre-logging levels (Chapman et al. 1991). Resident and anadromous salmonids, including bull trout, declined after timber extraction and associated road building. Despite a 25-year logging moratorium in the watershed, fish habitat has not returned to pre-logging quality, and salmon production has not recovered (Chapman et al. 1991).

A relationship between forest management, watershed conditions, aquatic habitat degradation, and loss of occupied bull trout range has been documented in the Spokane River basin, Idaho. Streambed aggradation and loss of pool habitat are attributed to forest management and associated roads in the basin (G. Kappesser, Panhandle National Forest, *in litt.* 1993). The loss of pool habitat correlates to reductions in bull trout range and abundance in managed watersheds (Cross and Everest 1995). Sixty-one percent of the basin's managed watersheds do not meet forest plan standards (B. Kasum, Panhandle National Forest, *in litt.* 1992).

The USFS classified watersheds in the Bitterroot National Forest, Montana, into three categories, "healthy," "sensitive," and "high risk" based on sediment yield from road construction and increased water yield and peak flow from timber harvest (Decker 1991 *in* MBTSG 1995a). About one third of all watersheds were assigned to each of the three categories. Bull trout with estimable numbers were found only in watersheds rated as "healthy" or "sensitive" (Clancy 1993). The effects of past forest practices, including road construction, continue to affect Bitterroot tributaries (MBTSG 1995a). Generally, bull trout numbers were higher where stream substrates were larger, but numbers tended to be lower in areas high in fine sediments (Clancy 1993). In contrast, habitat where brook trout, an introduced, non-native species that competes and hybridizes with bull trout, were found were characteristic of areas degraded by land use activities (Rich 1996). Eighty-five percent of the drainages classified as "high risk" supported brook trout (Clancy 1993).

Extensive logging activity has impaired water quality in many tributaries of the Blackfoot River, Montana, including the North Fork Blackfoot River (Montana Department of Health and Environmental Sciences (MDHES) 1994). Wide-spread canopy removal, alterations to riparian vegetation, and water irrigation returns have increased the historic temperature regime of the Blackfoot River (MBTSG 1995b; Pierce et al. 1997). Water temperatures in the mainstem Blackfoot frequently exceeded the bull trout preferred range of 15° C (60° F) in 1994, 1995 and 1996, making coldwater refuges during this time critical for bull trout (Pierce et al. 1997). The effect of forest practices was considered a limitation to bull trout restoration in the Blackfoot River drainage (MBTSG 1995b).

Timber management is the dominant land use in the Kootenai River watershed, Montana. Extensive road construction to support forestry activities exists throughout the watershed. Many reaches of streams in the Kootenai drainage have impaired water quality as a result of silviculture activities (MDHES 1994). As a result of salvage logging in 1996, the number of timber sales and clearcuts have substantially increased over the past three years (Kootenai National Forest 1997).

Past forest practices, including road construction, log skidding, riparian tree harvest, clearcutting, and splash dams, are considered a cause in the historic decline of bull trout and have limited restoration opportunities in the Flathead Lake basin (MBTSG 1995c). This basin supports over 30 subpopulations in wilderness, national park, national forest, and private lands of Montana. Because bull trout are sensitive to habitat and water quality degradation, Fraley and Shepard (1989) considered timber harvest and road construction in both the North and Middle Fork Flathead River drainages to be threats to bull trout spawning and rearing habitat. Although forest practices have improved, effects of past activities still affect bull trout because the existing road systems continue to erode, cause sedimentation, and increase water yield to streams. Silvicultural activities have contributed to 323.2 km (202 mi) in 17 streams being classified as water quality impaired in the Flathead basin (MDHES 1994). Existing roads in two National Forests of Idaho (Boise and Payette) created slides and slumps during 1997, a high water year. In some areas of Montana and Idaho, culverts that are passage barriers for bull trout, are being replaced at road crossings (P. Batt, Governor of Idaho, *in litt.* 1997; P. Graham, Montana Department of Fish, Wildlife and Parks (MFWP) and B. Clinch, Montana Department of Natural Resources and Conservation (MDNRC), *in litt.* 1997).

Much of the forest in the Klamath River basin has been managed for timber production, with substantial activity beginning in 1940. Extensive harvesting, including partial cutting with overstory removal, clearcutting, and selective logging for old-growth pine occurred on private lands, and low intensity harvest occurred on some of the USFS lands. Past forest management activities in the Klamath River basin have temporarily reduced riparian vegetative cover and increased water temperature in some streams, including Threemile Creek (Light et al. 1996). Roads were built in the basin for access to timber, causing increased sedimentation and substrate embeddedness. Sediment from existing roads continues to degrade stream habitat (Light et al. 1996). Weyerhaeuser Timber Company began an improved road maintenance program in 1994 to reduce sediment inputs from roads on its lands adjacent to occupied bull trout stream reaches in the Klamath River basin, and U.S. Timberlands is presently continuing the practice (B. Johnson, U.S. Timberlands, pers. comm. 1997). Two recent timber harvest activities occurred on U.S. Timberlands property along Boulder Creek in 1994 and Long Creek in 1995 (Johnson, U.S. Timberlands, pers. comm. 1997). A review of the activities concluded that leaving buffer strips and obliterating existing roads left the riparian habitat in better condition than before the timber harvest (B. Johnson, U.S. Timberlands, pers. comm. 1997). No timber harvests are currently planned for areas adjacent to streams occupied by bull trout. Six of the seven bull trout subpopulations identified in the Klamath River basin have been affected by past forest management practices.

In summary, forestry activities that adversely affect bull trout and its habitat are primarily timber extraction and road construction, especially where these activities affect riparian areas. These activities, when conducted without adequate protective measures, alter bull trout habitat by

increasing sedimentation, reducing habitat complexity, increasing water temperature, and promoting channel instability. Although certain forestry practices have been prohibited or altered in recent years to improve protection of aquatic habitats, the consequences of past activities continue to affect bull trout and their habitat. Within the Columbia River population segment, approximately 74 percent of bull trout subpopulations are threatened by forestry management practices.

Livestock Grazing: Occupied bull trout habitat is negatively affected by livestock grazing (Howell and Buchanan 1992; Mullan et al. 1992; Platts et al. 1993; R. Uberuaga, Payette National Forest, *in litt.* 1993; Henjum et al. 1994; MBTSG 1995a,b,d; USDA and USDI 1996, 1997a). Livestock grazing degrades aquatic habitat by removing riparian vegetation, destabilizing streambanks, widening stream channels, promoting incised channels and lowering water tables, reducing pool frequency, increasing soil erosion, and altering water quality (Platts 1981; Kauffman and Krueger 1984; Henjum et al. 1994; Overton et al. 1993). These effects increase summer water temperatures, reduce cover, promote formation of anchor ice in winter, and increase sediment into spawning and rearing habitats.

Livestock grazing impacts on bull trout habitat may be minimized if grazing is managed appropriately for conditions at a specific site. Practices generally compatible with the preservation and restoration of bull trout habitat may include fences to exclude livestock from riparian areas, rotation schemes to avoid overuse of areas, and stock tanks so that livestock concentrate outside of riparian areas for water.

Livestock grazing has caused habitat degradation in stream reaches supporting bull trout. On Squaw Creek, a tributary of the Payette River, Idaho, livestock grazing has damaged streambank and riparian vegetation. While fencing and grazing changes are underway to reduce impacts in this area, future damage from grazing will not be eliminated (M. Huffinan, Boise National Forest (BNF), *in litt.* 1997). Livestock grazing continues to affect bull trout habitat for spawning, rearing, and migration in Bear Valley Creek and its tributaries in the BNF, Idaho (T. Burton, BNF, pers. comm. 1997a). Livestock grazing was a factor in the decline of bull trout habitat in Pataha Creek, Washington (WDFW 1997). In Montana, severe overgrazing occurs in the Bitterroot River valley bottom streams and along the mainstem Clark Fork River in the Deerlodge valley, Flint Creek valley, and parts of Rock Creek, and limits bull trout restoration in these drainages (MBTSG 1995a,d; Maxell 1996). Overall, livestock grazing in portions of the Wieser, Grande Ronde, Imnaha, and Malheur rivers has degraded streamside habitat (Adams 1994; Buchanan et al. 1997). Of the 141 subpopulations the Service identified in the Columbia River population segment, approximately 50 percent were threatened by ongoing livestock grazing.

Intensive livestock grazing historically occurred throughout most of the Klamath River basin, and continues to be widespread (Light et al. 1996). Livestock grazing is a major land use within the Sprague River drainage, mostly in the lowland meadows and to a lesser extent in some forested areas. Grazing has been eliminated along bull trout streams on U.S. Timberlands property (B. Johnson, U.S. Timberlands, *in litt.* 1997) and adjacent National Forest lands. However, documented cattle trespass on Long and Deming creeks indicates that livestock continue to locally affect bull trout habitats (Light et al. 1996; Buchanan et al. 1997). The meadows in upper Long Creek exhibit bank instability and diminished availability of undercut

banks caused by livestock (Buchanan et al. 1997). Channelization and intense grazing by cattle degraded lower Sun Creek and an adjoining stream in the Klamath River basin and may have contributed to the extirpation of migratory bull trout in Sun Creek (Dambacher et al. 1992).

Agriculture: Agricultural practices, such as cultivation, irrigation, and chemical application can affect bull trout. Agriculture has been identified as a source of nonpoint source pollution in some areas within the range of bull trout (Washington Department of Ecology (WDE) 1992; MDHES 1994). These practices can release sediment, nutrients, pesticides and herbicides into streams, increase temperature, reduce riparian vegetation, and alter the hydrologic regime.

Irrigation diversions affect bull trout by altering stream flow and through entrainment and are discussed in more detail above. Bull trout may enter unscreened irrigation diversions and become stranded in ditches and agricultural fields. Streams are also channelized in some agricultural areas, reducing stream length and area of aquatic habitat, altering stream channel morphology, and diminishing aquatic habitat complexity.

Historical agricultural use in the Klamath River basin has had a profound effect on bull trout habitat in the larger tributaries and mainstem rivers (Buchanan et al. 1997). Channelization, water diversions, removal of streamside vegetation, and disturbances have altered the aquatic environment by elevating water temperature, reducing water quantity and quality, and increasing sedimentation (Light et al. 1996). Deming, Long, Threemile, and Sun Creeks have diversions immediately downstream of occupied bull trout habitat (Dunsmoor and Bienz, *in litt.* 1997). Unscreened diversions result in the transport of fish into irrigation canals (e.g., Deming and Sun creeks), often resulting in mortality (Light et al. 1996).

Approximately 47 percent of the bull trout subpopulations in the Columbia River population segment are affected by the past and ongoing effects from agricultural practices, including diversions. In 1988, the Idaho Department of Environmental Quality (IDEQ) conducted an assessment of nonpoint source pollution of the Salmon River basin. Of 4,080 km (2,550 mi) of streams assessed 1,374 km (859 mi) were affected by agricultural practices.

Dewatering of stream reaches as a result of irrigation has restricted bull trout migration and isolated bull trout into subpopulations. Examples include the Powder, Malheur, Grande Ronde, Umatilla, and John Day rivers in Oregon (Buchanan et al. 1997); the Tucannon, Snake, Yakima, Methow, and Walla Walla rivers in Washington (WDW 1992; WDFW 1997); the upper Salmon and Lemhi rivers in Idaho (Dorratcaque 1986; Chapman et al. 1991); and the Clark Fork, Blackfoot, and Bitterroot rivers in Montana (Clancy 1993; MBTSG 1995a,b,d; 1996b,c; Swanberg 1996). The mainstem Umatilla River is frequently dry during the irrigation season, effectively isolating bull trout (T. Cummings, Service, pers. comm. 1997). Moreover, two diversion facilities in the Umatilla River inhibit migration during portions of the year (Buchanan et al. 1997). Walla Walla River basin bull trout subpopulations are segregated in the Touchet River, Mill Creek, and South Fork and North Fork of the Walla Walla River by four irrigation diversion dams (Buchanan et al. 1997; WDFW 1997).

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In Idaho, Dorratcaque (1986) documented chronic flow and passage problems on the Lemhi River, where the stream has been dewatered during the irrigation season. An irrigation diversion dewateres the upper Salmon River in Idaho from mid-July to the end of the irrigation season, preventing chinook salmon access to spawning areas. Juvenile chinook salmon, which are used as prey by bull trout, are, thereby, no longer available (Chapman et al. 1991). Stream flows in the Umatilla River basin in Oregon have been fully appropriated during the irrigation season since 1920 (Oregon Water Resources Division (OWRD), *in litt.* 1988). Over-appropriations have resulted in dewatered stream reaches that limit bull trout distribution within the basin. Similarly, the Oregon State Game Commission (OSGC) first recognized the negative effects of irrigation diversions on fisheries resources in the Deschutes River as early as 1950 (OSGC, *in litt.* 1950). In Washington, over 80 percent of the annual stream flow in the Yakima River basin is seasonally diverted for irrigation (WDW 1992). Bull trout in the basin are isolated into eight subpopulations in upper watershed tributaries by reduced summer flows and dams (WDW 1992). The lower reaches of the Walla Walla River in Washington are often dewatered during the irrigation season, isolating three bull trout subpopulations in perennial headwater reaches (Martin et al. 1992).

In 1991, Montana Fish Wildlife and Parks Department listed Montana streams that support or contribute to important fisheries and are substantially dewatered from diversions and appropriated stream flows (MFWP, *in litt.* 1991). Within the range of bull trout, 101 stream reaches totaling 958.4 km (599 mi) were listed as chronically dewatered due to irrigation withdrawals and an additional 220.8 km (138 mi) were listed as periodically dewatered. Although bull trout do not occur in all streams cited, all are within the range of bull trout and dewatering likely affects fish migration and connectivity among subpopulations.

The extirpation of bull trout in the mainstem Bitterroot River, Montana, and the loss of migratory fish are attributed to chronic dewatering of the mainstem Bitterroot and the lower reaches of most of its tributaries (Clancy 1993, 1996; MBTSG 1995a). Some diversions on the mainstem Bitterroot River are fish passage barriers or entrain downstream migrants into irrigation ditches (MBTSG 1995a). Nearly 104 km (65 mi) of 18 tributary streams are chronically dewatered in the Bitterroot River basin (MBTSG 1995a). Dewatering of tributary streams is a limitation to restoration of bull trout in the Bitterroot River basin (MBTSG 1995a) and the cause of habitat

fragmentation isolating 27 subpopulations.

In the Clark Fork River basin, Montana, irrigation diversions, canals, and dams in the Jocko and lower Flathead rivers eliminated bull trout access to spawning and rearing areas; however, some of these structures are in the process of being modified (MBTSG 1996c; Hansen and DosSantos 1997; Montana Bull Trout Restoration Team [MBTRT] 1997). The lower reaches of the Jocko River are severely affected by grazing and irrigated agriculture (Hansen and DosSantos 1997). Because migratory bull trout can no longer ascend Grant Creek from the mainstem Clark Fork River due to irrigation diversions, only resident bull trout exist upstream (MBTSG 1996c; R. Berg, MFWP, pers. comm. 1997). Dewatering, irrigation return flows, and denuded riparian areas have increased water temperatures in the Blackfoot River and Clark Fork River basins, Montana (MBTSG 1995b,d). Water temperatures in the mainstem upper Clark Fork River frequently exceed 20° C (68° F) and temperatures in tributaries, including the Little Blackfoot and Flint Creek, may exceed bull trout tolerance limits (MBTSG 1995d). In the Blackfoot River basin, irrigation returns have contributed to the warming of this historic coldwater river (MBTSG 1995b; Pierce et al. 1997). Irrigation diversions, particularly in the Little Blackfoot River and in Flint Creek of the upper Clark Fork River, are physical and thermal passage barriers to bull trout (MBTSG 1995d). Diversion for irrigation is the primary cause of 622 km (389 mi) of streams in the upper Clark Fork basin being chronically dewatered (MDHES 1994). Irrigation diversions also continue to limit restoration of migratory bull trout in the Blackfoot River basin (MBTSG 1995b). Recently, several diversions have been renovated to provide passage and eliminate ditch entrainment (MBTRT 1997).

Unscreened irrigation diversions in eastern Washington are known to trap or divert bull trout in Ahtanan Creek (Yakima River basin), Ingalls and Pesbastin creeks (Wenatchee River basin), Roaring Creek (Entiat River basin), and Buttermilk, Little Bridge, Eagle, and Wolf Creeks (Methow River basin) (Hallock, Service, pers. comm. 1997). Channelization has altered 56 km (35 mi) of the Methow River (Mullan et al. 1992). Approximately 72 km (45 mi) of the lower Coeur d'Alene, St. Joe, and St. Maries rivers of the Spokane River basin have been channelized. These streams were once considered important rearing areas and migratory corridors for migratory (fluvial) bull trout. Approximately 47 percent of the bull trout subpopulations in the Columbia River population segment are affected by the past and ongoing effects from agricultural practices, including diversions.

Historical agricultural use in the Klamath River basin has had a profound effect on bull trout habitat in the larger tributaries and mainstem rivers (Buchanan et al. 1997). Channelization, water diversions, removal of streamside vegetation, and disturbances have altered the aquatic environment by elevating water temperature, reducing water quantity and quality, and increasing sedimentation (Light et al. 1996). Deming, Long, Threemile, and Sun creeks have diversions immediately downstream of occupied bull trout habitat (Dunsmoor and Bienz, *in litt.* 1997). Unscreened diversions result in the transport of fish into irrigation canals (e.g., Deming and Sun creeks), often resulting in mortality (Light et al. 1996).

Hydroelectric, flood-control, or irrigation dams: Dams are not known to affect bull trout subpopulations in the Klamath River basin. However, bull trout passage is prevented or inhibited at hydroelectric, flood-control, or irrigation dams in almost every major river in the Columbia River basin except the Salmon River in Idaho. For instance, six dams were constructed

without fish passage in the Boise River, Idaho, and of these, Arrowrock and Anderson Ranch dams isolate bull trout subpopulations. Historically, bull trout in the Boise River likely functioned as a single subpopulation with migratory adults moving among areas that are now isolated (Rieman and McIntyre 1995).

Similarly, bull trout were thought to have ranged throughout the Yakima River, Washington, prior to construction of several dams beginning in 1905 (WDFW 1997). Storage dams (Tieton, Bumping Lake, Keechelus Lake, Kachess Lake, and Cle Elum Lake dams) now isolate five of eight bull trout subpopulations in the Yakima River basin, with agricultural diversion dams isolating three additional bull trout subpopulations (WDFW 1997).

Operation of irrigation diversion dams also disrupts annual migrations of fluvial bull trout in five of seven spawning streams in the Methow River basin, Washington (WDFW 1997). In the mainstem Methow River, up to 79 percent of the average flow is removed from a 64 km (40 mi) reach, occasionally stranding and killing bull trout (Mullan et al. 1992). Due primarily to temperature constraints in partially dewatered tributaries to the Methow River, 60 percent of the total spawning and rearing areas for bull trout has been lost (Mullan et al. 1992; WDFW, *in litt.* 1995).

Also in Washington, bull trout in the North Fork Lewis River were separated into two subpopulations by the construction of Swift and Yale reservoirs, and the Condit Dam on the White Salmon River also isolated a subpopulation (WDFW 1997). In Oregon, bull trout were thought to have historically occurred throughout the Willamette River basin, but are presently found only in the McKenzie River basin. Dams in the basin (Trailbridge and Carmen) isolate bull trout into three subpopulations.

In the mainstem Clark Fork River, Idaho and Montana, bull trout moved and migrated freely from Lake Pend Oreille upstream to the headwaters of the Clark Fork and Flathead rivers prior to construction of five dams (Pratt and Huston 1993; MBTSG 1996b; Frissell 1997). The construction of Albeni Falls, Cabinet Gorge, Noxon Rapids, Thompson Falls, and Milltown dams isolated four bull trout subpopulations in the mainstem Clark Fork-Pend Oreille rivers. The uppermost dam, Milltown, isolates downstream fish from those in the upper Clark Fork River and prevents fish downstream of the dam from moving into the Blackfoot River, a major tributary of the upper Clark Fork River. Annually, some bull trout congregate below Milltown Dam, attempting to move upstream. Radio-tagged bull trout collected below Milltown Dam and released above the dam moved into Rock Creek, a tributary to the upper Clark Fork system (Swanberg 1996).

Movement of bull trout from the mainstem Clark Fork River to the Flathead Lake system is prevented by Kerr Dam on the lower Flathead River. Sport harvest of bull trout from Lake Pend Oreille, Idaho, abruptly declined more than 50 percent after Albeni Falls and Cabinet Gorge dams blocked access to historic spawning streams and reduced adult numbers (Ellis 1940; Pratt and Huston 1993). Major tributaries of the Flathead River basin, Montana, were historically interconnected so that migratory bull trout were widely distributed throughout the drainage (MBTSG 1995c). Bull trout from the Flathead River system had access to the South Fork Flathead River drainage and the Swan River drainage. However, upstream passage from the Flathead River has been blocked by dams on the South Fork Flathead River (Hungry Horse

Dam) and the Swan River (Bigfork Dam).

On the Kootenai River, Montana, Libby Dam is an upstream passage barrier to bull trout. The dam also has altered the flow regime, water temperature, and sediment load in the Kootenai River (MBTSG 1996d). Dam operation has typically reduced spring flows, which has made upstream passage over Kootenai Falls, located downstream of Libby Dam, impossible. Therefore, fish below the falls do not have the opportunity to interbreed with fish above (MBTSG 1996d). An additional effect of dams on bull trout is the loss of individuals from a subpopulation. During a 7-month study in the Boise River, bull trout were marked in Arrowrock Reservoir and 5 percent of them were recaptured in Lucky Peak Reservoir (U.S. Bureau of Reclamation (USBR), *in litt.* 1997). Lucky Peak Dam is downstream of the Arrowrock and Anderson Ranch subpopulations, and neither Lucky Peak Reservoir nor the reach downstream of the dam provide any known spawning habitat. Thus, fish entering Lucky Peak Reservoir are lost from the upstream subpopulations.

Urban Development: Residential development is not known to be a factor affecting existing bull trout subpopulations in the Klamath River basin. However, approximately 26 percent of the bull trout subpopulations in the Columbia River population segment are threatened by the effects of residential development. Development increases threaten to alter stream and riparian habitats through streambank modification and destabilization, increased nutrient loads, and increased water temperatures (MBTSG 1995a). Indirectly, urbanization within floodplains alters groundwater recharge by routing water into streams through drains rather than through more gradual subsurface flow (Booth 1991). Zoning and urban planning are often regulated at the County government level.

In Montana, rural residential development is rapidly increasing, particularly in drainages of the Bitterroot, Blackfoot, and Flathead rivers (MBTSG 1995a,b,c). The lower Bitterroot River is a major non-point source of nutrient pollution, primarily from sewage effluent and land development (U.S. Environmental Protection Agency (USEPA) 1993 *in* MBTSG 1995a). Efforts to mitigate effects of rural development in the Blackfoot River basin have been encouraged by an active local group, the Blackfoot Challenge, which has been working to acquire conservation easements, among other projects. Residential development in the Flathead Lake system is considered a limitation for restoration of bull trout because of the threat to water quality from domestic sewage and changes to stream morphology (MBTSG 1995c).

Fire Management: Fire is also a component of the baseline affecting the two bull trout DPSs. The BA provided an analysis of the baseline conditions for fire. They noted that in forested areas of the ICBEMP area, departures from natural disturbance and successional processes due to human-related activities has resulted in substantive changes to vegetation structure and seral stage composition (USDA and USDI 1997a). These broad-scale changes in vegetative conditions have increased the probability that catastrophic wildfires and large-scale insect and disease events will occur. The three forest potential vegetation groups where historic fire regimes have been most changed include: Dry Forest Potential Vegetation Group, Moist Forest Potential Vegetation Group, and Cold Forest Potential Vegetation Group. Models were used to estimate the relations among various management activities, fire, vegetation groups, and bull

trout.

At a broad-scale assessment level, adverse effects to forested bull trout watersheds on USFS and BLM administered lands from programs directed at restoring vegetation composition and structure and historic fire regimes under current plans have the potential to be significant. This is based on existing plan decisions which continue to support fire suppression policies and direct the use of traditional vegetation management techniques; and the inherent complexity of ecosystems combined with incomplete knowledge of how aquatic systems respond to various types of anthropogenic disturbances. Although the local effects of fire on aquatic systems have occasionally resulted in the loss of fish populations from stream reaches (Bozek and Young 1994; Rieman et al. 1997), these are more subtle and less damaging than changes from traditional vegetation management practices (silvicultural prescriptions and road building). Amendments to current plans with PACFISH and INFISH objectives and S&Gs will mitigate potential adverse effects but will not, by themselves, reduce effects to a level where conservation and restoration goals for bull trout are being met.

However, when forest restructuring priorities are more closely examined within the ICBEMP area, potential conflicts with conservation and restoration needs across the range of bull trout decrease, based on the following information: 1) In general, the greatest departure from historic range of variability in forest structure and composition has been in the dry forest potential vegetation group. This has resulted in the greatest departure from the historic fire regime of all types of forest potential vegetation groups (nonlethal/mixed-severity to lethal); 2) the dry forest type primarily occurs at low and mid-elevations; and 3) bull trout are generally more restricted to the moist and cold forest types which occur at higher elevations. As this separation is not complete, a strategy is needed at the programmatic level which provides consistency in how administrative units address conflicts between forest restructuring objectives and the conservation and restoration of bull trout in order to meet the requirements of ESA.

The BA presented a strategy, based on a broad landscape perspective of risk and opportunities to bull trout, that could be used to guide the distribution and intensity of forest restoration activities (Rieman and Clayton 1997).

Mining: Mining effects are not known to be a factor affecting bull trout subpopulations in the Klamath River basin. In the Columbia River population segment, approximately 20 percent of the bull trout subpopulations are threatened by past, ongoing, or potential future mining activities.

Mining severely impacts large portions of the Spokane River basin. Effects include roading, stream diversion and alteration, watershed degradation from airborne emissions, and the discharge of massive quantities of waste materials, including the release into the South Fork Coeur d'Alene River of 72 million tons of hazardous mine wastes laden with heavy metals such as lead, zinc, and cadmium (Coeur d'Alene tribe of Idaho et al. 1991). During the early 1930s, the South Fork Coeur d'Alene River and about 20 miles of the lower Coeur d'Alene River were considered devoid of aquatic life due to mining waste discharge (Ellis 1940). The Bunker Hill Superfund Site is located on the South Fork Coeur d'Alene River in Idaho. Although some aquatic species have returned to the river, bull trout are not among them. In Montana, bull trout

have not recolonized the upper mainstem Clark Fork River where mining-related stream degradation extirpated all fish prior to the turn of the century (MBTSG 1995d; Titan Environmental Corp. 1997). The lingering effects of mining operations over the past century in the Butte and Anaconda reaches of the upper Clark Fork River has resulted in four Superfund sites being designated. Mining continues to impair water quality in 558 km (349 mi) of stream in these reaches (MDHES 1994). Eleven fish kills documented between 1959 and 1991 were attributed to mining contamination of the river (Titan Environmental Corporation 1997).

Numerous abandoned mines, such as the Blackbird and Cinnabar mines in the Salmon River drainage of Idaho, degrade water quality where toxic heavy metals continue to leach from mine sites into streams or groundwater. Old mine tailings in the floodplains of Newsome Creek, American River, and Crooked River, tributaries to the Clearwater River in Idaho, continue to prevent recovery of riparian areas (N. Gearhardt, Nez Perce National Forest, pers. comm. 1997). In Idaho, mine tailings abandoned decades ago contaminated a tributary of the Middle Fork Boise River with heavy metals, including arsenic, during flood flows in 1997 when migrating bull trout were present (R. Barker, Idaho Statesman, *in litt.* 1997; S. West, IDEQ, *in litt.* 1997). In Montana, historic mining in many tributaries of the Middle Clark Fork River has impaired water quality in 245 km (153 mi) of stream (MDHES 1994). The MBTSG (1995b) ranked mining in the Blackfoot River drainage as a limitation to bull trout restoration. Many mines exist in the western and southern portions of the Blackfoot River basin causing direct loss of bull trout habitat and contamination of waters from mine effluents (MBTSG 1995b). Fishes in the upper Blackfoot River are still affected by the washout of the Mike Horse tailings dam in 1975, which spilled contaminated tailings into the Blackfoot River (MBTSG 1995b). Research in the Blackfoot drainage demonstrated that heavy metal contaminants released in the headwaters affect chemical trends, metal concentrations, metal bioavailability, and fish for 25 km (15.6 mi) from the contaminant source (Moore et al. 1991).

New open-pit mines using cyanide leach pads are planned for watersheds currently occupied by bull trout in the Middle Fork Boise River basin, Idaho, and in the Stibnite area of the East Fork South Fork Salmon River, Idaho (G. Visconty, Boise National Forest, *in litt.* 1996; Payette National Forest (PNF), *in litt.* 1996). In Montana, a large underground copper-silver mine proposed for Rock Creek in the lower Clark Fork River basin is currently in the permitting process. Tailings would be stored at the confluence of Rock Creek and the Clark Fork River (MBTSG 1996b; R. Stewart, USDI, *in litt.* 1995). Rock Creek is one of only two bull trout core areas in this subpopulation (MBTSG 1996b). A large open-pit gold mine using cyanide heap leach processing is proposed for the upper Blackfoot River basin, Montana. Much of the ore body occurs below the water table, requiring pumping of groundwater. Thus, the hydrology of the upper Blackfoot River system could be affected and an increase in contamination risks could result (S. Cody, USEPA, *in litt.* 1997; K. McMaster, Service, *in litt.* 1997).

The North Fork Flathead River headwaters in Canada contain a large coal deposit that could be developed (MBTSG 1995c). Mining this deposit could destroy spawning habitat and degrade water quality in the Montana portion of the Flathead River system (MBTSG 1995c).

Other Actions Considered in the Environmental Baseline

PACFISH and INFISH Implementation

Because PACFISH and INFISH have been implemented since 1995 in areas occupied by the Columbia and Klamath River bull trout DPSs, effects of their implementation to the present are considered as part of the environmental baseline. Land management agencies have accomplished various road mitigation, closure, and obliteration projects over the last two years, but often in association with, or to counterbalance further road construction or reconstruction. Road standards RF-2 and RF-3 in PACFISH describe a comprehensive approach to identifying and repairing or obliterating roads which cause degradation of habitat for listed anadromous fish. Most National Forests and BLM Districts in the Snake River basin have not implemented key portions of these standards: they have not completed transportation plans, have not evaluated the effects of the majority of existing roads on listed species, and have not funded and implemented rehabilitation and obliteration activities accordingly.

Since PACFISH went into effect, NMFS has noted a decrease in the number of USFS and BLM actions NMFS found likely to adversely affect (requires formal consultation) the listed anadromous fish species. NMFS also noted, however, that several of the formal consultations were on actions in the South Fork and Middle Fork Salmon River subbasins. This presents a concern because of the high value of those subbasins as strongholds for chinook salmon, steelhead, and bull trout. In spite of direction in the PACFISH amended LRMPs, other laws have made it difficult for USFS and BLM to avoid adverse effects from mining actions, water conveyances, issuance of road use permits enabling a variety of activities on non-Federal lands, and timber salvage under the Rescissions Act timber rider (Section 2001 of Public Law 104-19; enacted July 1995).

Aspects of the LRMPs themselves contribute to the development of actions that would degrade, or hinder improvement of, baseline conditions. A few examples of these types of actions can be found in NMFS' consultation records since 1995, but many more have been modified to minimize adverse effects through discussions held under the process for streamlining section 7 consultation. Some of the features of LRMPs which have reduced their effectiveness in improving baseline conditions are listed below.

- (1) LRMPs lack a coordinated, clearly defined strategy to conserve anadromous fish species, and do not schedule the development of such a strategy. This type of strategy should include not just the measures outlined in PACFISH to prevent degradation, but would also prioritize watersheds based on species' biological requirements and would establish a schedule and actions to be taken to achieve the functioning aspects of those watersheds at appropriate rates.
- (2) LRMPs lack direction and methodology to analyze collections of actions within watersheds--usually 5th and 6th field hydrologic unit code (HUC) scale--so that combined effects are adequately addressed.
- (3) LRMPs lack direction and methodology to determine and track fish habitat conditions related to land management activities at the subbasin scale (3rd and 4th field HUCs).

- (4) LRMPs contain goals and standards both for production of goods and services and resource conservation without a clear, coordinated approach to achieving realistic and legally required levels of both.
- (5) Goals, objectives, standards, and guidelines in the LRMPs are numerous and open to interpretation, and thus lead to actions varying from no effect to jeopardy to the listed species.
- (6) Road rehabilitation and obliteration, measures to reduce impacts on grazing allotments, and other restoration activities have been inadequately planned, funded, and monitored; therefore, the USFS and BLM have been greatly limited in actively improving baseline aquatic conditions over the last three years.

In summary, in their consultation regarding the effects of the LRMPs and ACSs on steelhead, NMFS concluded that, while the addition of PACFISH to the LRMPs likely resulted in actions allowing natural recovery processes to take place in many areas, other laws and shortcomings of LRMPs themselves have reduced the effectiveness of LRMPs in avoiding adverse effects on the environmental baseline since 1995 (U.S. Department of Commerce [USDC] 1998). Also, because natural recovery generally takes place over many years or decades, some of the positive effects from improved land management practices on Federal land are not yet evident. Given those considerations, and assuming that land management practices on non-Federal land in the two basins have not changed substantially over the last two years, habitat conditions for anadromous fish likely remain much as in 1995. That is, most managed watersheds remain in at-risk or non-functional condition due to the effects of past and present land management activities on one or more key elements of habitat for listed anadromous fish species.

In considering both PACFISH and INFISH, the BA (USDA and USDI 1998a) concluded that indefinite extension of PACFISH and INFISH aquatic conservation strategies delays the recovery of bull trout and increases the risk that key population segments will be irretrievably lost. The PACFISH and INFISH aquatic conservation strategies maintain a fragmented network of habitats in degraded condition, where they presently exist, because they lack a comprehensive management strategy which protects and restores bull trout watersheds. The interim direction does not provide adequate assurance that future actions will not result in adverse effects to listed bull trout DPSs.

Habitat Conservation Plans

The effects to bull trout of implementing both the Washington State Department of Natural Resources (DNR) and Plum Creek 1-90 Habitat Conservation Plans (HICPs) are included in the environmental baseline. Both HICPs have undergone section 7 consultation for Northern Spotted Owls and other listed species.

The DNR HCP does not propose riparian and wetland conservation strategies for the DNR east-side planning units, which includes the project area. Current Washington State Forest Practice Rules would apply in managing riparian areas in the project area. The current rules allow harvest activities throughout the whole Riparian Management Zone up to the edge of a stream. Impacts

of near-stream harvest which negatively affect bull trout include increased stream bank erosion, increased stream sedimentation, decreased canopy cover causing increased stream temperatures, and decreased large woody debris recruitment (elements in pool formation and instream cover). Subpopulations most at risk in the east-side planning units are the Klickitat and White Salmon River subpopulations, due to the large DNR-managed land base and remnant level status of these subpopulations. The lack of a comprehensive riparian and wetland conservation strategy for the east-side planning units continues to place east-side bull trout subpopulations at risk from timber and non-timber resource activities.

The Plum Creek I-90 Multi-Species HCP includes a Riparian Management Strategy which incorporates watershed analysis and the maintenance and protection of Riparian Habitat Areas. These measures are intended to ensure greater protection of aquatic and riparian resources than under existing State and Federal regulations. Populations most affected by this HCP are in the Yakima River Basin. The Service is currently conducting section 7 consultation evaluating the effects of this HCP on bull trout.

Public Law (PL) 104-19

In July 1995, Congress passed PL 104-19, often referred to as the Rescissions Act. Signed on July 25, 1995, PL 104-19 included provisions directing the USFS and the BLM to expedite salvage sales. These provisions expired on December 31, 1996. As part of the procedures established to expedite salvage sales, Section 2001 of the Rescissions Act broadened the definition of salvage sales, eliminated administrative appeals of such sales by the public, abridged judicial review, and in effect temporarily suspended environmental and natural resource laws that would otherwise apply to such sales. In signing this legislation, President Clinton directed the involved Federal agencies to implement the salvage provisions in an environmentally sound manner, and to continue to use the streamlining procedures, coordination, and consultation actions that were already underway as a result of previous direction from the Administration (USDC 1996).

The interagency memorandum of agreement (MOA) that resulted from the President's direction established the framework for salvage sale activity under the Rescissions Act. Federal agencies covered by the MOA included USFS, BLM, FWS, NMFS, and USEPA. In addition to overall direction, the MOA included 11 specific items, one of which called for a national review of the salvage program (USDC 1996).

The agency heads instructed the interagency review team to address four objectives in carrying out the review process. Those objectives, together with a brief summary of their findings, as excerpted from the report, are presented below.

Objective 1. Determine agency compliance with the 11 items in the MOA and related guidance, and identify actions to enhance compliance.

There was substantial variation in field compliance with various MOA items. There was a direct correlation between the level of understanding and acceptance of the MOA at the field level and compliance with its provisions.

Objective 2. Determine whether the MOA has been effective in establishing process necessary for achieving environmentally sound timber salvage sales.

The MOA provided direction that was an adequate basis for effective planning and management processes. However, at the time of the report, practical establishment of the processes on the ground was still developing. The review team recommended increased oversight and accountability at several organizational levels.

Objective 3. Evaluate the effectiveness and time/cost savings associated with the streamlined consultation process, which was developed prior to PL 104-19 and incorporated in the MOA, and determine the potential applicability of the streamlined consultation process for future use.

Where the streamlined process was completed in a collaborative manner with true teamwork between the agencies, the process ran more smoothly, there were fewer setbacks and delays, sale preparation times lines were generally reduced, and the sales were more likely to be designed to conserve threatened and endangered species or minimize adverse effects to these species.

Objective 4. Identify any additional actions to further enhance interagency collaboration.

Several actions were identified. Some of the more significant were:

- leadership needs to be asserted at all organizational levels to assure collaboration occurs as envisioned by the MOA.
- agencies should conduct interagency site visits and workshops to share successes and focus on improvement.
- the agencies should jointly develop and use program design criteria to improve ecosystem approaches to management and increase efficiency.

Non-Federal Actions in the Action Area

Forest Practices: Oregon, Washington, Idaho, and Montana each have adopted a Forest Practice Act (FPA) or other legislation consisting of rules and regulations addressing forest management on State, Federal, and private lands. In general, the legislation establishes best management practices (BMPs) to be implemented on forests, such as streamside management zones (Montana Department of State Lands 1994), activities allowed in riparian areas, restrictions on harvest adjacent to streams, and location of road construction. The application of BMPs is voluntary in some States. Although audits show that compliance with BMPs is high in Idaho (H. Malany, Idaho Forest Practice Act Advisory Committee Member, *in litt.* 1997) and Montana (Mathieus 1996), the Service is not aware of evaluations of various States' BMPs relative to the protection of bull trout habitat and processes affecting water quality, such as sediment delivery, water temperature, recruitment of woody debris, and bank stability. In Idaho, half of timber sales audited resulted in contributions of sediment to streams, largely from inadequately maintained roads (Zaroban et al. 1997). Even with high implementation rates, Idaho's forestry BMPs have been ineffective at maintaining beneficial uses, including cold water biota (McIntyre 1993). In Montana, McGreer (1994) noted that the Montana legislation may adequately provide for woody debris and bank stability, but it may be inadequate for temperature control and sedimentation.

The MDNRC has discontinued timber harvest and grazing in areas directly adjacent to streams containing bull trout (P. Flowers, MDNRC, *in litt.* 1996). In the Washington Department of Natural Resources HCP Draft Environmental Statement (USDI et al. 1996) it is stated that, “Forest Practices Riparian Management Zone widths may not always ensure protection of riparian components because minimum widths, as specified by the Washington Forest Practices Rules (WFPR), are insufficient to protect riparian ecosystems.” The WFPR are much less restrictive with regard to timber harvest and associated activities in the proximity of streams than the S&Gs within Riparian Reserves on Federal lands under the Northwest Forest Plan. Based on current information, the Service is unable to conclude that State FPAs and related legislation are adequate to protect bull trout habitat.

Water Quality Standards: Under sections 303 and 304 of the Clean Water Act (CWA), States or the USEPA set water quality standards, which combine designated beneficial uses and criteria established to protect those uses. Water bodies that are identified as failing water quality standards are designated by States under section 303(d) as water quality limited (MDHES 1994; USEPA 1994; Oregon Department of Environmental Quality [ODEQ] 1996), and subject to development of management plans to restore water quality and protect designated uses. These management plans, or total maximum daily loads (TMDLs), address both point and non-point sources of pollutants within a watershed. BMPs are used with TMDLs to address non-point sources of pollution, such as mining, forestry, and agriculture; however, regulatory authority to enforce the BMPs varies among the states. It is estimated that 10 percent of the total length of streams within the ICBEMP assessment area, including the Klamath River and Columbia River basins, are listed as water quality limited. This may underestimate the true extent and distribution of streams with impaired water quality potentially affecting bull trout (USDA and USDI 1997b). In the Klamath River basin, stream reaches designated as water quality limited (i.e., cited on the 303(d) list of Oregon for various water quality standards (ODEQ 1996)) are estimated to apply to six of the seven bull trout subpopulations. In the Columbia River basin, water bodies designated as water quality limited by Oregon, Washington, Idaho, and Montana are estimated to apply to at least 64 of the 141 bull trout subpopulations.

Relative to water temperature, Oregon established a water quality criterion of 10° C (50° F) as a weekly average based on daily maximum temperatures in bull trout spawning and rearing waters (OAR 340-41-685 and OAR 340-41-026); however, water bodies where these criteria would apply have not been identified. In Washington, temperature criteria for waters vary among the different classifications that are assigned to each water body, and range from 16 to 22° C (60.8 to 71.6° F) (Chapter 173-201 WAC). Washington is reviewing these standards with the intent of creating more appropriate water quality standards; however, whether the criteria specifically are for bull trout is unknown. In Idaho, USEPA disapproved the state's temperature criteria applications within the geographic range of bull trout (USEPA 1997). The USEPA determined that the criteria did not provide adequate protection for bull trout relative to two designated uses—cold water biota and salmonid spawning (maximum daily average of 13° C (55.5° F) and 9° C (48.2° F) for each respective use). In July 1997, USEPA promulgated a temperature criterion of 10° C (50° F) during June through September in designated stream areas, as a weekly average based on daily maximum temperatures for spawning and rearing of bull trout (USEPA 1997). To date, the State has not adopted USEPA's promulgated criterion, but has adopted 12° C as a daily average during June-August for juvenile rearing and 9° C for September and October for spawning. Additionally, Idaho has established a geographical area where these criteria would

apply. It is unknown whether USEPA will approve the State's criteria and withdraw the promulgated rule. In Montana, the temperature criterion applied to waters with bull trout is 19° C (66° F); temperature can be raised 0.6° C (1° F) by discharges, but water temperature may not exceed 19.5° C (67° F) (Administrative Rules of Montana 1996).

In accordance with Section 319 of the CWA, States also develop programs to address non-point sources of pollution such as agriculture, forestry, and mining. The effectiveness of controlling water pollution from these activities has been mixed. The State of Washington monitored the effectiveness in meeting water quality criteria for temperature in riparian areas on forest lands and concluded that regulations for stream shading were inadequate to meet criteria (Sullivan et al. 1990). In summary, it is uncertain whether the CWA can provide sufficient protective measures for conservation of bull trout. Temperature regime is one of the most important factors affecting bull trout distribution (Adams and Bjornn 1997, Rieman and McIntyre 1995). Given the known temperature requirements of bull trout (Buchanan and Gregory 1997), criteria developed by the four States may not be conducive to either spawning, incubation, rearing, migration, or combinations of these life-history stages.

Conservation efforts by non-Federal entities

All four States within the range of the Klamath River and Columbia River DPSs of bull trout have regulations affecting bull trout and their habitat. Idaho, Montana, and local or county organizations have recently developed or are developing conservation plans to maintain and restore bull trout, primarily through stream habitat protection.

Idaho: In 1995, Idaho Governor Phil Batt initiated a conservation plan to restore bull trout populations in Idaho. The mission of the Governor's Plan, approved in July 1996, is to "... maintain and/or restore complex interacting groups of bull trout populations throughout their native range in Idaho" (Batt, *in litt.* 1997). Although the harvest of bull trout is closed throughout Idaho and State-sponsored survey and monitoring has increased (S. Mealey, IDFG, *in litt.* 1997), few on-the-ground recovery actions for bull trout have been implemented to date.

Other efforts include a 1994 conservation agreement (CA) between the Idaho Department of Transportation (IDOT) and the Service to protect bull trout (USDI and IDOT, *in litt.* 1994), and recent conservation activities by the IDFG that were funded by Section 6 of the ESA. The IDOT finished only one passage restoration project under the CA, and recently declined to renew the CA (R. Howard, Service, pers. comm. 1997). Since 1994, IDFG has used Section 6 funds to begin several habitat restoration actions in northern and southwestern Idaho. Aside from enacting restrictive fishing regulations, few protective or restoration projects have been completed that substantially reduce threats to bull trout throughout the Columbia River Basin.

Oregon: Beginning in 1992 and 1993, several interagency bull trout working groups were formed in Oregon (R. Rosen, ODFW, *in litt.* 1995). These working groups have been instrumental in gathering additional status information and developing preliminary conservation strategies for bull trout in their respective basins. These efforts are encouraging signs of bull trout conservation, but the outcome has not yet been demonstrated.

The Upper Klamath Basin Bull Trout Conservation Strategy (Light et al. 1996) was developed by the Klamath Basin Bull Trout Working Group in response to the limited and shrinking distribution and number of bull trout. The Working Group, formed in 1993, is composed of representatives from the Service, Oregon Department of Fish and Wildlife, Fremont and Winema National Forests, Crater Lake National Park, PacifiCorp, USBR, Sprague River Water Users Association, Klamath Basin Water Users Protective Association, U.S. Timberlands, and Klamath Tribes. The defined goals of this group as identified in the Conservation Strategy are--(1) secure existing bull trout populations and (2) restore populations to some of their former distribution (Light et al. 1996). Phase 1 has concentrated on addressing threats to bull trout from non-native salmonids and addressing problems related to stream temperatures. Phase 2 will involve expanding the number of subpopulations by reestablishing bull trout in high quality headwater habitats, effectively increasing the size of the Klamath River metapopulation and making it more resilient to natural disturbance (Light et al. 1996).

All habitats currently occupied by bull trout in the Klamath River basin are managed by Working Group members. From 1993 through 1996, conservation actions (phase 1) were implemented by the Working Group, including--watershed assessments; fish distribution, abundance, and spawning surveys; collection of stream temperature and sediment data to help identify limiting factors; brook trout eradication efforts in Long, Sun, and Threemile creeks; reduction or elimination of grazing along bull trout habitat owned by U.S. Timberlands; road system improvements, closures, and rehabilitation; and barrier management to prevent access of non-native fishes (Johnson, U.S. Timberlands, *in litt.* 1997; Buchanan et al. 1997). Habitat improvement projects have also been implemented in areas historically occupied by bull trout, such as the 9,700 ha (24,000 ac) Nature Conservancy preserve at Sycan Marsh (P. Rexroat, The Nature Conservancy, *in litt.* 1997) and the Sun Pass State Forest on lower Sun Creek. These ongoing conservation efforts have been complicated by recent private land ownership changes and lack of an approved recovery plan that identifies specific conservation tasks and actions.

In addition to the Klamath Basin Bull Trout Working Group, a Federally-authorized, interagency and entity group, the Upper Klamath Basin Working Group, was established in 1994. This group, composed of Federal, State, county, city, tribal, environmental, local business, agricultural and ranching, and local community members, works on a consensus-based approach to Klamath basin ecosystem issues. The group focuses on ecosystem restoration projects and has funded bull trout conservation efforts, such as riparian fencing and road maintenance and obliteration projects.

Washington: The Washington Department of Fish and Wildlife released the final Environmental Impact Statement (EIS) for the proposed Wild Salmonid Policy in September 1997 (WDFW 1997). The EIS focused on salmon and steelhead, referring to bull trout and other wild salmonids in an ancillary manner. It described problems and challenges facing the recovery of anadromous and resident salmonids throughout Washington. Regardless of the alternative ultimately selected by the Washington State Fish and Wildlife Commission as the Wild Salmonid Policy, implementation of the policy will suggest guidelines for actions taken by the WDFW and will not be binding on other State, tribal, and private entities. Uncertainties will remain regarding implementation and effect of the policy on bull trout conservation in Washington.

Montana: In Montana, Governor Marc Racicot appointed the Bull Trout Restoration Team in 1994 to produce a plan that maintains, protects, and increases bull trout populations. The team appointed a scientific group that has subsequently prepared eleven basin-specific status reports and two technical, peer-reviewed papers. A third technical paper is presently undergoing peer review. A Montana Bull Trout Recovery Plan, including a recovery goal, is also nearing completion. Watershed groups are being established in some areas to lead local bull trout restoration efforts. As of October 1997, some localized habitat restoration projects, such as removal of fish passage barriers, screening irrigation diversions, riparian fencing, stream restoration projects, and habitat monitoring, had been completed or were underway (P. Graham, MFWP, and B. Clinch, MDNRC, *in litt.* 1997). Likelihood of implementation of the restoration plan and the effect of the plan on future bull trout conservation in Montana is unknown.

Fisheries Management by Non-Federal Entities

Statewide angling regulations have become more restrictive in an attempt to protect bull trout throughout Idaho, Montana, Nevada, Oregon, and Washington and are considered by the Service to be adequate to protect the species from excessive take. The Service intends to continue to work with the States and Tribes in developing management plans and agreements with the objective of recovery and eventual delisting of the Klamath River and Columbia River distinct population segments. The special rule provided in the final rule regarding bull trout listing (USDI 1998) allows for take of bull trout within the Klamath River and Columbia River distinct population segments when it is in accordance with applicable State and Native American Tribal fish and wildlife conservation laws and regulations, as constituted in all respects relevant to protection of bull trout. The Service believes that this special rule will allow for more efficient management of the species, thereby facilitating its conservation.

Recreational fishing for other trout species continues in the basin, and, as a consequence, incidental fishing mortality of bull trout likely occurs (OCAFS 1993). Incidental bull trout mortality due to angling is unknown, but is not suspected to be suppressing bull trout subpopulations in the Klamath River basin (Light et al. 1996). However, Dunsmoor and Bienz (Klamath Tribe, *in litt.* 1997) consider angling to be a factor negatively affecting bull trout, especially subpopulations with low numbers and proximity to highway access, such as Threemile Creek.

Overharvest of bull trout in the Columbia River basin historically, likely contributed to their decline. In the past, harvest included legal recreational angling, poaching, and State-sponsored eradication programs (Thomas 1992). Bull trout were often targeted for removal by anglers and government agencies because bull trout preyed on salmon and other desirable species (Simpson and Wallace 1982; Bond 1992). As recently as 1990, State and Federal agencies instituted programs to eradicate bull trout through bounties and poisoning of waterways (Ratliff and Howell 1992; ODFW 1993; Newton and Pribyl 1994; Palmisano and Kaczynski, NFRC, *in litt.* 1997). For instance, during the 1940's and 1950's in Oregon, several hundred bull trout migrating from Wallowa Lake to spawn in Wallowa River were trapped in a weir and exterminated (B. Smith, WDFW, *in litt.* 1997). Bull trout were recently re-introduced to Wallowa Lake in summer 1997 in an effort to re-establish the fish.

Mortality from incidental catch and release angling of bull trout and harvest as a result of misidentification still continues under existing fishing regulations. For example, about half or fewer of anglers surveyed were able to correctly identify bull trout from other salmonids in west-central Montana (Kelly et al. 1996; M. Long and S.P. Whalen, MFWP, *in litt.* 1997). Poaching of bull trout likely continues and can be especially detrimental to small, isolated subpopulations of migratory fish (WDFW 1992; Craig and Wissmar 1993; Pratt and Huston 1993; Long 1997). Approximately 21 percent of the bull trout subpopulations in the Columbia River population segment are threatened by the effects of poaching. A study in the Metolius River suggested that 2 of 22 radio-tagged adult bull trout were illegally harvested (Ratliff et al. 1996). Illegal harvest of bull trout in northwest Montana has been a recurring problem for over 50 years, especially in drainages of the Blackfoot, Kootenai, South Fork Flathead, and Clark Fork rivers (MBTSG 1995e; Swanberg 1996; Long 1997). In response, the MFWP instituted a program in 1994 funded by the Bonneville Power Administration to reduce the illegal harvest of bull trout, disperse information to improve anglers' fish identification skills, and increase understanding of the importance of native species (Long 1994). Additionally, the Montana legislature increased the penalties for bull trout poaching, and the Bonneville Power Administration, until recently, funded increased enforcement (M. Racicot, Governor of Montana, *in litt.* 1995).

Introductions of non-native species by the State fish and game departments and private parties across the range of bull trout has resulted in declines in abundance, local extirpations, and hybridization of bull trout (Bond 1992; Howell and Buchanan 1992; Leary et al. 1993; Donald and Alger 1993; Pratt and Huston 1993; MBTSG 1995a,c, 1996e; Platts et al 1995; Palmisano and Kaczynski, NFRC, *in litt.* 1997). Negative effects of interactions with introduced non-native species may be the most pervasive threat to bull trout throughout the Columbia River basin. Of the 141 subpopulations of bull trout in the Columbia River population segment, approximately 62 percent were threatened by competition, predation, or displacement by non-native species. Often one or more non-native species have been introduced into bull trout habitats.

Non-native fish threaten bull trout in physically unaltered habitats, including roadless areas, wilderness, and national parks. For instance, brook trout occur in tributaries of the Middle Fork Salmon River within the Frank Church-River of No Return Wilderness, (Thurow 1985; S. Achord, NMFS, *in litt.* 1994) and Sun Creek in Crater Lake National Park (Light et al. 1996). Glacier National Park has self-sustaining populations of introduced non-native species, including lake trout, brook trout, rainbow trout, Yellowstone cutthroat trout, lake whitefish (*Coregonus clupeaformis*), and northern pike (MBTSG 1995c). Although stocking in Glacier National Park was terminated in 1971, only a few headwaters lakes contain exclusively native species, including bull trout.

Introduced brook trout threaten bull trout through hybridization, competition, and possibly predation (Leary et al. 1993; Thomas 1992; WDW 1992; Clancy 1993; Rieman and McIntyre 1993; MBTSG 1996a). Hybridization between brook trout and bull trout has been reported in Montana (MBTSG 1995a,d, 1996c,d,f; Hansen and DosSantos 1997), Oregon (Markle 1992; Ratliff and Howell 1992), Washington (WDFW 1997), and Idaho (Adams 1996; T. Burton, BNF, pers. comm. 1997b). Hybridization results in offspring that are frequently sterile (Leary et al. 1993), but some hybrids show gonadal development (Dunsmoor and Bienz, Klamath Tribe, *in litt.* 1997), raising concern of potential introgression. Hybrids may be significant competitors;

Dunsmoor and Bienz (Klamath Tribe, *in litt.* 1997) noted that hybrids are aggressive and larger than resident bull trout, suggesting that hybrids may have a competitive advantage. Brook trout mature faster and have a higher reproductive rate than bull trout. This difference may favor brook trout over bull trout when they occur together, leading to replacement of bull trout with brook trout (Leary et al. 1993; Clancy 1993; MBTSG 1995a).

Opossum shrimp, a crustacean native to the Canadian Shield area, was widely introduced in the 1970s as supplemental forage for kokanee and other salmonids in several lakes and reservoirs across the northwest (Nesler and Bergerson 1991). The introduction of opossum shrimp in Flathead Lake changed the lake's trophic dynamics, and is widely believed to have been partially responsible for the expanding lake trout population, resulting in increased competition and predation on bull trout (T. Weaver, MFWP, *in litt.* 1993). Thus, opossum shrimp have had an indirect, negative effect on bull trout. Conversely, in Swan Lake, Montana, opossum shrimp and kokanee have become established and increased the availability of forage for bull trout, contributing to the significant increase in bull trout numbers in the Swan River basin (MBTSG 1996f). Introduced species, such as rainbow trout, may benefit large adult bull trout by providing supplemental forage (Faler and Bair 1991; Pratt 1992; ODFW, *in litt.* 1993). Introductions of non-native game fish result in increased angling and subsequent incidental catch and illegal harvest of bull trout (Rode 1990; Bond 1992; WDW 1992; MBTSG 1995c). Thus, the effects of introduced species on bull trout involve complex interactions that are dependent on several factors.

In 1992, chemical eradication of brook trout was initiated in Sun Creek of the Klamath River DPS (Buktenica 1997). The chemical treatment apparently killed a number of bull trout due to the difficulty of removing fish prior to treatment (Buktenica 1997). Other eradication programs relying on chemical treatments would likely have similar effects on bull trout. Ongoing management actions in Threemile and Long creeks focus on brook trout eradication via selective electrofishing, snorkel-spearing, trapping, and chemical treatments with the objective of expanding bull trout range. Brook trout have declined in Threemile Creek, but there has been no measurable change in brook trout numbers in Long Creek (Dunsmoor and Bienz, Klamath Tribe, *in litt.* 1997).

V. EFFECTS OF THE ACTION

Direct effects occur simultaneously with, or immediately after, implementation of the proposed actions. Indirect effects include future activities that are induced by these activities but occur after the action is completed. Effects of the action also include direct and indirect effects of interrelated and interdependent actions (see 50 CFR 402.02). Future actions with Federal involvement, not included in this biological opinion, and which potentially impact bull trout are not covered under this document but are subject to separate section 7 analysis and review.

Service Assumptions

The following assumptions were used by the Service to evaluate the proposed action. These assumptions frame the Service's expectation of impacts likely to occur as a result of the

continued implementation of LRMPs as amended by PACFISH and INFISH.

1. Implementation of LRMPs, as amended by PACFISH and INFISH, includes components and objectives of an interim ACS that will result in reducing the risk of loss of populations and reduce the potential negative impacts to aquatic habitat in the short-term. The species will persist, but most likely not recover, under this direction.

2. PACFISH and INFISH are intended to be interim strategies that will be replaced by a long-term, comprehensive management strategy that integrates processes and functions from riparian, aquatic, and terrestrial ecosystems, includes a comprehensive aquatic conservation strategy for listed, proposed, and sensitive fish species, a spatially stratified and prioritized restoration strategy, and is based on an adaptive management process.

3. All actions in watersheds containing bull trout will be consistent with the riparian goals in PACFISH and INFISH. The determination of ACS consistency is a responsibility of land management agency line officers and is supported by sound, scientifically-based information preferably gained through watershed analysis.

4. S&Gs in the PACFISH and INFISH strategies will be strictly implemented as written, unless individual administrative units have other standards that are more restrictive and better protect and conserve aquatic resources. Suggestions made to administrative units during PACFISH implementation field reviews will be strongly considered when making management decisions.

5. All goals, objectives, standards, and guidelines in PACFISH that apply to anadromous fish also apply to bull trout in PACFISH areas.

6. Key, priority, and special emphasis watersheds will be identified and managed to conserve habitat for anadromous and resident fish and to provide a comprehensive refugia network for the protection and recovery of bull trout. The refugia network will include important high quality but unoccupied historical habitat for bull trout.

7. Non-key and priority watersheds containing bull trout will be managed to meet riparian goals in PACFISH and INFISH and in a manner that conserves habitat for anadromous and resident fish.

8. The USFS and BLM will work with the Service to develop and implement strategies that integrate and coordinate restoration, protection, and evaluation measures to expeditiously achieve restoration objectives at multiple scales.

9. Watershed analysis will be conducted using the Federal Guide "Ecosystem Analysis at the Watershed Scale" and will not be project-driven but undertaken to generate an information base and recommendations for use in project planning. The modules associated with the Federal Guide will be used until other modules can be proven to be as or more effective for watershed analysis. Interim RMOs and RHCAs will be refined through watershed analysis.

10. Monitoring of PACFISH implementation will continue, but be expanded to include INFISH areas and to require regional/state level FS and BLM line officer involvement. An effectiveness

monitoring strategy will be developed and initiated in a short time frame.

II. Project and watershed level consultations, using the section 7 consultation streamlining guidance and Level I and II team process have and will continue to operate to reduce the potential for take or adverse effects to bull trout at the project and watershed levels.

Although the LRMPs as amended by the PACFISH and INFISH aquatic conservation strategies (ACSs) were intended to preserve management options for anadromous (PACFISH) and inland native (INFISH) fishes for an interim period by reducing the risk of loss of populations and reducing potential negative impacts to aquatic habitat, the level of protection afforded individual aquatic species varies considerably. Certain activities that are consistent with the LRMPs and RMPs as amended by PACFISH and INFISH may not completely avoid take of individuals or loss/degradation of important habitats. For example, under MM-1, mineral operations may be located in RHCAs. The current environmental baseline affecting the various DPSs of bull trout is not the same in each case. Also, PACFISH and INFISH were not designed to be landscape-scale, long-term conservation strategies, which narrows their influence on aquatic resources. They focus only on riparian and instream habitats and do not integrate other watershed factors upslope that can greatly impact aquatic ecosystem functions and processes. The Service believes that incomplete or inconsistent application of S&Gs, differing interpretations of the intent of the interim ACSs' guidance among field units and within the interagency structure, inaccurate assumptions concerning the level of protection to bull trout offered by various components within the ACSs, and the narrow scope of these strategies may also contribute to take.

To determine the potential for effect of LRMPs as amended by PACFISH and INFISH on bull trout and their habitat, the Service constructed its analyses using the following three tiers of effects: 1) ACS Component-Related Effects: effects associated with components within the ACSs that pertain to all activities; 2) Specific Application Effects: effects of specific land management activities associated with ACS S&Gs; and 3) Spatially Directed Effects: effects associated with LRMP-designated land management emphasis areas.

ACS Component-Related Effects

The eight goals of the PACFISH and INFISH strategies are similar and focus on riparian and instream habitat functions and processes. These goals give general direction to maintain and restore characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. RMOs, RHCAs, Key Watersheds in PACFISH and Priority Watersheds in INFISH, watershed analysis, watershed restoration, and monitoring are components of the strategies that are designed to be an integral part of all actions and work in concert toward realizing the riparian goals. How these components are applied at the watershed and site-specific levels will affect the types and outcomes of actions and, therefore, will be overriding factors that influence the potential for take of the species as well as the potential of adverse effects on the habitat.

1) RMOs

Although existing LRMPs afforded riparian areas some protection, degradation of these areas continued. Interim RMOs were included in PACFISH and INFISH to halt the continued

degradation by providing a consistent set of interim criteria for riparian areas and fish habitat that are good indicators of ecosystem health, are quantifiable, and are subject to accurate and repeatable measurements. These indicators were intended to serve as default “target” values that when achieved would provide a high level of habitat diversity and complexity for, and meet the needs of, the fish community inhabiting a watershed. In managed watersheds, where current habitat conditions are worse than the RMOs, implementation of the interim ACSs may result in some improvement for bull trout. In watersheds where habitat features are similar to RMOs, implementation of these strategies may support the persistence of bull trout, but recovery beyond their current status is uncertain. Effective indicators of stream habitat condition would provide criteria against which progress toward attainment of riparian goals could be measured. The Service has the following general concerns with RMOs as established by PACFISH and INFISH:

- 1) no decision framework was provided for land managers to decide which actions will retard or prevent attainment of RMOs;
- 2) no time frame for attainment of the RMOs were designated;
- 3) data requirements were not described for determining whether RMOs are met or for changing RMO values;
- 4) no direct guidance was given to prevent degradation of areas that currently surpass the RMOs;
- 5) both strategies allow RMOs to be adjusted based on site-specific rather than watershed analysis;
- 6) neither strategy provides clear guidance for management of areas where existing data, in lieu of watershed analysis, indicates that watershed or stream reach habitat capabilities could surpass the RMOs values; and
- 7) application of RMOs throughout the areas where PACFISH and/or INFISH amend LRMPs and RMPs is not consistent.

The concern relating to the lack of direction as to data requirements needed to change RMOs was identified as a deficiency in the BA. Although default RMO values are used widely, there is an increasing tendency for administrative units to modify RMOs based on results from watershed analysis and site-specific analysis; however, RMOs have been modified using insufficient data for some ongoing projects, such as special use permits and some emergency flood and fire response actions (Appendix 4- letter to Russ Strach NMFS from Jack Williams BLM dated October 28, 1997).

More specifically, the Service has concerns about the RMO temperature variable in PACFISH and the absence of a criteria for sediment among RMOs for both strategies. Stream temperature and substrate composition may be particularly important characteristics of suitable habitats for bull trout (Lee et al. 1997). PACFISH RMOs were developed to accommodate the needs of anadromous fish species and are applied to streams in watersheds with anadromous fish. The

moving average maximum temperature criteria identified in the PACFISH RMOs are too high for bull trout during most of its life stages (Appendix 5- Temperature section). Thermal barriers have contributed to the disruption and fragmentation of bull trout habitat (Buchanan et al. 1997; USEPA 1997; MBTSG 1998; WDFW 1997). Also, increases in stream temperatures can cause direct mortality, displacement by avoidance (Bonneau and Scarnecchia 1996), or increased competition with species more tolerant of warm stream temperatures (Craig and Wissmar 1993 cited in 62 FR114 Proposed Rule; MBTSG 1998; Rieman and McIntyre 1993). Sediment is another important indicator of ecosystem condition since sedimentation can increase water temperatures, reduce pool depth, alter substrate composition, reduce interstitial space, and cause channels to braid (MBTSG 1998, Rieman and McIntyre 1993). Bull trout are more strongly tied to the stream bottom and substrate than other salmonids (Pratt 1992). They prefer loose, clear gravel for spawning (Fraleay and Shepard 1989, McPhail and Murrey 1979), spend 220+ days in the gravel from egg deposition to emergence, and use interstitial spaces in substrate as cover during juvenile rearing and overwintering (Baxter and McPhail 1996; Goetz 1989; Jakober 1995; Pratt 1992; Thurow 1997). Although the Service recognizes the variability of sediment concentrations across the Columbia River and Klamath River DPSs, an RMO addressing sediment as an indicator of ecosystem condition should be considered as a criteria for determining the quality of habitat for bull trout.

2) RHCAs

Protection and management of RHCAs is a principal means by which the riparian goals and RMOs may be attained. RHCAs comprise the stream channel, adjacent riparian areas, unstable areas, and other areas that are directly linked to geomorphic, hydrologic, and ecological processes that determine the quality of fish habitat and that serve as connective corridors. As with the RMOs, default widths of RHCAs identified in the strategies can be modified using watershed or site-specific analysis. The BA points out the lack of process or guidelines describing the level of documentation and strength of rationale required to redefine RHCA boundary widths or justify activities within the RHCA boundaries. Similarly, the Service has identified the following concerns regarding RHCAs described in both strategies:

- 1) specific guidance is not given on the rigor of data required to modify RHCA boundary widths;
- 2) no guidance is given as to what types and levels of land management activities should be allowed in or adjacent to the RHCA; and
- 3) interim RHCA widths may not be adequate to fully protect fish habitats.

Ground disturbance within or outside of RHCAs, associated with activities such as timber harvest, mining, livestock grazing, road construction, or recreation activities, could increase sediment and pollutant delivery rates to streams; disrupt hydrologic connectivity for seeps, springs, and groundwater upwelling to the stream; and reduce habitat and channel complexity. In most situations, interim RHCAs would buffer streams from sediment and pollutants carried in

unchannelized flows, but may not effectively protect streams from sediment produced in upslope areas and carried in channelized flows, such as through culverts (Belt et al. 1992). PACFISH and INFISH do not prevent potentially harmful activities, such as road building or mining, at the edge of the floodplain. These actions could result in increased sedimentation or other impacts to the floodplain, and hence the stream, during floods or when the stream changes its course within the floodplain. As described above in the discussion of the effects of RMOs on bull trout, sedimentation can have a negative effect on every life stage of bull trout due to the close relationship of the species to the stream substrate.

3) Key and Priority Watersheds

The Service has the following concerns regarding the designation and locations of key (PACFISH) and priority (INFISH) watersheds:

- 1) there is no process for adding or deleting key and priority watersheds dependent on new information;
- 2) designated PACFISH key watersheds do not sufficiently protect bull trout populations where anadromous salmonids and bull trout do not coexist;
- 3) key and priority watersheds were only designated in areas where anadromous salmonids (PACFISH) or bull trout (INFISH) currently exist, so currently unoccupied, historical, high quality and important habitats do not receive the added protection given under these designations; and
- 4) key and priority watersheds have not adequately protected and reconnected high quality habitat and species strongholds for bull trout.

A widely held principle of managing for the survival and recovery of threatened and endangered aquatic species is that remaining stronghold areas for the species and high quality habitats be preserved and reconnected. The current network of key or priority watersheds was established for the conservation of habitat for anadromous fish or resident fish, specifically Federally listed salmon ESUs and bull trout populations for the PACFISH and INFISH, respectively. Refugia is a cornerstone of most species conservation strategies and are designated areas that either provide, or are expected to provide, high quality habitat (USDA and USDI 1998a). A system of key or priority watersheds that serve as refugia is crucial for maintaining and recovering habitat for Federally listed endangered and threatened species or species with viability concerns. The streams in Key or Priority watershed areas are intended to serve as cores of high quality habitat within a landscape containing large areas of low quality habitat and as population centers for recolonization during the recovery of degraded areas. This is particularly important for locally-distributed fish species such as bull trout.

Although key and priority watersheds of PACFISH and INFISH are not specifically defined to serve as fish “refugia”, as noted in the BA, the description and selection criteria implies refugia as their function. Both strategies state that the intent of designating Key and Priority watersheds is to provide a pattern of protection across the landscape where habitat for either anadromous or inland native fish would receive special attention or treatment. Areas in good condition are to

serve as anchors for the potential recovery of depressed fish stocks, and are to provide colonists for adjacent areas where habitat had been degraded by land management or natural events. Those areas of lower quality habitat with high potential for restoration are to become future sources of good habitat with implementation of a comprehensive restoration program. The USFS and BLM report 74 and 98 per cent of the occupied bull trout habitat on Federal lands in the Columbia and Klamath DPSs, respectively, is designated as key and/or priority watersheds; however, the quality of the riparian and aquatic habitats and watershed condition within those watersheds has not been evaluated (USDA and USDI 1998a). What is known is that 36 and 69 percent of the key and priority watersheds occupied by bull trout in the Columbia and Klamath DPSs, respectively, are allocated primarily for timber management, while 6 and 1 percent of the key and priority watersheds occupied by bull trout in the Columbia and Klamath DPSs, respectively, have a primary emphasis for range management (USDA and USDI 1998a). Although timber and range management can be conducted in a manner that is compatible with maintaining strong fish populations, key and priority watersheds may not meet their defined purpose when their primary use is not clearly defined as the protection of high quality habitat and the conservation of species.

The current list of designated key and priority watersheds does not include all high quality areas and species population strongholds in bull trout currently occupied and historical habitats that are needed to adequately conserve and recover bull trout. The key watershed network in the PACFISH areas is based on the distribution of listed anadromous fish populations and, therefore, some stronghold populations and important high quality habitat for bull trout were not included in this network. The middle Columbia River portion of the PACFISH area does not contain anadromous fish but does have bull trout populations; subsequently, no key watersheds were designated in this area. The Northwest Forest Plan does include key watershed designations, which should be considered in project specific analysis of effects. Additionally, some bull trout population strongholds in the INFISH area were not designated as priority watersheds.

Inclusion of high quality, unoccupied bull trout habitat into the key and priority watershed networks was not a consideration. Although most administrative units in PACFISH and INFISH areas do not have information on the quality of habitat for bull trout, there are assumptions that can be made on where those habitats might be found. Bull trout are more likely to be found in areas with lower road densities, forested rather than unforested areas, in mid-size streams, on steeper, wetter, higher elevation and more erosive lands (Lee et al. 1997). Although roads are not the only factor depressing fish populations, they are a surrogate and are closely associated with many other land management actions that do affect aquatic systems (i.e. timber harvest, mining, recreation, fishing, and others). Roads have been, and continue to be a primary source of sediment impacts to developed watersheds (Furniss et al. 1991). Lee et al. (1997) found a pattern of decreasing strong populations of bull trout with increasing road density. Given these relationships, it could be suspected that the high quality areas that need protection may also be population centers for bull trout and will likely be found in roadless and less roaded areas. These areas might be more readily found in those management area categories (MACs) that are described as “natural and unmodified environments”, “special natural areas” (including administratively withdrawn areas), and “essentially unmodified forest and grasslands” (USDA and USDI 1998a). According to the BA, approximately 48 and 28 percent of the strong and depressed bull trout populations in the Columbia and Klamath River DPSs, respectively, are in these three less developed MACs. LRMPs and RMPs amended by PACFISH and INFISH do

not restrict road density or access into stronghold areas or roadless areas.

The USFS and BLM have committed to addressing some of the deficiencies in designated key and priority watershed identified above in their letter to the Service, dated June 19, 1998. In that letter they commit to identifying and clarifying the primary functions of key, priority, and special emphasis watersheds and to using these designated watersheds to develop a comprehensive refugia network. The Service supports this direction and encourages the USFS and BLM to make the identification of key, priority, and special emphasis watersheds a dynamic process that can be revised as new information on bull trout status and distribution is received.

4) Watershed Analysis

The Service is concerned that:

- 1) watershed analysis has not been emphasized nor consistently conducted and applied under PACFISH or INFISH;
- 2) the results and recommendations in those watershed analyses that have been completed are often not considered and included in project planning, design, and associated management decisions;
- 3) no process has been identified to prioritize watersheds for analysis; and
- 4) as identified in the BA, there are no examples in the PACFISH and INFISH areas of large-scale watershed analyses for long-term planning and management strategies.
- 5) the modules currently used in watershed analysis are optional. A consistent, scientifically documented approach needs to be developed for use in the analysis. Until that time, however, the draft modules are the best tool available.

The intent and function of watershed analysis is to provide a framework for understanding and carrying out land use activities within a geomorphic context; it remains a major component of the ecosystem analysis process and a key factor used to prioritize restoration and conservation actions. There is a broad agreement that risk to the species increases without watershed analysis unless actions are very limited in scope and excellent local knowledge is available (Appendix 4 - letter to Russ Strach NMFS from Jack Williams BLM dated October 28, 1997). To better control risk, the development and use of a method for prioritization of watersheds based on management needs and their importance to listed species, such as bull trout, is needed that enables a stratified approach to planning activities and restoration projects while increasing management effectiveness for the survival and recovery of those species. This stratified approach could be a major component within a long-term conservation and recovery strategy, such as the one that the USFS and BLM have committed, in their June 19, 1998, letter to the Service (see Appendix 6), to developing and implementing .

Since the adoption of the PACFISH and INFISH strategies nearly three years ago, the application and use of watershed analysis has proceeded slowly in all the bull trout DPSS. The Columbia

River and Klamath River DPSs have watershed analyses completed for 8 and 20 percent of the Federal land, respectively (USDA and USDI 1998a). However, not all of these watershed analyses followed the process outlined in the Federal Guide, "Ecosystem Analysis at the Watershed Scale", and identified in the strategies as the method to use. As indicated by the PACFISH monitoring report for FY 1995-97, most land management decisions in the DPSs and analysis areas are made using site-specific analysis of stream reaches in a proposed project area. Although site-specific watershed analysis is used to modify RHCAs, in most cases land management units have found it easier to use the RMOs and RHCAs rather than conduct the required watershed analysis to change the RMOs or the RHCAs. In some cases, modifications made to RHCAs have occurred but are not supported by adequate documentation, such as watershed analysis. On the other hand, there are examples where expensive, time-consuming analyses have been conducted but the data has not been integrated, the analyses are inconclusive, and the recommendations are not used when making management decisions.

There is also some concern regarding the scale of analysis being used to support modifications to RHCAs and RMOs. Too often, the scale of the analysis is limited to the immediate area of the project, poorly documented, and too specific to characterize the ecosystem processes and functions within the watershed. In general, information at both the watershed and site scales are needed: watershed analysis places the broader context on RHCAs and RMOs and defines whether and what changes are appropriate; site-specific information is needed to define precisely where the new RHCA boundaries should be placed (Appendix 4 - letter to Russ Strach NMFS from Jack Williams BLM dated October 28, 1997).

As pointed out in the BA, deficiencies found with the application of watershed analysis included inconsistent application under the current project-driven approach to analysis of a watershed, a lack of a clear understanding of what a watershed analysis entails, and the level of analysis necessary to affect a meaningful result. These deficiencies stem from the interim nature of the strategies and lack of consistent direction. Without full application of the "Watershed Analysis at the Ecosystem Scale" guidelines, decisions affecting aquatic habitats are being made without the information necessary to account for the habitat conditions and population needs of the species. In the letter from the USFS and BLM dated June 19, 1998, the land management agencies have committed to using the Federal Guide process, "Ecosystem Analysis at the Watershed Scale", to generate an information base and recommendations that will not be project driven but rather be used for planning projects in a watershed. The Service supports this commitment; it can reduce the risk to bull trout by ensuring that an understanding of ecosystem functions and processes and consideration of the potential impacts of actions on bull trout and their habitats have been incorporated into project planning.

5) Watershed Restoration

Neither PACFISH nor INFISH included a restoration plan or a process to develop a restoration plan given the expected short time period for implementation of these interim directions. The extension of these two strategies indefinitely until a more comprehensive strategy is developed negates this reasoning for postponement. Both strategies assumed no additional funding would be available for watershed restoration, but that some existing funds may be retargeted to initiate a watershed restoration program. No specific guidance, however, was given on how to prioritize

restoration efforts. Both ACSs assume that watershed analysis would be used to establish restoration priorities for each watershed and that key and priority watersheds would have the highest priority for restoration efforts. To date, restoration has been conducted as budgets allow and emphasis has been placed on priority watersheds (Appendix 4 - letter to Russ Strach NMFS from Jack Williams BLM dated October 28, 1997). The lack of implementation of prioritized, scheduled restoration projects, particularly riparian protection and road reduction projects, allows the environmental baseline to continue to degrade the status of bull trout and hinder recovery of their habitats. The USFS and BLM recognized in their BA the long-term negative effect that will occur to bull trout if restoration and improvement activities continue to be inadequately funded and lack a prioritization process tied to watershed analysis and listed species. In the Klamath River DPS, all bull trout populations are considered depressed (Lee et al. 1997). Approximately 70 percent of these populations are associated with roaded watersheds and would greatly benefit from restoration efforts in those areas (USDA and USDI 1998a). Likewise in the Columbia River DPS, 62 percent of the sub-watershed on USFS and BLM lands occupied by bull trout have moderate or greater (>0.7 miles/mi²) road densities (USDA and USDI 1998a); these populations would benefit from a prioritized restoration strategy.

The commitment adopted by the USFS and BLM in their letter to the Service, dated June 19, 1998, goes a step beyond the PACFISH and INFISH approach of merely not hindering natural restoration processes. The commitment states simply that restoration strategies will be developed initially by March 1, 1999, and implemented to achieve restoration objectives at multiple scales that integrate restoration, protection, and evaluation measures. Development and initiation of these integrated, multi-scale restoration strategies will begin to reduce the negative effects to bull trout referred to in the BA, given that the restoration strategies include a basis for prioritizing restoration in areas where the greatest gains can be made for bull trout, include a schedule for the restoration projects, and remain dynamic documents that are modified annually to reflect priorities and opportunities determined through watershed analysis.

6) Monitoring

To help improve the quality of management activities, monitoring is needed to provide essential feedback to land managers on whether S&Gs are being met, whether S&Gs are effective, and whether goals and objectives are being achieved. In PACFISH, it is required that onsite monitoring occur to determine the level of implementation of PACFISH S&Gs, and that stratified effectiveness monitoring be initiated using statistically valid study techniques and methods. INFISH direction on monitoring is less defined, merely focusing monitoring on determining whether or not S&Gs were implemented and mentioning the need to initiate effectiveness monitoring, especially in priority watersheds. Due to the interim nature of the PACFISH and INFISH strategies, no specific requirements were included for validation monitoring to determine the validity of the assumptions used in developing the interim direction. For similar reasons, and the anticipation of an approaching completion of a more comprehensive ecosystem management strategy (ICBEMP), effectiveness monitoring has been postponed. Since 1995, an interagency team has annually monitored the implementation of the PACFISH strategy in USFS and BLM selected areas; INFISH areas had received only internal USFS reviews until 1997 when a few watersheds in INFISH areas were included in interagency PACFISH implementation field reviews.

The value of these field reviews is high, but adoption of a more rigorous, collaboratively developed schedule of reviews needs to occur. The reviews provide the land management agencies as well as the Service an avenue through which to discuss site-specific implementation problems and opportunities, to answer questions regarding the intent of S&Gs and strategy components, and to provide suggestions for better implementation of the strategy. The USFS and BLM outlined in the BA the problems and deficiencies found during PACFISH implementation monitoring reviews and noted the lack of a “formal” monitoring strategy in INFISH areas. To address the deficiencies they identified in the BA, the USFS and BLM committed to improve monitoring in their letter to the Service, dated June 19, 1998. In this commitment, the USFS and BLM agree to develop, collaboratively with the Service, a “mechanism for improved monitoring” that will include updating the PACFISH monitoring strategy, developing an effectiveness monitoring strategy, improving the current implementation monitoring process, and expanding the monitoring into the INFISH areas. The Service agrees with their recognized deficiencies and supports their commitment. The Service also identifies the need to not only develop but implement an effectiveness monitoring strategy as soon as possible, since without findings from such an analysis, it is difficult to ascertain without suppositions and assumptions whether or not the PACFISH and INFISH directions will provide for bull trout survival and recovery.

Effects of Specific Management Activities

A wide variety of activities are addressed and directed by LRMPs and RMPs; see the previous section on description of the action, or the BA (USDA and USDI 1998a) for more specific information. To determine the effects of these actions, the Service’s analysis identified and grouped activities into categories used to designate S&Gs for PACFISH and INFISH, and rated them as high, moderate, or low, based on the potential to adversely affect bull trout. These S&Gs are listed in their entirety in the description of the action section of this biological opinion. Where a specific standard and guideline is indicated, please refer to that section for more specific information.

Timber Management

Timber management affects bull trout through a variety of impacts or alterations to watershed structural conditions and functional capacity. The primary pathways for negative impacts are through altering stream temperature patterns, hydrologic and sediment regimes, and reducing channel complexity as well as the structural features that maintain channel complexity. Potential adverse effects also include introduction of pollutants (fuels, fertilizers, pesticides, and herbicides) into watercourses while conducting harvest, site preparation, and stand maintenance activities.

Bull trout require colder water temperatures than most salmonids and these requirements vary by life cycle stages; for specific information on bull trout temperature requirements refer to the previous section describing the species and the temperature section of Appendix 5. According to the BA (USDA and USDI 1998a), timber harvest has the potential to affect stream temperatures primarily through reducing streamside canopy levels. The potential for riparian vegetation to mediate stream temperatures is greatest for small to intermediate size streams and

diminishes as streams increase in size, lower in the floodplain (Spence et al. 1996). Generally, small and intermediate streams represent the majority of total aggregate stream length within a watershed (Chamberlin et al. 1991). Given these relationships, maintaining adequate canopy conditions on small and medium sized streams (including intermittent streams) is necessary to avoid altering natural temperature regimes.

Groundwater entering streams (especially small streams) may be an important determinant of stream temperatures (Spence et al. 1996) or may provide localized thermal refugia in larger stream systems. Where groundwater flows originate above the neutral zone (16-18 meters below the surface in general) groundwater temperatures will vary seasonally, as influenced by air temperature patterns (Spence et al. 1996). Timber harvest from upland areas exposes the soil surface to greater amounts of solar radiation than under forested conditions (Carlson and Groot 1997), elevating daytime temperatures of both air and soil (Fleming et al. 1998, Buckley et al. 1998, Morecroft et al. 1998) and increasing diurnal temperature fluctuations (Carlson and Groot 1997). Relationships between shallow source groundwater flows and air and soil temperatures indicate that harvest activities in upland areas may increase stream temperatures via increasing temperature of shallow groundwater inflows. Other pathways for harvest actions to influence stream temperature include changing the volume and timing of peak flows, elevating suspended sediment levels, and altering channel characteristics (Chamberlin et al. 1991, Spence et al. 1996, USDA and USDI 1998a).

Bull trout are sensitive to hydrologic alterations due primarily to the extended period of time from egg deposition to fry emergence spent within the streambed. Hydrologic changes that alter normal bedload movement and scour and fill patterns can excavate or bury redds, exposing eggs to stream flow, and trapping or crushing eggs or fry. Increasing levels of fine sediments affects developing eggs by filling interstitial spaces within stream substrate, reducing or eliminating water flow through the redd, supply of oxygen to developing eggs, removal of waste products, and may be sufficient to reduce or eliminate the ability of juvenile fish to emerge from the redd. Additional information on biological requirements is contained in the habitat complexity and substrate composition and stability sections of Appendix 5. Hydrologic and sediment regimes can be altered by vegetation removal, site disturbance, and soil compaction associated with timber harvest (USDA and USDI 1998a). The nature and magnitude of these changes is mediated by local climatic, geologic, and topographic characteristics as well as re-vegetation patterns (Spence et al. 1996). Harvest and site preparation that disturbs soils such as tractor skidding, cable yarding, burning and scalping or scarification alter the ability of soils to accept water, increasing the potential for overland flow, and altering normal pathways for water entry to streams (Chamberlin et al. 1991). Canopy removal also alters the amount (Troendle and Olsen 1993), frequency, and intensity of precipitation delivery to forest floors. These disturbances may also lead to increased amounts of sediment introduced into streams and mobilization of sediments within the stream channel, mediated again by local conditions.

Land management activities can alter processes that create and maintain riparian and aquatic habitats, often resulting in reductions of habitat complexity and the diversity of aquatic species (Elmore and Beschta 1987, USDA et al. 1993, USDA and USDI 1998a). In watersheds containing bull trout, changes in habitat features associated with reductions in habitat complexity include decreases in: large woody debris, pool quality, channel stability, substrate quality, groundwater inflows, and suitable habitat serving as corridors between habitat patches (e.g.

resulting from increases in water temperature [MBTSG 1998]). Refer to the section on habitat complexity in Appendix 5 for additional information.

The LRMPs as amended by PACFISH and INFISH contain a S&G for timber management (TM-1). The primary focus of this S&G is to modify management activities within the RHCA, excluding the land base identified as RHCAs from LRMP determinations of Allowable Sale Quantity. The S&G requires watershed analysis prior to salvage activities in RHCAs, and that silvicultural practices within RHCAs be applied where needed to achieve RMOs, in a manner that does not retard attainment of RMOs and avoids adverse effects to listed anadromous fish. S&Gs for general riparian area management (RA-2, RA-3, RA-4) address the storage and use for fuels and other toxicants, and application of pesticides, herbicides and other chemicals within RHCAs. Areas designated as key watersheds add an additional one-half site potential tree height or 50 feet of slope distance to the standard width for RHCAs. These S&Gs, along with RMOs and riparian goals, form the basis for protecting aquatic systems from timber management impacts (exclusive of road system impacts which are addressed later). While these S&Gs, as written, should limit impacts from management activities in RHCAs, they do not address the magnitude and extent of activities in upslope areas. Timber harvest outside of RHCAs has potential to alter temperature and hydrologic regimes, increase suspended sediment levels and may, under certain conditions, lead to mass wasting. The Service expects that upslope harvest has the potential for severest impacts where RHCAs are immature, stream large woody debris levels are below RMOs, where harvest activities occur on steep unstable slopes, and where bull trout occur outside of key and priority watersheds. Timber management activities are considered to present a moderate to high risk to bull trout under conditions identified above and where LRMP and RMP management focus is on timber production. Special emphasis watersheds, when identified, may lessen this risk under certain situations.

Roads Management

According to the BA (USDA and USDI 1998a): "The construction, use and maintenance of forest roads has been shown to be a primary source of sediment impacts in developed watersheds. Roads can alter both subsurface and surface water flows which, in turn, may alter both peak and base stream flows (USDC 1997, Jones and Grant 1996)." Lee et al. (1997), indicate that over 205,000 km of roads exist throughout the Columbia Basin on USFS and BLM managed lands, with an attendant high number of stream crossings which occur at higher densities on steep dissected terrain. Lee et al. (1997), also note that although improvements in road construction and logging methods can reduce sediment delivery to streams, sedimentation increases are unavoidable even when utilizing the most cautious logging and construction methods. Bull trout are very sensitive to sediment increases, hydrologic alterations, and impacts to stream structure and function imposed by extensive road networks and high road densities. Roads are also conduits for a host of non-management related impacts such as noxious weed introductions, illegal transplants of predatory or competing non-native fishes, increased harvest pressure and potential for poaching, dispersed recreation impacts, and potential introduction of toxicants from spills and roadside application of herbicides. Additional information on the relationship of roads to bull trout biological characteristics are contained in the roads section of Appendix 5, and the road analysis contained in Lee et al. (1997).

S&Gs for road management are listed in the description of the action (RF-1 through RF-5).

Major features of these S&Gs are:

- RF-1) Encouraging interagency cooperation to achieve consistency in road design, operation and maintenance to attain RMOs;
- RF-2) Limiting road impacts in RHCAs through minimizing new road and landing construction and requiring watershed analysis prior to construction of new roads or landings, initiating development and implementation of road or transportation management plans, addressing road surface and drainage elements to avoid sediment delivery to streams, and prohibiting sidecasting soils or snow from the road surface in RHCAs with designated critical habitat for listed anadromous fish;
- RF-3) Addressing design and sediment problems on existing roads, prioritizing reconstruction efforts to eliminate identified problems, and closing and stabilizing or obliterating and stabilizing unneeded roads as prioritized to their impact to listed fish and value of riparian resources affected;
- RF-4) Constructing and reconstructing culverts, bridges, and stream crossings to accommodate 100-year floods; and
- RF-5) providing and maintaining fish passage at stream crossings.

There is no positive contribution from roads to physical or biological characteristics of watersheds or landscapes. Under present conditions, roads represent one of the most pervasive impacts of management activity to native fish communities. As stated above, even the most cautious construction methods are likely to yield some degree of impact. Although Lee et al., (1997) note that the threshold for negative response from road induced sedimentation and hydrologic modification to streams and watersheds is not well known, their analysis does identify overall patterns related to road densities. The correlation between bull trout status classification and geometric mean road density was significant ($p=0.0001$) and negative (Quigley et al. 1997). Bull trout were indicated as being: absent at geometric mean road densities (mi./mi.^2) at or above 1.31, depressed at or above 0.67, and strong at or above 0.18 (Lee et al. 1997). Correlation between bull trout status classification was significant ($p=0.0001$) and negative for the arithmetic mean of upstream road density (mi./mi.^2) with bull trout being absent at a mean road density of 1.71, depressed at 1.36, and strong at 0.45 (Lee et al. 1997).

The Service expects that road system impacts are ongoing and will be most severe where RHCAs are non-functional and roaded, where roads and road crossings occur on steep unstable slopes, and where bull trout occur in watersheds with road densities (arithmetic mean for upstream areas) above 1.36 mi./mi.^2 . Road impacts are considered to present a high risk to bull trout under the conditions identified above, where LRMP management focus is on intensive management for timber production, and with new road construction in inventoried and uninventoried roadless areas.

Grazing Management

Impacts of livestock grazing on stream habitat and fish populations can be separated into direct

and chronic effects. Direct effects are those which contribute to the immediate loss of individual fish, and loss of specific habitat features (undercut banks, spawning beds, etc) or localized reductions in habitat quality (sedimentation, loss of riparian vegetation, etc.). Chronic effects are those which, over a period of time, result in loss or reductions of entire populations of fish, or widespread reductions in habitat quantity and/or quality.

Bull trout vulnerability to direct effects of grazing is greatest during early development stages. During early phases of their life cycle, fish have little or no capacity for mobility, and large numbers of embryos or young are concentrated in small areas. Cattle entering spawning areas can trample redds, and destroy or dislodge embryos and fry. Embryo and fry mortality can also result from localized sedimentation of spawning beds (Bjornn and Reiser 1991). Accumulations of silt, if delivered in sufficient quantity, can fill interstitial spaces in stream bed material impeding water flow through redds, reducing dissolved oxygen levels, and restricting removal of wastes from redds. As development progresses, vulnerability to mortality from direct effects decreases.

Direct effects to habitat include compacting stream substrates, collapse of undercut banks, destabilized stream banks and localized reduction or removal of herbaceous and woody vegetation along stream banks and within riparian areas (Platts 1991). Increased levels of sediment can result through the resuspension of material within existing stream channels as well as increased contributions of sediment from adjacent stream banks and riparian areas. Impacts to stream and riparian areas resulting from grazing are dependent on the intensity, duration, and timing of grazing activities (Platts 1989) as well as the capacity of a given watershed to assimilate imposed activities, and the pre-activity condition of the watershed (Odum 1981).

Chronic effects of grazing result when upland and riparian areas are exposed to activity and disturbance levels that exceed assimilative abilities of a given watershed. Both direct and indirect fish mortality are possible, and the potential for mortality extends to all life cycle phases. For example, following decades of high intensity season-long grazing, the Whitehorse Creek watershed in Oregon had extensive areas of degraded upland and riparian habitat (USDI 1992). According to the USDI (1992), an extreme rain-on-snow event in late winter 1984 and subsequent flooding of area streams flushed adult and juvenile trout through area streams and into Whitehorse Ranch fields and the adjacent desert.

Increases in stream temperature and reduced allochthonous inputs following removal of riparian vegetation, increased sedimentation from in-stream, riparian and upland sources, and decreased instream, riparian and upland water storage capacity, work in concert to reduce the health and vigor of stream biotic communities (Armour et al. 1991, Platts 1991, USDI 1992, Chaney et al. 1990). Increased sediment loads reduce primary production in streams. Reduced instream plant growth and woody and herbaceous riparian vegetation limits populations of terrestrial and aquatic insects, the basic food source for juvenile and resident bull trout. Persistent degraded conditions adversely influence resident fish populations (Meehan 1991).

According to Chaney et al. (1990), strategies for protection or restoration of riparian areas must address the contribution of upland areas and their condition to the overall hydrologic regime. Further, strategies should include one or more of the following features:

"Including the riparian area within a separate pasture with separate management objectives and strategies.

Fencing or herding livestock out of riparian areas for as long as necessary to allow vegetation and stream banks to recover.

Controlling the timing of grazing to: (a) keep livestock off stream banks when they are most vulnerable to damage; and (b) coincide with the physiological needs of target plant species.

Adding more rest to the grazing cycle to increase plant vigor, allow stream banks to heal, or encourage more desirable plant species composition.

Limiting grazing intensity to a level which will maintain desired species composition and vigor.

Changing from cattle to sheep to obtain better animal distribution through herding.

Permanently excluding livestock from riparian areas at high risk and with poor recovery potential when there is no practical way to protect them while grazing adjacent uplands."

S&Gs for grazing management are listed in the description of the action (GM-1 through GM-4). Major features of these S&Gs are:

GM-1) Modifying grazing practices (livestock access to RHCAs, length and timing of the grazing season, stocking levels) or suspend grazing if RMOs are not being attained;

GM-2) Eliminate locating livestock handling and management facilities within RHCAs. Relocate or close existing facilities that cannot be modified to meet RMOs or avoid adverse effects to listed fish;

GM-3) Limiting management activities (trailing, bedding, watering, salting, loading) to times or locations that will not retard or prevent attainment of RMOs and that avoid adverse effects to listed fish; and

GM-4) Modify wild horse and burro management to achieve RMOs and avoid adverse effects to listed fish.

The Service expects that livestock grazing impacts will be most severe where RHCAs are non-functional and where range management programs are ineffective at ensuring that terms and conditions of grazing permits are met (including lacking effectiveness due to inadequate resources allocated to the program), where as a result of inadequate supervision, compliance with permit terms and conditions is low. Grazing management is considered to present a high risk to bull trout under conditions identified above, where LRMP and RMP management focus is on intensive grazing management. The Service expects a moderate risk to bull trout from grazing management activities where RHCAs are classified as "functioning at risk", documentation indicates that range management programs experience high levels of compliance with terms and

conditions of grazing permits, and management direction is documented as sufficient to restore riparian conditions. The Service expects a low risk to bull trout where RHICAs are properly functioning and management is documented as sufficient to restore or maintain riparian conditions.

Recreation Management

According to the BA (USDA and USDI 1998a), recreation use has the potential to affect salmonid habitat by: 1) altering upland and riparian soil and vegetation conditions that may lead to increased erosion and runoff, loss of cover and food resources and reductions in water quality; and 2) instream changes that affect stream morphology, water quality, streamflow, substrate and debris. Angling as a result of recreational develop and trail maintenance and construction may lead to direct angling mortality (USDA and USDI 1998a).

S&Gs for recreation management are listed in the description of the action (RM-1 through RM-3). Major features of these S&Gs are:

RM-1) Designing, constructing and operating recreational facilities consistent with attainment of RMOs and requiring watershed analysis prior to locating new recreational facilities in RHCAs;

RM-2) Adjusting dispersed and developed recreation practices where necessary to allow attainment of RMOs and eliminating practices that cannot be modified to be consistent with attainment of RMOs or that continue to have adverse effects to listed fish;

RM-3) Addressing attainment of RMOs and potential effects to listed fish and designated critical habitat in Wild and Scenic, Wilderness, and other Recreation Management Plans.

The Service expects that recreation impacts will be most severe where dispersed or developed facilities are located in RHCAs that are non-functional. Recreation management is considered to present a moderate risk to bull trout under conditions identified above. The Service expects a low risk to bull trout where RHCAs are properly functioning and management is documented as sufficient to maintain riparian conditions.

Minerals Management

Appendix B of the BA compares occupied bull trout subwatersheds to model generated mineral deposit areas finding that, in general, there was little overlap (USDA and USDI 1998a). Comparisons with known or potential oil and gas reserves yielded similar results, with the majority of occupied subwatersheds occurring in areas with no or low potential (USDA and USDI 1998a). While this result may be true for hard-rock mineral mining and oil and gas, sand and gravel mining and recreational suction dredge, placer, and pan mining are activities that may also occur on federal lands. Small heap leach mines are numerous throughout the Columbia Basin (Lee et al. 1997). Impacts to streams from past mining activity may still affect habitat quality on federal lands within the range of bull trout ([Lee et al. 1997, MBTSG 1996] John Day, Grand Ronde, Imnaha and Powder River Basins in Oregon; Salmon and Couer d'alene River Basins in Idaho; and North Fork Flathead, Clark Fork, Kootenai, and Blackfoot River Basins in

Montana, for example).

S&Gs for minerals management are listed in the description of the action (MM-1 through MM-6). Major features of these S&Gs are:

MM-1) Requiring a reclamation plan, approved plan of operations and reclamation bond for mineral operations in RHCAs;

MM-2) Avoid locating structures, support facilities and roads within RHCAs; if no alternatives exist construct facilities in a manner that avoids impacts to RHCAs and close, obliterate, and revegetate roads no longer required for mineral or land management activities;

MM-3) Addresses solid and sanitary wastes from mining activity in RHCAs;

MM-4) Prohibit or minimize impacts from surface occupancy for mineral, oil, gas, and geothermal exploration and development activities;

MM-5) Permit sand and gravel mining in RHCAs only if no alternative exists, and the activity will not prevent attainment of RMOs or adversely affect listed fish; and

MM-6) Development of inspection, monitoring and reporting requirements for mineral activities.

Increased sedimentation, chemical contamination, stream channel modification and destabilization, destruction of riparian vegetation, (Lee et al. 1997) and hydrologic impacts from associated roads are major impacts from mining activities. In addition to stream channel modification, liberation of stored sediments, and stream channel destabilization, suction dredge mining can potentially entrain fish embryos, juvenile salmonids and smaller mature fishes such as sculpin into the dredge works (Harvey et al. 1995). Mining effects can be severe when they occur in areas inhabited by rare fish; negative effects from mining can persist for decades.

The Service expects that mining impacts will be most severe when these activities are located near or upstream of bull trout spawning and rearing areas, where existing or new facilities are located in RHCAs particularly near or upstream of spawning and rearing areas, and when they occur in watersheds already degraded by past activities and management emphasis is on resource extraction. Minerals management is considered to present a high risk to bull trout under conditions identified above. The Service expects a moderate risk to bull trout where RHCAs are properly functioning and mining activity is restricted to small scale recreational placer or suction dredge mining in stream reaches used by bull trout primarily as migratory corridors. The Service expects a low risk to bull trout when minerals management activities occur outside of watersheds presently or historically occupied by bull trout.

Fire/Fuels Management

Management which is used to restore ecological structure, composition, and process is largely experimental and potentially risky (Rieman and Clayton 1997). Burn treatments can remove

coarse wood, reduce large woody debris (LWD) recruitment, reduce canopy cover (leads to increased water temperatures), increase the likelihood of mass erosion on sites, and alter water yield and timing of peak and low flows (Spence et al. 1996; Rieman and Clayton 1997). These are all significant impacts to bull trout habitat.

According to the BA (USDA and USDI 1998a), ground disturbing activities associated with the suppression of wildfire may result in an increase in sediment delivery to streams. In addition, the use of prescribed burns may result in an increase of nutrients and fine sediment into streams. Increasing levels of fine sediments affects developing eggs by filling interstitial spaces within stream substrate, reducing or eliminating water flow through the redd and supply of oxygen to developing eggs, removal of waste products, and may be sufficient to reduce or eliminate the ability of juvenile fish to emerge from the redd. Due to bull trout's extended residency in the gravel (220+ days from egg deposition to emergence), eggs, alevins, and fry are highly vulnerable to the impacts resulting from the deposition of fine sediments.

Prescribed fire treatments can remove coarse wood, lessen LWD recruitment, and lower canopy cover. These can lead to reduced habitat complexity and increased stream temperature, habitat elements that are extremely important to bull trout.

Wildfire suppression also has the potential to impact bull trout. The BA acknowledges the potential for delivery of fine sediments and chemicals (oil and gasoline) from the construction and use of pump chutes. The impacts from fine sediment have been described above.

The use of chemical fire retardants in wildfire suppression can have adverse impacts to bull trout. Retardants can have direct and indirectly effects on salmonids. Large quantities of retardant can cause direct mortality. Indirect effects of retardants include mortality of invertebrates and eutrophication of downstream reaches (Spence et al. 1996).

S&Gs for fires/fuels management are listed in the description of the action (FM-1 through FM-5). Major features of these S&Gs are:

- FM-1) Design fuel treatment and fire suppression strategies, practices, and actions so as not to prevent attainment of RMOs, and to minimize disturbance of riparian ground cover and vegetation;
- FM-2) Locate incident bases, camps, helibases, staging areas, helispots, and other centers for incident activities outside of RHCAs;
- FM-3) Avoid delivery of chemical retardant, foam, or additives to surface waters;
- FM-4) Design prescribed burn projects and prescriptions to contribute to the attainment of the RMOs; and
- FM-5) Immediately establish an emergency team to develop a rehabilitation treatment plan to attain RMO's and avoid adverse effects on inland native fish whenever RHCAs are significantly damaged by a wildfire or a prescribed fire burning out of prescription.

The Service expects that fires/fuels management impacts will be most severe where treatments affect RHCAs that are non-functional, where prescribed fires are difficult to manage/control, and where bull trout subpopulations are susceptible to extinction from stochastic events. In addition, standards and guidelines state that fuel treatment and fire suppression strategies “should recognize the role of fire in ecosystem function and identify those instances where fire suppression or fuel management actions could perpetuate or be damaging to long-term ecosystem function or inland native fish”, but this is not a requirement. Given the risky nature of prescribed fires and the sensitivity of bull trout to the resulting habitat changes, the Service feels that this activity has a high potential to create adverse impacts to bull trout. Fires/fuels management is considered to present a high risk to bull trout under conditions identified above, where LRMP and RMP management focus is on intensive fires/fuels management, especially using prescribed wildfires, and the management strategies have not addressed and minimized the risk to bull trout. The Service expects a moderate risk to bull trout from fires/fuels management activities that affect RHCAs that are classified as “functioning at risk” or “properly functioning”, where design of management strategies have addressed and minimized the risk to bull trout, and where bull trout subpopulations are not susceptible to extinction from stochastic events.

Lands

The LRMPs as amended by PACFISH and INFISH contain several S&Gs for “Lands” relating to hydroelectric facilities, rights of way, and land exchanges and easements. These S&Gs are summarized below (For exact language of the S&Gs, see description of the action).

LH-1 This S&G requires that instream flows and habitat conditions for hydroelectric and other surface water development projects provide for maintained or improved riparian channel conditions and allow fish passage, survival and growth. It also requires the USFS to coordinate with other Federal and State Agencies during Federal Energy Regulatory Commission (FERC) licensing and relicensing.

LH-2 This S&G requires the USFS to locate new hydroelectric facilities outside RHCAs. For existing facilities, the USFS provides recommendations to FERC to ensure that the facilities would not prevent attainment of the RMOs, and to ensure that adverse effects to inland fish are avoided. Where these objectives can not be met, the USFS is to provide recommendations to FERC on how and where to relocate existing facilities. If the projects can not be relocated outside of RHCAs, there is still the requirement to operate and maintain the projects to avoid or minimize effects.

LH-3 The USFS is to issue leases, permits, rights of way and easements to avoid effects that would retard or prevent attainment of the RMOs or adverse effects to inland native fish. The S&G makes a distinction between existing permits for which authority is not retained and permits for which “authority is retained” by the USFS which allows them to further condition activities governed by the original permit. Where that authority is not retained USFS can still attempt to negotiate terms of the original permit. Priorities for negotiating and renegotiating permit are to be based on “current and potential adverse effects on inland native fish and the ecological value of the riparian resources affected.”

LH-4 The USFS is directed by this S&G to use land acquisition, land exchanges and

conservation agreements to achieve the RMOs, and to facilitate restoration of fish stocks and other species at risk of extinction.

In LH-1, and LH-2, it is not clear what authority, if any, the USFS can exert on the FERC. It would appear from the language in the S&G that the USFS has this authority, but chooses only to make recommendations to FERC, like other federal agencies. The Service is not aware of any specific instances in which USFS has exerted any implied authority to deny a permit, or to cause FERC to deny a permit, for a new hydroelectric facility. Similarly, the Service is not aware of any instances in which the USFS (based upon the strength of its recommendations to FERC) has caused any existing facility to be relocated outside of an RHCA. The effects of this S&G as worded could be negative, in that it does not appear to grant USFS sufficient authority, or acknowledge USFS's existing authority, to strongly influence FERC decisions on future projects or halt any FERC projects that are currently on USFS lands. While there may not be very many projects in this category, it is possible that any future hydroelectric projects or expansions of existing projects would not be adequately sited, or their effects minimized sufficiently, to avoid adverse impacts to bull trout.

In LH-3, it is particularly unclear how the USFS can successfully re-negotiate terms of any existing permit in cases where it has not retained authority. The priorities for negotiation of permit terms, however, appear to be ecologically appropriate.

LH-4 has the potential to be beneficial, as long as priority areas needed for bull trout conservation are not traded away or lost, and bull trout population connectivity issues (see Appendix 5) are fully considered when the land exchange proposals are being developed.

In general, it is difficult to assess the level of effects that would likely accrue from implementation of the four S&Gs relating to "Lands." However, the wording of these S&Gs leads the Service to conclude the effects will likely be adverse to bull trout and other inland resident fish species, particularly in the long-term. The documented adverse effects of hydroelectric project development to fish and aquatic life are numerous, generally irreversible, and occur regardless of the mitigation measures applied to reduce the level of effects. Adverse effects include loss of fish passage, disruption of hydrologic connectivity both laterally and longitudinally, changes in stream water temperature, altered patterns of nutrient cycling, and reduction in water quality and natural channel functioning. Reduced downstream bedload transport is typically a consequence of most major impoundments, and causes eventual loss or reduction in spawning areas through depletion of spawning substrates. The Service does not expect that the continuing adverse effects of existing hydroelectric projects are likely to be fully eliminated under application of LH-1 and LH-2. Therefore, the risk of these two S&Gs is probably moderate to high. Although existing hydroelectric operations are not found in all locations, where they do occur, the threats to bull trout populations are very likely significant and negative. Furthermore, the risks of planning, siting, and operation of new hydroelectric facilities based upon these S&Gs would be high.

In LH-3, by definition the USFS lacks authority to condition permits (such as road use permits) for which it has not retained authority. The S&G also implies that issuing permits, leases, and rights of way is somehow done, or can be accomplished "to avoid effects." Road reconstruction, maintenance activities and continued road use pursuant to non-renegotiable existing permits, or

issuance of new permits based upon this S&G, could result in significant long-term adverse effects to bull trout and their habitats for the same reasons discussed in other sections of this BO dealing with roads. The Service, therefore considers the risks of this S&G to be moderate to high.

LH-4 is the only S&G in the “Lands” category that the Service believes could offer some potential longer-term benefits to bull trout. However, there is still a risk that some land exchanges would not fully consider and explicitly address bull trout conservation and, in particular, the need for connected, high quality waters to support all life forms of the species. Therefore, the Service considers the overall risk of this S&G to be “moderate,” with the potential to reduce the risks to “low” or even “positive benefit” through careful planning and analysis of individual land exchanges.

General Riparian Area Management

Generally, robust riparian areas are necessary for maintaining channel equilibrium that results in a variety of structural features and ecological functions in streams. Water temperature, substrate composition, cover, and hydraulic complexity are related to riparian composition and the distribution and abundance of bull trout (Lee et al. 1997).

S&Gs for general riparian area management are listed in the description of the action (RA-1 through RA-5). Major features of these S&Gs are:

- _____ RA-1) cooperating with other agencies and tribes to secure instream flows;
- _____ RA-2) allowing tree felling in RHCA when trees pose a safety risk;
- _____ RA-3) avoiding adverse affects to non-target species when applying toxicants;
- _____ RA-4) prohibiting storage of toxicants and refueling in RHCA; and
- _____ RA-5) locating water drafting sites to avoid adverse effects to inland native fish and instream flows.

The General Riparian Area Management category of activities, which is used by PACFISH and INFISH, is not specifically addressed in the BA (USDA and USDI 1998a). The BA does address some issues that are related to the S&Gs RA-1 through RA-5. For example, the BA addresses instream flows as part of the administration of special use permits (Categorized as *Lands* in INFISH), which are related to RA-1. The BA addresses fertilization and chemical treatments within conifer plantations within the discussion of timber management (related to RA-3). The management of fuels and fire retardant is related to RA-4, and is discussed with *Fire/Fuels Management*.

The activities related to general riparian management present a low to high risk to bull trout depending on the activity and the location of the activity. For example, if water developments or diversions are permitted within or upstream of the habitats of the species considered in the assessment, a high risk to the species may exist. In contrast, removing a tree in an RHCA, that is

a safety concern, is likely to have a low risk to bull trout.

Watershed and Habitat Restoration

The major watershed restoration activities discussed in the BA (USDA and USDI 1998a) focus on culvert replacement and road decommissioning. Analysis of the effects of roads is summarized in “Roads Management” above. Lee et al. (1997) state that forest management needs may be accomplished quickly by focusing on projects in heavily roaded watersheds. The BA (USDA and USDI 1998a) cites NMFS (USDC 1997) to support the probability that the net effect of watershed restoration activities will be beneficial to bull trout. Adverse effects to the species may occur in the short term, but the long term effects should be beneficial.

S&Gs for watershed and habitat restoration are listed in the description of the action (WR-1 through WR-2). Major features of these S&Gs are:

WR-1) implementing watershed restoration projects that promote long term ecological integrity and contributed to attainment of the RMOs; and

WR-2) cooperating with other agencies, tribes, and private landowners to develop watershed-based management to meet RMOs.

Restoration activities considered here primarily include culvert replacement and road decommissioning. The primary adverse impacts from these activities are short term increases in fine sediment deposition and turbidity downstream of projects. Culvert replacement or upgrading should improve fish passage, decrease scouring effects of flood flows, and improve the transport of bedload and debris. Road decommissioning should improve watershed and habitat conditions provided drainage patterns are re-established, and access to significant sediment sources that require maintenance is available. Other activities considered as watershed restoration are road drainage improvement, surfacing, and sediment source stabilization through seeding and planting. Restoration is not to be used to mitigate or act as a substitute for preventing habitat degradation.

Watershed and habitat restoration presents a low to high risk to bull trout. Improved conditions, following the upgrading or replacement of culverts, may occur within days or months. The risk of adverse effects to bull trout is low for seeding, planting, drainage improvement, and most culvert upgrade and replacement activities. Roads that are decommissioned may continue to contribute sediment for a few years before sediment levels are effectively decreased. Abandonment of roads includes a risk of increased sediment following rehabilitation activities and sediment inputs from poorly monitored, eroding, abandoned roads. The risk of adverse effects to bull trout is moderate to high depending on the length and location of the road.

Fisheries and Wildlife Restoration

The BA (USDA and USDI 1998a) states that over 1,700 miles of habitat restoration has occurred, and increased activity in restoration and improvement of aquatic habitats is expected. The activities include improving stream channel diversity and stability, removing migration

barriers, and managing riparian vegetation. The assessment also states that current programs for restoration and improvements have deficiencies that may negatively affect aquatic management and the species covered in the assessment. These deficiencies are primarily related to the lack of funding and prioritization of actions.

Delays in implementing needed restoration and improvement activities will have a long term negative effect to bull trout. Riparian rehabilitation and instream habitat enhancement structures may have short and long term benefits to bull trout.

The species addressed in this opinion can be negatively impacted by certain types of restoration activities. Instream habitat restoration projects may cause short term fine sediment pulses. Surveys and population sampling, such as smolt traps and electrofishing, will result in harassment, and may result in injury or death of individual fish.

Wildlife management activities include winter range burning, access management, snag management, tree topping and falling, and water developments. Burning is addressed in the *Fire and Fuels Management*, and access management is addressed in the *Roads Management* section above. Tree topping is expected to occur to scattered individual trees or small groups widely scattered over a large landscape. Trees that are cut within a riparian area should be left as riparian or instream woody debris if it assists in meeting RMOs. Water developments considered here are expected to be at small isolated springs or ephemeral channels, and should not adversely affect bull trout.

S&Gs for fisheries and wildlife restoration are listed in the description of the action (FW-1 through FW-4). Major features of these S&Gs are:

FW-1) implementing habitat restoration actions in a manner that contributes to attainment of the RMOs;

FW-2) constructing and operating fish and wildlife interpretive and other user-enhancement facilities in a manner that does not adversely affect inland native fish;

FW-3) cooperating with other agencies and tribes to identify and eliminate wild ungulate impacts that adversely affect inland native fish; and

FW-4) cooperating with other agencies and tribes to identify and eliminate adverse effects on native fish associated with habitat manipulation, fish stocking, fish harvest, and poaching.

Fisheries and wildlife restoration presents a low to moderate risk to bull trout. Improved conditions, following the installation of instream habitat restoration structures, may occur within days or months. Surveys and population sampling may continue to contribute to the take of individuals, but over the long term these surveys should improve the knowledge base for informed management decisions and result in a long term benefit for the species.

Wildlife habitat restoration projects are expected to have a low to moderate risk to bull trout. Projects within the RHCAs may have a moderate risk and those outside of the RHCAs are likely

to have low risk. These projects, with the exception of winter range burning, are generally small in area affected and scattered over large landscapes.

Spatially Directed Effects -- Management Area Categories

The LRMPs describe levels of goods and services expected to be provided as plans are implemented. As noted in the BA (USDA and USDI 1998a), the range of goods and services actually delivered is expected to vary given budget and land capability changes over time. MACs were identified based on current information on management direction from each LRMP for use as an analysis tool in the ICBEMP. MACs are described in their entirety in the description of the action. The BA (USDA and USDI 1998a) summarized the eight categories to simplify analysis as follows:

- Undeveloped Areas: Categories one, two, and three;
- Developed Areas: Categories four five and six; and
- Highly Developed Areas: Categories seven and eight.

Undeveloped areas are primarily Congressionally reserved or Administratively withdrawn from the land base administered by the USFS and BLM for production of the full range of goods and services identified in LRMPs, or are overlain by protective designations (such as wild and scenic rivers designation and RARE II inventoried roadless areas) that limit management activities. Although they represent relatively pristine habitats, they do not limit all activities that may adversely affect bull trout (such as mining, grazing, recreation, and fire and fuels management). The Service assumes that management focus on production of timber, forage, and mineral resources occurs primarily in developed and highly developed areas as described above. Distribution of the eight MACs across all management units by bull trout DPS is contained in Appendix A of USDA and USDI (1998a). Based on present condition and likely management direction as reflected by the three MAC categories described above, Table 1 summarizes the Service's expectation of risk of potential adverse effects to bull trout associated with major classes of activities as identified in USDA and USDI (1998a), as conditioned by the goals and RMO provisions of PACFISH and INFISH. Bull trout status and distributional information within MAC categories and in Key and Priority Watersheds is derived from analysis presented in USDA and USDI (1998a), and based on known or predicted status within sixth field hydrologic units (HUCs) expressed as acreage values for HUCs identified as containing strong or depressed local populations of bull trout. The Service's analysis presents this information as percentage values within the indicated categories.

Table 1. Summary of existing fish status and distribution across management area categories, within Key and Priority Watersheds, and the Service's risk analysis of major activity classes for the portion of the Columbia River DPS within PACFISH and INFISH administered areas (L=low; M=moderate; H=high).

Fish Status and Management Activity	General Management Area Category		
	Undeveloped Areas (1, 2, & 3)	Developed Areas (4, 5, & 6)	Highly Developed Areas (7 & 8)
Percent Strong (Total)	19.12	6.66	0.41
Percent Depressed (Total)	38.52	35.01	0.29

Percent Strong (Key and Priority Watersheds)	16.20	5.78	0.41
Percent Depressed (Key and Priority Watersheds)	29.44	22.17	0.26
Timber	L	H	H
Roads	L	H	H
Grazing	M	H	H
Mining/Minerals	M	H	H
Recreation	M	M	L
Fire/Fuels	M	M	M
Lands	L	M	H
General Riparian Area Management	L	M	M
Watershed and Habitat Restoration	L	M	L
Fisheries and Wildlife Restoration	L	M	L

As shown in Table 1, 57.64 percent of the total distribution of bull trout (Columbia River DPS) within the PACFISH and INFISH area occur in undeveloped MACs, and are exposed to moderate risk from grazing, mining, recreation, and fire and fuels management. Key and Priority watersheds contain 45.64 percent of the distribution within undeveloped MACs. Developed MACs contain 41.64 percent of the total distribution, with 27.95 percent of this distribution occurring in Key or Priority Watersheds. All activities were rated as high or moderate risk within developed MACs due to the management focus, relatively high intensity of management expected within these areas, and lack of coverage within Key or Priority Watersheds. Highly developed MACs contain 0.70 percent of the total distribution, with 0.67 percent of this distribution occurring in Key or Priority Watersheds. Low risk is expected for recreation and restoration activities as they are relatively unlikely to occur within this area. Fire and fuels and general riparian management are expected to present moderate risk due to the potential for these activities to occur within the category. High risk is expected from timber, roads, grazing, and mining due to degraded baseline conditions, the expectation that these actions will continue within the area, and lack of coverage in Key or Priority Watersheds. Overall, Key and Priority Watersheds capture 74.26 percent of the total bull trout (Columbia River DPS) distribution within the PACFISH and INFISH area.

Table 2 provides information for bull trout within the Klamath River DPS within the area administered under PACFISH and INFISH. The expected risk of potential adverse effects to bull trout from conducting the indicated management activities is similar as for the Columbia River DPS, but modified due to differences in status, distribution, and proportion of the distribution contained within Key or Priority Watersheds and the potential for activities to occur.

Table 2. Summary of existing fish status and distribution across management area categories, within Key and Priority Watersheds, and the Service's risk analysis of major activity classes for the portion of the Klamath River DPS within PACFISH and INFISH administered areas (L=low; M=moderate; H=high).

Fish Status and Management Activity	General Management Area Category		
	Undeveloped Areas (1, 2, & 3)	Developed Areas (4, 5, & 6)	Highly Developed Areas (7 & 8)
Percent Strong (Total)	0.00	0.00	0.00
Percent Depressed (Total)	49.48	50.17	0.00

Percent Strong (Key and Priority Watersheds)	0.00	0.00	0.00
Percent Depressed (Key and Priority Watersheds)	49.48	48.44	0.35
Timber	L	M	M
Roads	L	H	H
Grazing	M	H	H
Mining/Minerals	M	M	M
Recreation	M	M	L
Fire/Fuels	M	M	M
Lands	L	M	H
General Riparian Area Management	L	M	M
Watershed and Habitat Restoration	L	M	L
Fisheries and Wildlife Restoration	L	M	L

As shown in Table 2, 49.48 percent of the total distribution of bull trout (Klamath River DPS) within the PACFISH and INFISH area occur in undeveloped MACs, and are exposed to moderate risk from grazing, mining, recreation, and fire and fuels management. Key and Priority Watersheds contain the entire 49.48 percent of the distribution within undeveloped MACs. Developed MACs contain 50.17 percent of the total distribution, with 48.44 percent of the distribution occurring in Key or Priority Watersheds. All activities were rated as high or moderate risk within developed MACs due to the management focus, relatively high intensity of management expected within these areas, and lack of coverage within Key or Priority Watersheds. Highly developed MACs contain 0.35 percent of the total distribution, all occurring in Key or Priority Watersheds. Low risk is expected for recreation and restoration activities as they are relatively unlikely to occur within this area. Timber, mining, fire and fuels, and general riparian management are expected to present moderate risk due to the potential for these activities to occur within the category. As noted in the environmental baseline, although mining impacts are not suspected to impact bull trout in the Klamath River DPS, the Service assumes potential for gravel and sand mining from area streams exists, resulting in the moderate risk rating. Additional required buffer widths on intermittent streams is expected to moderate a portion of timber management impacts. High risk is expected from lands, roads, and grazing management, due to degraded baseline conditions and the expectation that these actions will continue within the area. Overall, Key and Priority Watersheds capture 98.27 percent of the total bull trout (Klamath River DPS) distribution within the PACFISH and INFISH area.

As indicated in USDA and USDI (1998a), under current direction, habitat for existing bull trout core areas would be preserved, but little rebuilding of habitat networks would occur. In part, this lack of emphasis on rebuilding habitat networks is due to exclusion of important fringe populations from the Key and Priority Watershed network, and expected low watershed restoration accomplishments (USDA and USDI 1998a). Additional analysis (USDA and USDI 1998a) indicates that substantial declines in the cumulative probability of occurrence for bull trout strongholds are predicted to result from continued implementation of PACFISH and INFISH, based primarily on projected increasing road densities under current direction. As previously stated, roads are a primary source of negative impact to native fish communities. This likely increase in road density is reflected by moderate and high probable impact expected in the developed and highly developed MACs (Tables 1 and 2), for timber and roads. The Service expects that where bull trout subpopulations are located within Key or Priority Watersheds, some

negative effects of timber harvest will be mediated (such as temperature increases and a portion of the hydrologic impacts). However, due to increasing road densities associated with timber management, moderate to high impacts are expected overall.

Since livestock grazing is expected to be emphasized within the developed and highly developed MAC categories, high levels of impact are expected from this activity. Mining activity, although expected to be limited in existing protected areas, has potential for local and expansive, short and long term impact, as reflected in Tables 1 and 2. The Service expects recreation impacts to be lower in highly developed MACs, due to lack of pristine landscapes, and moderate for undeveloped and developed areas due to the potential for local negative effects to habitat, and the potential for adverse biotic impacts (illegal fish introductions, poaching, etc.). Due to the potential for local impacts fire and fuels management is expected to result in moderate impact across all MACs. Since the potential for impact by the variety of activities covered under standards and guides for lands varies with the nature of the project, the Service assumes that most of these will not occur in existing undeveloped areas, will likely occur in developed areas, and occur more extensively in highly developed areas. General riparian management, and restoration activities are not likely to occur extensively in undeveloped areas, due to their present condition; most activities are likely to occur in the developed MACs; although local short-term negative effects are possible, restoration activities should result in improved conditions overall.

In summary, a large proportion of the current bull trout distribution (57.64 percent in the Columbia River DPS; 49.48 percent in the Klamath River DPS) occurs within undeveloped areas as defined in USDA and USDI (1998a). In general activities within this summarized management category are expected to result in low to moderate risk to bull trout. Developed MACs contain 41.64 and 50.17 percent of the bull trout distribution in the Columbia and Klamath River DPSs respectively. Management risk to bull trout ranges from moderate to high within this management area. Highly developed MACs contain a small amount of the bull trout distribution, (.7 and .35 percent in the Columbia and Klamath River DPSs respectively) with management risks that range from low to high, but are primarily high and moderate. Key and Priority Watersheds contain approximately 74 percent of the Columbia River DPS and 98 percent of the Klamath River DPS within the PACFISH and INFISH area. Analysis in USDA and USDI (1998a) and Lee et al. (1997) indicates that reductions in strong populations and further loss of fringe or depressed populations are expected under current management direction; based primarily on additional road-related management impacts, and lack of resources directed toward watershed and habitat restoration. Current implementation of PACFISH and INFISH varies across the area, and given the initial interim nature of the strategies, components addressing the road system, monitoring and watershed analysis have not been fully implemented. Given implementation history, eroded environmental baseline conditions, and the sensitivity of bull trout to management induced disturbance, the Service expects that the potential to jeopardize the existence of bull trout through continued implementation of LRMPs as amended by their respective strategies is high. However, other components of the proposed action apply, affect current direction, and management risks as evaluated by the Service.

In analyzing large geographic areas and general features of projects and activities as described in LRMPs and RMPs the Service cannot speak to the nature and extent of actual impacts of projects as implemented. For example, timber harvest is rated as having a high potential for adverse effects at this scale of analysis within developed and highly developed MACs. However

individual timber sales may range in potential impact from high to low, given geologic, topographic, and climatic conditions, specific project location, local watershed conditions, and project specific mitigation. Further, as required by the ESA (Section 7 a(2)), activities having potential for adverse effects to listed species require section 7 analysis. The January 27, 1998, letter of direction specifies the approach that will be taken to complete the required analysis at the project level, and includes review at project specific and watershed levels. Additional modifications to the continuing implementation of LRMPs and RMPs as amended by PACFISH and INFISH were adopted by letter dated June 19, 1998 (USDA and USDI 1998b). Commitments identified in this letter are described in the description of the action, and are considered by the agencies (BLM, USFS, and Service) as part of the proposed action. The effect of these commitments on the Service's expectation of risk of potential adverse effects to bull trout associated with activities authorized by LRMPs and RMPs is described in Table 3 for the Columbia River DPS and Table 4 for the Klamath River DPS.

Table 3. Summary of existing fish status and distribution across management area categories, within Key and Priority Watersheds, and the Service's risk analysis of major activity classes for the proposed action as modified by the letter of June 19, 1998 for the Columbia River DPS (L=low; M=moderate; H=high).

Fish Status and Management Activity	General Management Area Category		
	Undeveloped Areas (1, 2, & 3)	Developed Areas (4, 5, & 6)	Highly Developed Areas (7 & 8)
Percent Strong (Total)	19.12	6.66	0.41
Percent Depressed (Total)	38.52	35.01	0.29
Percent Strong (Key and Priority Watersheds)	16.20	5.78	0.41
Percent Depressed (Key and Priority Watersheds)	29.44	22.17	0.26
Timber	L	M	H
Roads	L	H	H
Grazing	L	M	H
Mining/Minerals	M	H	H
Recreation	M	L	L
Fire/Fuels	M	M	M
Lands	L	L	H
General Riparian Area Management	L	L	M
Watershed and Habitat Restoration	L	L	L
Fisheries and Wildlife Restoration	L	L	L

The Service assumes that short-term risks from continuing activities remain, especially in

developed and highly developed MACs. Much of this risk is a "legacy" effect, due to eroded baseline conditions over much of the area, and can be expected to remain in the complete absence of additional action by the USFS and BLM. Although restoration activities have short term risks associated with their implementation, long-term positive effects will result. Coordination on development of long-term conservation strategies should help sequence restoration actions in a manner that helps alleviate short-term adverse effects. Given the pervasive negative impact of roads on aquatic species and their habitat, moving forward on development of comprehensive plans addressing road system-related effects is extremely important to bull trout conservation. Similar reduction in risk is expected for the Klamath River DPS Table 4, although impacts are evaluated generally as higher risk of potential adverse effects to bull trout due to the lack of strong populations within the DPS.

Table 4. Summary of existing fish status and distribution across management area categories, within Key and Priority Watersheds, and the Service's risk analysis of major activity classes for the portion of the Klamath River DPS within PACFISH and INFISH administered areas considering the June 19, 1998 letter modifying the proposed action (L=low; M=moderate; H=high).

Fish Status and Management Activity	General Management Area Category		
	Undeveloped Areas (1, 2, & 3)	Developed Areas (4, 5, & 6)	Highly Developed Areas (7 & 8)
Percent Strong (Total)	0.00	0.00	0.00
Percent Depressed (Total)	49.48	50.17	0.00
Percent Strong (Key and Priority Watersheds)	0.00	0.00	0.00
Percent Depressed (Key and Priority Watersheds)	49.48	48.44	0.35
Timber	L	M	M
Roads	L	H	H
Grazing	M	H	H
Mining/Minerals	M	M	M
Recreation	M	M	L
Fire/Fuels	M	M	M
Lands	L	M	H
General Riparian Area Management	L	M	M
Watershed and Habitat Restoration	L	M	L
Fisheries and Wildlife Restoration	L	M	L

In summary, reductions in expected risk are based on reducing existing and future road related impacts, additional riparian protections afforded by identification of special emphasis watersheds, and evaluation of Key and Priority Watershed networks, increased emphasis on restoration activities, and joint development of long-term conservation and recovery strategies. Monitoring and watershed analysis is also emphasized and should assist with identification of

potential problems, and development of long-term conservation and recovery strategies. The main issues with the adequacy of PACFISH and INFISH, were adequacy of the refugia network, road-related impacts and the lack of implementation of road management S&Gs intended to address these impacts, lack of restoration emphasis within the PACFISH and INFISH area, and adequacy of monitoring and watershed analysis efforts. The Service concludes that successful implementation of the additional commitments agreed to by the agencies will sufficiently modify the proposed action to a degree where it is not likely to jeopardize bull trout in the Columbia River and Klamath River DPSs.

VI. CUMULATIVE EFFECTS

Cumulative effects are defined in the implementing regulations of section 7 of the Act as those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation (50 CFR 402.2). The cumulative effects of future Federal actions will be considered during the section 7 consultations required for those actions and, therefore, are not considered cumulative to the proposed action. This analysis will only address the potential effects of future State and private actions. Cumulative effects analysis of foreseeable State and private actions provide the Service and the action agency greater insight toward understanding the current environmental baseline and likely trends. This insight is necessary to provide the action agencies and the Service with a broader context in which to fully evaluate the impact of the Federal action.

An extensive description of the types of non-Federal actions which are and will likely continue to occur in the project area are included in the "*Non-Federal actions in the Action Area*" portions of this document above. Based on this information, and because of the type, extent and distribution of those actions, the Service concludes they will continue to have a moderate to high risk of adverse effects to bull trout in the Columbia Basin and Klamath Basin DPSs.

VII. CONCLUSION

After reviewing the current status of bull trout in the Columbia and Klamath River DPSs, the environmental baseline for the action area, the effects of implementation of the ACSs by LRMPs that include activities which may affect bull trout, and their cumulative effects, it is the Service's biological opinion that the action as proposed, when considered cumulatively, is not likely to jeopardize the continued existence of bull trout in those DPSs. No critical habitat has been designated for this species, therefore, none will be affected.

This consultation addresses continued implementation of LRMPs as modified by interim strategies for PACFISH and INFISH, and where more stringent protection exists in existing plans, in the individual LRMPs. This consultation does not address the specific effects of individual future actions. The scope of analysis for evaluating the impacts of an activity on bull trout is the DPS as a whole. The Level 1 teams, through the streamlined consultation process, will evaluate effects of specific future actions on bull trout. As provided in the section 7 consultation streamlining guidance, and as noted in the June 19, 1998 letter from the USFS and BLM, Service anticipates conducting project level section 7 consultations on a watershed basis. Programs or projects brought forward at the larger landscape scale will facilitate the Service's

ability to evaluate the individual and cumulative effects of such projects on bull trout. As a result, the Service will be able to more accurately evaluate the impacts to the bull trout within their respective DPSs.

VIII. INCIDENTAL TAKE STATEMENT

Under sections 4(d) and 9 of the ESA, any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species is prohibited unless exempted by the ESA or authorized by ESA permit or special regulation. Harm is further defined to include significant habitat modification or degradation that actually kills or injures a listed species by significantly impairing essential behavioral patterns such as breeding, feeding, and sheltering. Harass is defined as actions that create the likelihood of injuring a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. Incidental take is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of an incidental take statement.

In general, an incidental take statement specifies the impact of any incidental taking of endangered or threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions which must be complied with in order to implement the reasonable and prudent measures.

Amount and Impact of Anticipated Incidental Take

This incidental take statement addresses impacts to Columbia River and Klamath River DPSs of bull trout from continued implementation of LRMPs for the subject administrative units, as amended by PACFISH and INFISH and the additional seven commitments, as conducted using the current streamlining guidance, and the procedures for conducting watershed level consultations according to the January 27, 1998 letter of direction.

Implementation of LRMPs, as Amended by PACFISH and INFISH

Notwithstanding the Service's conclusion that continued implementation of management direction in the subject LRMPs is not expected to jeopardize the continued existence of the Columbia River and Klamath River bull trout DPSs, certain actions implementing the LRMPs may result in incidental take of bull trout. These actions will be subject to future site-specific consultation.

The Service is unable to anticipate all possible circumstances related to continued LRMP implementing actions, including programmatic actions or individual actions that might be developed in the future. Therefore, the Service is unable to issue a "blanket" incidental take statement or a comprehensive list of reasonable and prudent measures to cover all programs and actions subsequently implemented pursuant to LRMP management direction. Even though the Service anticipates some low level of incidental take may occur due to these actions, the best

scientific and commercial data available are not sufficient to enable the Service to estimate a specific amount of incidental take to the species. In these instances, the Service designates the expected level of take as “unquantifiable.” While the Service has determined that the level of anticipated take associated with continued implementation of the LRMPs, as amended by PACFISH and INFISH and the seven additional commitments, is not likely to jeopardize the Columbia and Klamath River bull trout DPSs, the Service is not authorizing through this biological opinion the incidental take of bull trout for any specific action carried out under direction of the LRMPs.

The Service is able, however, to prescribe reasonable and prudent measures that will reduce the overall level of incidental take which may result from continued implementation of LRMP management direction by ensuring that planned actions are fully consistent with the PACFISH and INFISH ACS objectives. There are actions which are fully consistent with LRMPs as amended by PACFISH, INFISH, and the seven commitments which may result in incidental take of bull trout. These include actions undertaken to benefit the species (e.g., instream habitat enhancement and restoration projects, culvert replacement and upgrades, and road decommissioning projects), as well as other actions (e.g., timber harvest, site preparation, road construction, livestock grazing, and mining). Incidental take associated with these types of actions may occur from detrimental effects on aquatic habitat parameters including stream temperature, substrate quality, suspended sediment levels, and habitat complexity and connectivity, all of which may directly or indirectly affect the life history of bull trout.

The reasonable and prudent measures and terms and conditions provided here are based on a process for evaluating and screening proposed actions at both individual action and watershed levels. The evaluation and screening of proposed actions is accomplished through the ESA consultation process developed to implement the May 31, 1995, interagency streamlining agreement and the direction letters of January 27, 1998 and February 6, 1998 (Appendix 3). Interagency Level 1 teams evaluate the effects of proposed actions against the environmental baseline at individual action and section 7 watershed scales. They determine whether effects to listed, proposed, and candidate species have been minimized by fully applying the relevant LRMP management direction, as amended by PACFISH and INFISH and the seven commitments, and relevant terms and conditions from this BO in the design of proposed actions.

The first step in this process, in fact the ultimate goal of the section 7 streamlining consultation process, is to design actions that are not likely to adversely affect the bull trout, and thus avoid the likelihood of incidental take and the need for formal consultation. The second step in the process, for those cases where adverse effects are likely to occur, is for the action agency, based on Level 1 team input, to incorporate adequate measures into the proposed actions to minimize the incidental take, with the goal of avoiding the need for additional measures beyond those described as part of the proposed action. Finally, in those cases where proposed actions are “likely to adversely affect” bull trout and additional measures are needed to minimize incidental take, the Service will need to identify these measures, associated terms and conditions, and prepare a biological opinion to conclude formal consultation.

These reasonable and prudent measures and terms and conditions will become mandatory when and where found appropriate through formal consultation, and prescribed by the Service in a site-specific biological opinion. Incidental take, if any, will be authorized at the site specific action

level. Site-specific biological opinions may tier to, and incorporate by reference, the analysis, reasonable and prudent measures, and terms and conditions set forth in this opinion.

Reasonable and Prudent Measures

As noted in the June 19, 1998 amendment to the BA, the USFS and BLM made additional commitments in implementing the PACFISH and INFISH ACSs to ensure their actions conserve the federally listed bull trout. These actions were evaluated by the Service in this BO as part of the proposed action. In short, the additional commitments address:

1. Restoration and improvement
2. Standards and guidelines
3. Key and priority watershed networks
4. Watershed analysis
5. Monitoring
6. Long-term conservation and recovery
7. Section 7 consultation at the watershed level

The following reasonable and prudent measures and implementing terms and conditions are provided to emphasize and further clarify those commitments, and other aspects of the LRMPs as amended by PACFISH and INFISH.

Continued LRMP Implementation

1. Apply the review criteria described on pages C-3 through C-9 of the PACFISH ROD (USDA and USDI 1995a), and A-1 through A-6 of the INFISH FONSI (USDA 1995) to ensure that proposed actions are fully consistent with applicable standards and guidelines and ACS objectives.
2. Utilize the Level 1 team consultation process and apply the “bull trout Matrix” or a similar approach as agreed to by the agencies (USFS, BLM, and the Service; Appendices 2, 3, and 6) to evaluate actions to determine the potential effects on bull trout, and to assure interagency coordination to complete the consultation process. In addition, update the environmental baseline at the section 7 watershed scale to include proposed actions once consultation is concluded.
3. In collaboration with the Service, develop a mechanism for improved monitoring accountability and oversight of management actions that affect bull trout or their habitats, designed to meet the applicable objectives, standards and guidelines of PACFISH and INFISH.
4. Together with the Service, collaborate in development of multi-year road restoration strategies for key, priority and special emphasis watersheds.
5. In collaboration with the Service, conduct a comprehensive review of existing unroaded and low density roaded areas throughout the Columbia River and Klamath River bull trout DPSs and determine their importance for the long-term conservation of bull trout.

The information will serve as the foundation of a conservation strategy based on the protection of existing high quality habitat with the necessary connectivity between these areas.

The following reasonable and prudent measures and terms and conditions become mandatory when and where found appropriate through formal consultation, and prescribed by the Service in a site-specific biological opinion.

Watershed and Habitat Restoration Actions

6. Apply the results of watershed analysis where required or applicable, and consider expected benefits to bull trout during the design and prioritization of instream habitat enhancement and restoration projects, culvert replacement upgrades, and road decommissioning actions. Assess proposed watershed and habitat restoration actions to ensure that potential short term adverse effects to bull trout are outweighed by long term benefits.
7. Ensure that the timing of any work within intermittent or perennial stream channels associated with these projects is designed to minimize/reduce short-term adverse effects to aquatic habitat and bull trout.
8. Apply relevant PACFISH and INFISH objectives, standards and guidelines, and relevant aspects of the June 19, 1998 additional commitments in design and implementation of watershed and habitat restoration actions.

Road Construction Actions

9. Avoid, reduce or minimize the adverse effects of road construction, reconstruction and maintenance on bull trout habitat components; particularly water quality, flow and hydrology, and channel condition and dynamics.

Livestock Grazing Actions

10. Review, modify, and implement annual operating instructions or term grazing permits for those allotments/leases which encompass streams known or expected to contain bull trout addressed in this BO to meet appropriate PACFISH or INFISH objectives.
11. Develop and implement grazing management plans and practices in areas of known or suspected bull trout spawning to minimize/reduce trampling of redds and other direct and indirect effects that may result in take of the species.
12. As allotment management plans are amended or revised, modify the AMPs to meet appropriate PACFISH or INFISH objectives.

Mining Actions

13. Minimize/reduce the adverse effects of mining actions, including placer mining.

recreational suction dredging, and gold panning, that result in take of the species by implementing all relevant standards and guidelines (e.g., MM-1, MM-2, etc.).

Timber Management Actions

14. Analyze, design, and implement timber harvest activities to address impacts from the action on water quality, habitat access, habitat elements, channel condition and dynamics, stream flow, hydrology, and watershed conditions.

Terms and Conditions

Continued LRMP Implementation

1. By December 1, 1998, the USFS and BLM will develop, in cooperation with the Service, time lines and a schedule for completion of aspects of the additional commitments contained in the June 19, 1998 amendment to the BA where they are not currently described.
2. To ensure that proposed actions designed in accordance with relevant standards and guidelines are in fact consistent with PACFISH and INFISH ACS objectives, USFS and BLM decision makers will apply the results of watershed analysis and other relevant information to conclude that actions either "meet" or "do not prevent attainment" of the ACS objectives. The conclusion must be documented and supporting rationale provided. Examples of tools for the documentation include, but are not limited to materials provided at interagency workshops on the bull trout conference process (e.g. the bull trout matrix and outline for watershed BAs) and Adequate Documentation for Changes to ACS.
3. To ensure that an interagency, interdisciplinary process is used to implement management direction in the LRMPs, utilize the Level 1 team streamlining consultation process; the bull trout watershed consultation approach as outlined in the January 27, 1998 letter of direction and as updated by any new, revised interagency direction; and apply the bull trout Checklist and Matrix of Pathways and Indicators (USFWS 1998), or a similar agreed upon approach, to evaluate all proposed actions that may affect the bull trout.
4. Through interagency coordination, develop stratified monitoring plans (e.g. at the watershed or subbasin scales) to evaluate impacts of management actions to bull trout. The management program areas to address and a schedule for their development will be agreed to by the interagency team. The plans should address, at a minimum, both compliance and effectiveness monitoring.
 - a. Develop these plans by subbasin, through use of an interagency group, to maximize the utility of monitoring information through a coordinated effort and a defensible sampling design. The interagency groups should establish objectives for the monitoring plans in accordance with PACFISH and INFISH.
 - b. Goals for the monitoring plans should include maximizing the effectiveness of limited

monitoring funds, identifying appropriate scales and levels of monitoring necessary to determine if management actions are meeting PACFISH and INFISH direction, allowing for flexibility as funding and activities change, and identifying how monitoring results should be used to make management adjustments.

- c. Fully implement the monitoring plans by ensuring monitoring schedules are developed and implemented, with agreement between the USFS, BLM and the Service. If these mutually agreed upon schedules can not be followed, an alternative approach will be developed and agreed to by the interagency group.
5. In collaboration with the Service, the USFS and BLM will develop and implement guidance for use by administrative units for minimizing/reducing effects of road management programs on bull trout. Issues that should be addressed in this guidance document include, but are not limited to, road construction, reconstruction, removal, obliteration and decommissioning as well as an assessment of unroaded and low density roaded areas in relation to conservation of bull trout. The exact scope, format and detail of this guidance document should be decided through interagency discussions. Following are items for consideration in completing this task:
- a. Convene an technical interagency team of experts and research scientists to guide an assessment of road construction and management, including unroaded and low density roaded areas in relation to conservation of bull trout.
 - b. Provide descriptions, locations, and maps of unroaded and low density roaded areas, and existing information on the relative habitat value of the areas for bull trout.
 - c. The technical/research team will summarize and review existing management direction and make recommendations to senior agency managers regarding at a minimum: need for additional habitat protection; risks to bull trout from developmental activities; priority for subbasin assessments and watershed analyses connectivity between areas; and restoration priorities.
 - d. Provide a mutually agreed upon strategy to accomplish any additional habitat protections recommended by the technical/research team.
6. For mining operations on BLM-administered lands that are not required to have an approved Plan of Operation (see 43 C.F.R. § 3809.1-4), respond to all mining notices within 10 calendar days by advising the operator that the mining activity shall not cause take of bull trout unless the operator has first obtained an incidental take permit under section 10 of the ESA. BLM will advise the operator of what actions are needed to prevent adverse impacts to bull trout and their habitat.

The following terms and conditions, will become mandatory when and where found appropriate through formal consultation, and prescribed, by the Service, in a site-specific biological opinion.

Watershed and Habitat Restoration Actions

7. Provide documentation of information and criteria used to design and prioritize actions to demonstrate that the timing of in-channel work associated with the subject projects will minimize short-term adverse effects to aquatic habitat, and to demonstrate compliance with applicable objectives and standards and guidelines of the ACSs.
8. To ensure that proposed actions are designed to provide for long term habitat benefits while avoiding, minimizing or reducing short term impacts, utilize information and recommendations from completed watershed analysis reports, the most current watershed scale environmental baseline and the determination of effects of proposed actions using the bull trout Matrix and Checklist, or an agreed upon approach.

Road Construction Actions

9. To avoid or minimize incidental take associated with the adverse effects of road construction, reconstruction and maintenance on water quality, flow and hydrology, and channel condition and dynamics, each administrative unit shall apply the pertinent standards and guidelines for road construction and decommissioning as described in the LRMPs, as amended by PACFISH and INFISH.
10. New roads (temporary, semi-permanent or permanent) in RHCAs shall be minimized to the greatest extent possible, and shall be constructed only where watershed analyses have been completed to document that the roads would not prevent attainment of ACS objectives.

Livestock Grazing Actions

11. When reviewing and modifying grazing actions to minimize/reduce incidental take, amend livestock grazing annual operating instructions, term grazing permits or leases to incorporate appropriate criteria for evaluating ecological conditions of affected areas to ensure attainment of ACS objectives. The evaluation criteria should be developed by USFS and/or BLM range and other interdisciplinary specialists, in coordination with the Service through Level 1 teams.
12. Implement management actions, as appropriate, to minimize the impact of livestock grazing in known bull trout spawning areas. Some actions which may be considered include numbers of animals, timing and duration of grazing, herding, fencing of riparian areas, or upland water sites.

Mining Actions

13. For mining operations where the administrative unit has discretion to require a Plan of Operations, require such a plan if the mining operation has the potential to adversely affect bull trout. Ensure that the plan complies with applicable minerals management standards and guidelines for the ACS.

Timber Management Actions

14. Analyze, design, and implement timber harvest activities to meet the requirements of PACFISH and INFISH, and such additional measures as needed to minimize/reduce incidental take of bull trout, through incorporation of the following terms and conditions as appropriate for site specific conditions:
 - a. Evaluate effects to bull trout and develop mitigation measures.
 - i. Utilize the indicators for bull trout habitat needs contained in the bull trout matrix (Appendix 2), or a similar evaluation tool agreed upon by the agencies;
 - ii. Utilize information from: the scientific literature; models, validated with local data wherever possible; and on-site studies to evaluate slope stability, and landslide hazard and risk;
 - b. Develop and implement approaches that address and minimize potential incidental take of bull trout from fuel storage and transportation associated with timber harvest actions.

IX. CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of ESA by carrying out conservation programs for the benefit of endangered and threatened species. The term "conservation recommendations" is defined as suggestions from the Service regarding discretionary measures (1) to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, (2) conduct studies and develop information, and (3) promote the recovery of listed species. The recommendations provided here relate only to the proposed action and do not necessarily represent complete fulfillment of the agency's 7(a)(1) responsibilities.

1. *Roads within key, priority, and special emphasis area watersheds:* Seek a net reduction of roads in bull trout watersheds. Overall, watershed road densities of less than 1.0 mile per square mile, especially where there are bull trout stronghold populations, may be necessary to assure future survival and recovery to self-sustaining populations. An interim target should be to reduce total road densities in all Key, Priority, and special emphasis watersheds containing bull trout and to prevent any increase in road densities in those. Rehabilitation of road-miles cannot be accomplished alone by gating, berming, or otherwise blocking the entrance to a road permanently or temporarily, or seasonally closing roads, but will require obliteration, recontouring, and revegetating.

2. *Fish Passage:* Reduce passage problems associated with culverts and water diversions. Also screen all water intakes appropriately to prevent the entrainment of bull trout of all age classes.

3. *Viability Analysis:* The viability of bull trout on Federal lands should be analyzed using the definition suggested in Chapter 3, Table 3.5 of the ICBEMP Draft EIS that states a viable population "has the estimated numbers and distribution of reproductive individuals (both current and projected) to provide for a self-sustaining population with a sufficiently high likelihood of

continued existence at a high enough level that listing of the species under the ESA does not become warranted. A “recovered” species is considered to be viable when it is removed from the endangered species list. The Service offers support in completing this analysis.

4. *Connectivity*: When the USFS and BLM are developing a “watershed network to ensure the protection and recovery of bull trout metapopulations” (as committed to in the amendment to the BA addressed to the Service dated June 19, 1998), seek to restore or improve connectivity within and between isolated sub-populations of bull trout, except in cases where the risks of non-native species introductions override the risks to continued population isolation. This network should contain high quality habitat for bull trout, both currently occupied and historic, that would act as “refugia”. Guidance should be developed and implemented that specifies what actions can and cannot occur in these areas to preserve their status as “refugia”.

5. *Adaptive Management*: Those LRMPs that are now amended by the PACFISH and INFISH strategies indefinitely until a long-term, comprehensive management plan is developed should initiate an adaptive management approach when implementing their ACSs. The USFS and BLM should use all monitoring information available, map and information from the BA and BO, findings from watershed analysis, and other pertinent information to determine how RMOs, RHCAs, and S&Gs should be modified to better address the needs of bull trout.

6. *Prioritization and multi-scale planning*: Subbasin assessments should be conducted to provide a multi-scale context of habitat status and restoration needs within subbasins and watersheds. A subbasin assessment process, similar to the Nez Perce National Forest’s South Fork Clearwater River Assessment, would provide a method to use a broad perspective to characterize the contributions of individual watersheds to the survival and recovery of listed species. Other benefits of subbasin information would be gaining the perspective necessary to determine which watersheds should be prioritized for subsequent analysis, such as at the watershed scale.

7. *Collaboration*: The Service should have the opportunity to participate in all levels of analysis, project planning, and monitoring on USFS and BLM-administered lands within the area where PACFISH and INFISH amend LRMPs. Much, but not all, of this collaboration can be accomplished through early involvement of Service representatives on section 7 consultation streamlining Level I and II teams.

8. *Watershed Improvement Efforts*: Together with the Service, and NMFS where appropriate, the USFS and BLM will provide leadership in developing partnerships with other federal agencies, with state agencies, tribes and private entities to implement actions which will lead to the survival and recovery of bull trout populations.

9. *Future mine development*: To protect bull trout habitat, determine whether future development of mining claims, mineral leasing, or sale of mineral materials would adversely impact habitat conditions in watersheds currently occupied by bull trout and historically-occupied watersheds necessary for bull trout recovery, and use all available administrative authority, including withdrawals, to minimize such impacts.

- a. Review the results of completed assessments of bull trout habitat within each administrative unit (e.g., field surveys, watershed analyses, basin assessments, etc.) and identify essential bull trout habitat areas.
- b. In conjunction with USFS and BLM mineral specialists, review existing, proposed, and potential mining activities within each administrative unit and work with the Level I teams to assess the potential for adverse effects to the essential bull trout habitat areas identified in step a. above. Identify those stronghold habitat areas where mining effects cannot be fully mitigated pursuant to relevant LRMP and RMP management direction, mining regulations, or other administrative options.
- c. For areas where mining effects cannot be fully mitigated, withdraw these areas from location of new mining claims and prohibit mineral leasing and sales of mineral materials. For existing mining claims and mineral leases in these areas, use all available administrative authority to minimize and mitigate the adverse effects on mining on bull trout.

In order for the Service to be kept informed of actions minimizing or avoiding adverse effects or benefitting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

X. CLOSING STATEMENT - REINITIATION

This biological opinion addresses the effects of continued implementation of activities authorized by LRMPs as amended by PACFISH and INFISH by the USFS and BLM, as it affects populations of the Columbia River and Klamath River bull trout DPSs.

This concludes formal consultation on the actions outlined in the June 15, 1998 request for consultation, and amended by the letter of June 19, 1998. As provided in 50 CFR section 402.16, reinitiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been retained (or is authorized by law) and if: (1) new information reveals effects of the action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (2) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat not considered in this opinion; or (3) a new species is listed or critical habitat designated that may be affected by the action.

If you have any questions regarding this opinion, please contact Ron Rhew (Oregon: 503-231-6179); Susan Martin (Idaho: 208-378-5243); Linda Hallock (Washington: 509-921-0160); or Kemper McMaster or Dale Harms (Montana: 406-449-5225).

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XII. APPENDICES

Appendix I.

List of Major Documents used as Sources of Best Available Information.

Appendix 2.

**A Framework to Assist in Making Endangered Species Act Determinations of Effect for individual or Grouped Actions at the Bull Trout Subpopulation Watershed Scale.
U.S. Fish and Wildlife Service. February 1998.**

Appendix 3.

Interagency letters of direction (dated January 27, 1998 and February 6, 1998) regarding the conference/consultation process for bull trout.

Appendix 4.

October 28, 1997 letter to Russ Strach (NMFS) from Jack Williams (BLM).

Appendix 5.

Habitat Characteristics Important to Bull Trout (Temperature, Habitat Complexity, Connectivity, Substrate Composition and Stability), and Management Issues (Roads, Floodplain and Riparian Protection) That Affect These Habitat Characteristics.

Appendix 6.

Interagency memorandum (dated June 19, 1998) to amend the biological assessment for the PACFISH/INFISH LRMP Section 7 consultation on bull trout.

NORTHERN ROCKIES LYNX MANAGEMENT DIRECTION

USDA Forest Service, 2007. Northern Rockies lynx management direction: Record of Decision. USDA Forest Service, National Forests in Montana and parts of Idaho, Wyoming and Utah.

Record of Decision – Northern Rockies Lynx Management Direction

Summary of the decision

We have selected Alternative F, Scenario 2 as described in the Northern Rockies Lynx Management Direction Final Environmental Impact Statement (FEIS) (pp. 35 to 40), with modifications. We modified Alternative F, Scenario 2 and incorporated the U.S. Fish and Wildlife Service (FWS) Terms and Conditions (USDI FWS 2007), where applicable, into the management direction – see Attachment 1- hereafter called the *selected alternative*. We determined the selected alternative provides direction that contributes to conservation and recovery of Canada lynx in the Northern Rockies ecosystem, meets the Purpose and Need, responds to public concerns, and is consistent with applicable laws and policies. In the FEIS we analyzed six alternatives in detail and two scenarios for Alternative F. Of those, we determined Alternative F Scenario 2 is the best choice. With this decision, we are incorporating the goal, objectives, standards, and guidelines of the selected alternative into the existing plans of all National Forests in the Northern Rockies Lynx Planning Area – see Figure 1-1, FEIS, Vol. 1 Tables 1-1 and 1-2.

The direction applies to mapped lynx habitat on National Forest System land presently **occupied** by Canada lynx, as defined by the *Amended Lynx Conservation Agreement between the Forest Service and the FWS* (USDA FS and USDI FWS 2006). When National Forests are designing management actions in **unoccupied** mapped lynx habitat they should consider the lynx direction, especially the direction regarding linkage habitat. If and when those National Forest System lands become occupied, based upon criteria and evidence described in the Conservation Agreement, the direction shall then be applied to those forests. If a conflict exists between this management direction and an existing plan, the more restrictive direction will apply.

The detailed rationale for our decision, found further in this document, explains how the selected alternative best meets our decision criteria. Those decision criteria are: 1) meeting the Purpose and Need to provide management direction that conserves and promotes the recovery of Canada lynx while preserving the overall multiple use direction in existing plans; 2) responding to the issues; and 3) responding to public concerns.

Background

The FWS listed Canada lynx as a threatened species in March 2000, saying the main threat was “the lack of guidance for conservation of lynx and snowshoe hare habitat in National Forest Land and Resource Plans and BLM Land Use Plans” (USDI FWS 2000a). Following the listing, the Forest Service (FS) signed a Lynx Conservation Agreement with the FWS in 2001 to consider the Lynx Conservation Assessment and Strategy (LCAS) during project analysis, and the FS agreed to not proceed with projects that would be “likely to adversely affect” lynx until the plans were amended. The Conservation Agreement (CA) was renewed in 2005 and added the concept of occupied mapped lynx habitat. In 2006 the CA was amended to define occupied habitat and to

Record of Decision – Northern Rockies Lynx Management Direction

list those National Forests that were occupied. In 2006 it was also extended for 5 years (until 2011), or until all relevant forest plans were revised to provide guidance necessary to conserve lynx (USDA FS and USDI FWS 2000, 2005, 2006a, 2006b). The plan direction in this decision fulfills our agreement to amend the plans. The management direction provided in this decision is based upon the science and recommendations in:

- *Ecology and Conservation of Lynx in the United States* (Ruggiero et al 2000), which summarizes lynx ecology;
- *Lynx Conservation Assessment and Strategy* (LCAS) (Ruediger et al 2000), which recommends conservation measures for activities that could place lynx at risk by altering their habitat or reducing their prey; and
- Numerous publications cited in the FEIS and found listed in the *References* section of this ROD and in the FEIS, pp. 381 to 396.

Purpose of and Need for action

The Purpose and Need is to incorporate management direction in land management plans that conserves and promotes recovery of Canada lynx, by reducing or eliminating adverse effects from land management activities on National Forest System lands, while preserving the overall multiple-use direction in existing plans (FEIS, Vol. p. 1).

Risks to lynx and lynx habitat

The overall goals of the LCAS were to recommend lynx conservation measures, provide a basis for reviewing the adequacy of Forest Service land and resource management plans with regard to lynx conservation, and to facilitate section 7 conferencing and consultation under ESA. The LCAS identified a variety of possible risks to lynx and lynx habitat.

The LCAS identified *risk factors affecting lynx productivity* (pp. 2-2 to 2-15) as:

- Timber management
- Wildland fire management
- Livestock grazing
- Recreational uses
- Forest backcountry roads and trails
- Other human developments

These are the typical types of activities conducted on federal land administered by the FS, and the FS has the authority to manage and regulate them. As such, the management direction analyzed in the Lynx FEIS and incorporated into the forest plans with this Record of Decision (ROD) focus on these types of activities.

The LCAS identified *risk factors affecting mortality* (pp. 2-15 to 2-17) as:

- Trapping
- Shooting
- Predator control
- Highways
- Predation by other species

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These factors can directly cause lynx deaths. Trapping of lynx is no longer permitted in the planning area, although incidental trapping of lynx could still occur. Incidental or illegal shooting can also occur, but trapping and hunting is regulated by state agencies. Predator control activities are conducted by USDA Wildlife Services. Since the factors of trapping shooting and predator control are outside the authority of the FS to manage or regulate, this ROD does not include management direction related to them.

Highways (generally high-speed, two lane) are a known source of direct mortality (LCAS, pp. 2-16 to 2-17). Depending on the situation, this risk factor may fall under the authority of the FS. Therefore, it is addressed in the FEIS, and management direction concerning highways is incorporated into the Forest Plans through this ROD.

Other predators may affect lynx. Lynx have a competitive advantage in places where deep, soft snow tends to exclude predators in mid-winter, the time when prey is most limiting. Certain activities, such as certain types of winter recreation, may provide access to other predators (LCAS, pp. 2-6 to 2-15). The FEIS and ROD addresses this concern.

The LCAS identified *risk factors affecting movement* (pp. 2-17 to 2-19) as:

- Highways and associated development
- Private land development

Lynx are known to disperse over wide areas. Highways and the developments associated with them may affect lynx movement (LCAS, p. 2-17). The FS has only limited authority to address highways, and has no authority to manage activities on private land. Based on the limited authority the FS has in this area, only a few guidelines address these risk factors.

After the LCAS was issued the FWS published a Clarification of Findings in the *Federal Register* (FEIS, Vol. 1, Appendix P), commonly referred to as the Remand Notice. In the Remand Notice the FWS states, "We found no evidence that some activities, such as forest roads, pose a threat to lynx. Some of the activities suggested, such as mining and grazing, were not specifically addressed [in the Remand Notice] because we have no information to indicate they pose threats to lynx" (p. 40083). Further on in the Remand Notice they state, "Because no evidence has been provided that packed snowtrails facilitate competition to a level that negatively affects lynx, we do not consider packed snowtrails to be a threat to lynx at this time" (p. 40098). In regards to timber harvest the FWS states, "Timber harvesting can be beneficial, benign, or detrimental to lynx depending on harvest methods, spatial and temporal specifications, and the inherent vegetation potential of the site. Forest practices in lynx habitat that result in or retain a dense understory provide good snowshoe hare habitat that in turn provides good foraging habitat for lynx" (p. 40083). These findings by FWS narrow the focus from the concerns first published in the LCAS (discussed above) about what management direction is needed to maintain or improve Canada lynx habitat. We considered this information in the development of the selected alternative, and in our decision.

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Public involvement

We involved the public in the development of the plan direction from the very beginning. In order to determine the scope of the public's interest in developing lynx direction the FS and BLM started with a notice published in the *Federal Register* (Vol. 66, No. 176, pp. 47160 to 47163) on September 11, 2001. Originally, the scoping period was scheduled to end on October 26, 2001, but we extended it to December 10, 2001. The FS and BLM gave people more time to comment, both in response to several requests for extensions, and because of the general disruption stemming from the September 11th terrorist attacks. In December 2006, the BLM elected to not be a cooperating agency in this planning effort and to undertake changes to BLM plans through a separate planning process.

We created an official website at www.fs.fed.us/r1/planning/lynx.html. The website continues to provide information, including the information used to develop the Proposed Action, the DEIS, and FEIS.

During scoping we held numerous open-house meetings to provide a better understanding of the lynx proposal and to gain an understanding of public issues and concerns (FEIS, Vol. 1, p. 18). We mailed out more than 6,000 letters about the proposal and upcoming meetings to a mailing list of people interested in land management issues. By December 17, 2001 we had received 1,890 public responses to the scoping notice. We then evaluated and summarized those responses in a report entitled *Summary of Public Comments* (see the *Scoping* section of the Project Record). Responses received after December 17, 2001, but before the release of the Draft Environmental Impact Statement (DEIS) in January 2004 were also considered. A summary of these comments can also be found in the *Scoping* section of the Project Record. In mid-May 2002 we mailed an eight-page update to the more than 2,000 addresses of those who responded to the scoping notice.

We decided to prepare an EIS because of the level of interest expressed during scoping. On August 15, 2002, we published a Notice of Intent to prepare an Environmental Impact Statement in the *Federal Register* (Vol. 67, No. 158, pp. 53334 to 53335). There were five responses to the Notice of Intent, which we also considered.

On January 16, 2004, a Notice of Availability of the DEIS was published in the *Federal Register* (Vol. 69, No. 11, p. 2619). This notice began a 90-day public comment period. At that time, we sent copies of the DEIS (either paper or CD versions), or the summary of the DEIS to a variety of interested parties (FEIS, Vol. 1 p 19). The documents are also available on the web site: www.fs.fed.us/r1/planning/lynx.html.

We hosted open-house meetings in February and March of 2004 to provide the public with a better understanding of the DEIS and its alternatives. Over 380 people attended the open houses which were held in four states and 25 communities. We accepted public comments on the DEIS either sent through the mail or via E-mail. The public comment period ended on April 15, 2004, with the agency receiving well over 5,000

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comments. We used those comments, as well as late comments, to help formulate Alternative F, to help clarify and add to the analysis, to correct errors in the DEIS, and to update the FEIS. We responded to all of the comments on the DEIS in the Response to Comments (FEIS, Vol. 2).

Issues

As a result of the public participation process; review by other federal, state, tribal, and local government agencies; and internal reviews, we identified five primary issues, which are described in detail in the FEIS, Vol. 1, Chapter 2. The issues were used as a basis for developing the management direction in the alternatives, and were used to analyze effects. The issues are:

- 1. Over-the-snow recreation.* The effects of limiting the growth of designated over-the-snow routes on opportunities for over-the-snow recreation.
- 2. Wildland fire risk.* The effects of the management direction on the risks to communities from wildland fire.
- 3. Winter snowshoe hare habitat in multistoried forests.* The effect on lynx of allowing projects in winter snowshoe hare habitat in multistoried forests.
- 4. Precommercial thinning.* The effects of limiting precommercial thinning on restoring tree species and forest structures that are declining.
- 5. FWS Remand decision.* The appropriate level of management direction applied to activities that the FWS remand notice found were not a threat to lynx populations.

Alternatives considered in detail

Alternative A, the No Action Alternative. Analyzing a no-action alternative is a requirement of NEPA at 40 CFR 1508.14(d), and of FS planning procedures. The analysis of the effects of Alternative A in the FEIS considers the effects of the forest plans as they currently exist, including any previous amendments. In this case, “no action” means no amendment to the already existing plans, and no additional specific direction to conserve Canada lynx. While the FS has been following the Conservation Agreements signed with the FWS and has considered the LCAS when evaluating projects, the LCAS measures have not been incorporated as plan direction. A decision to adopt Alternative A would not adopt the measures of the LCAS into the plans, but also would not void the existing Conservation Agreements or the consultation requirements of ESA. A decision to not adopt some of the lynx management direction in any of the action alternatives would have been a decision to select a part of Alternative A.

Alternative B, the Proposed Action. The Proposed Action was developed from conservation measures recommended in the LCAS. (See Appendix A in the FEIS, pp. 401 to 438 for a crosswalk from the LCAS, to the proposal as written in the scoping letter; the Proposed Action, Alternative B, found in the Draft and Final EISs; and

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Alternative F in the FEIS.) Alternative B addresses activities on National Forest System lands that can affect lynx and their habitat. The exact language of the goal, objectives, standards, and guidelines for Alternative B and all the other action alternatives can be found in the FEIS (Table 2-1, pp. 41 to 69).

Alternative C. Alternative C was designed to respond to issues of over-the-snow recreation management and foraging habitat in multistoried forests, while providing a level of protection to lynx comparable to Alternative B, the Proposed Action. Alternative C would add direction to the plans similar to the LCAS, but would have fewer restrictions on new over-the-snow trails and more restrictions on management actions in winter snowshoe hare habitat in multistoried forests. The exact language of the goal, objectives, standards, and guidelines for Alternative C and all the other action alternatives can be found in the FEIS (Table 2-1, pp. 41 to 69).

Alternative D. Alternative D was designed to address the issues of managing over-the-snow recreation and multistoried forests, similar to Alternative C. Alternative D also allows some precommercial thinning in winter snowshoe hare habitat, while still contributing to lynx conservation. Alternative D would add direction to the plans similar to the LCAS, but having fewer restrictions on new over-the-snow trails and precommercial thinning, and more restrictions than the LCAS (Alternative B) on management actions in winter snowshoe hare habitat in multistoried forests, but less than Alternative C. The exact language of the goal, objectives, standards, and guidelines for Alternative D and all the other action alternatives can be found in the FEIS (Table 2-1, pp. 41 to 69).

Alternative E, the DEIS preferred alternative. Alternative E addresses the issue of wildland fire risk while contributing to lynx conservation. It also responds to statements made in the Remand Notice (USDI FWS, 2003) that FWS has no information to indicate grazing or snow compaction are threats to lynx at this time. This was done by changing the grazing and human uses standards to guidelines. Alternative E would add direction to the plans similar to the LCAS, but has fewer restrictions on new over-the-snow trails and on fuel reduction projects proposed in a collaborative manner, and more restrictions on management actions in winter snowshoe hare habitat in multistoried forests. The exact language of the goal, objectives, standards, and guidelines for Alternative E and all the other action alternatives can be found in FEIS (Table 2-1, pp. 41 to 69).

Alternative F, the FEIS preferred alternative. Alternative F was developed from public comments on the DEIS and by pulling together parts of the other alternatives. Since it was developed from the other alternatives, the effects of Alternative F is within the scope of the effects of the alternatives analyzed in the DEIS.

Alternative F addresses many comments about problems and concerns with Alternatives E, the DEIS preferred alternative. In particular many people and FWS felt Alternative E would not meet the purpose and need because it did not provide the

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regulatory mechanisms to adequately address lynx needs. Alternative F was designed to provide adequate regulatory mechanisms for those risk factors found to be a threat to lynx populations – specifically those factors related to the quantity and quality of lynx habitat as discussed in the FEIS, Vol. 1, section *Management direction considered*.

Alternative F addresses comments about where to apply the management direction. Many comments suggested the management direction should only be applied to occupied habitat. Therefore, Alternative F is evaluated under two scenarios: (1) management direction would be incorporated into all forest plans and would *apply to all mapped lynx habitat*, whether or not occupied; and (2) management direction would be incorporated into all forest plans but would only *apply to occupied habitat*. Under Scenario 2, the direction should be “considered” for unoccupied units, but would not have to be followed until such time as lynx occupy the unit. The Nez Perce, Salmon-Challis, Beaverhead-Deerlodge, Bitterroot, Ashley, and Bighorn NFs, and the disjunct mountain ranges on the Custer, Gallatin, Helena, and Lewis and Clark NFs are unoccupied based on the best scientific information available at this time (USDA FS, USDI FWS 2006a).

Other management direction considered

Comments on the DEIS identified a variety of suggestions for management direction. Some of the suggestions were incorporated into the selected alternative, others were not. The FEIS, Vol. 1 pp. 71-102 provides a thorough discussion of these comments and our considerations. The following section includes discussion of some these comments and how they were considered, but not all of the suggestions considered.

The decision

The management direction in Alternative F, Scenario 2 modified (referred from now on as the *selected alternative*, see - Attachment 1) is amended into all Forest Plans in the planning area. The management direction incorporates the terms and conditions FWS issued in their biological opinion (USDI FWS 2007). This management direction includes a goal, objectives, standards, and guidelines related to all activities (ALL), vegetation management (VEG), grazing management (GRAZ), human uses (HU), and linkage (LINK). *Goals* are general descriptions of desired results; *objectives* are descriptions of desired resource conditions; *standards* are management requirements designed to meet the objectives; and *guidelines* are management actions normally taken to meet objectives. Guidelines provide information and guidance for project and activity decision-making (FEIS, Vol. 1 p. 8). The Forest Service and FWS developed the selected alternative in a collaborative manner (Project File/Coordination/with FWS, and Project File/Alternatives/FEIS alternatives).

The selected alternative provides a balance of meeting the purpose and need, and addressing the five primary issues, including other public comments. Alternative B does not provide the management direction necessary for winter snowshoe hare habitat

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in multistoried forests. Alternative C, may be best for lynx, but does not address any other issues. Alternative D addresses the need to restore tree species in decline, but we have determined it may allow too much activity in winter snowshoe hare habitat and result in more extensive adverse effects. Alternative E address wildfire risk to communities, but based on our analysis and comments from FWS and the public, may not provide the necessary direction to contribute to conservation and recovery of lynx.

We determined, through our analysis and with concurrence from FWS, the selected alternative contributes to conservation and recovery of lynx, while allowing some activities to occur in lynx habitat that may have some adverse effects on lynx. We determined it was important and acceptable to restore tree species in decline and address wildland fire risks to communities. This decision allows some possible adverse effects on 6.5 percent of lynx habitat (through a combination of fuels treatment in the wildland urban interface (WUI) and precommercial thinning). However, all vegetative standards remain applicable to 93.5 percent of lynx habitat.

The following describes the risk factors, what the LCAS proposed (Alternative B), issues related to the proposed action, what Alternative E (the DEIS preferred alternative) included, comments we received on the DEIS, consideration of new information, and finally what was incorporated into the selected alternative and why.

Management direction related to vegetation

Lynx require certain habitat elements to persist in a given area. Lynx productivity is highly dependent on the quantity and quality of winter snowshoe hare habitat. Winter snowshoe hare habitat may be found in dense young regenerating forests - where the trees protrude above the snowline and in multistoried forests where limbs of the overstory touch the snowline, in addition to shorter understory trees that provide horizontal cover. Certain activities, such as timber harvest, prescribed burning and wildfires, can affect the amount and distribution of these habitat elements, which can in turn affect lynx productivity. Timber harvest can be beneficial, benign, or detrimental depending on the harvest method, the spatial and temporal occurrence on the landscape and the inherent vegetation potential of the site (FEIS, Vol. 1, Appendix P).

Objectives for vegetation management

Objectives define desired conditions for lynx habitat. The LCAS identified four primary objectives which are reflected in Alternative B as *Objectives VEG 01, VEG 02, VEG 03, and VEG 04*. These objectives essentially remain the same among all alternatives. Objectives VEG 01, VEG 02 and VEG 04 were clarified in the selected alternative based on comments on the DEIS, but their intent is the same as the in LCAS.

Standards and guidelines relating to quantity of winter snowshoe hare habitat

Standard VEG S1. In order to provide a distribution of age classes, the LCAS recommended that an lynx analysis unit (LAU) (an area the size of a female lynx home range) not have more than 30 percent of the lynx habitat in an unsuitable condition, and

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if an LAU was at 30 percent then vegetation management projects should not create more. Lynx habitat in an unsuitable condition includes those forests in a stand initiation structural stage that are too short to provide winter snowshoe hare habitat. These conditions are created by stand-replacing wildfires, prescribed burns that remove all of the vegetation, or regeneration timber harvest. This recommendation is reflected in Alternative B *Standard VEG S1*.

Some people felt the 30 percent criterion was too high and others said it was too low based on how fires burn in lynx habitat. In addition, some people felt that constraining the 30 percent criterion to a single LAU was too restrictive, as fires burn across vast areas. Fire is the most common disturbance in lynx habitat. Generally, large stand replacing fires burn every 40 to 200 years and smaller low intensity fires burn in the intervals between stand replacing fires (FEIS, Vol. 1, p. 72 and 213-214). The 30 percent criterion was based on a way to maintain lynx habitat over time (Brittel et al. 1989).

None of the alternatives change the 30 percent criterion. However, Alternatives C, D, and E change the area the standard would be considered from an LAU to a larger landscape. Alternatives C and E apply the standard to an LAU or in a combination of immediately adjacent LAUs; Alternative D applies the standard to a subbasin or isolated mountain range. Some people liked the idea of applying the standard to a larger area, others did not. In their comments on the DEIS FWS recommended the standard be applied to a single LAU in order to maintain a good distribution of lynx habitat at the scale of a lynx home range.

The selected alternative applies the management direction to a single LAU to ensure a variety of structural stages are provided within the home range. In addition, the selected alternative was reworded to clarify what “unsuitable habitat” entails and what types of vegetation projects create this condition.

Standard VEG S2. The LCAS also recommended that timber harvest not change more than 15 percent of lynx habitat to an unsuitable condition (stand initiation structural stage that is too short to provide for winter snowshoe hare habitat) over a decade. The purpose of this standard was to limit the rate of management induced change in lynx habitat (FEIS p. 74). This recommendation is reflected in Alternative B *Standard VEG S2*.

In 2003, the effect timber harvest historically had on creating “unsuitable habitat” on Forest Service lands in Region 1 (Hillis et al. 2003) was analyzed. The analysis was based on hydrologic unit codes (HUC) (similar to the size of a lynx home range). This analysis found only 2.5 percent of the HUCs exceeds the 15 percent criterion. Since this criterion was rarely exceeded in the past, and the amount of regeneration harvest the agency does now has been dramatically reduced over the past decade (Project File/Analysis/Vegetation/FEIS/Data), Standard VEG S2 was changed to Guideline VEG G6 in Alternative C, and dropped as a standard or guideline in Alternatives D and E.

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FWS comments on the DEIS said that dropping Standard VEG S2 could allow potentially negative effects to lynx to accumulate. Removal of the standard could result in reducing the amount of lynx habitat over a short period of time. Based on these comments, Standard VEG S2 was included in the selected alternative. In addition, the standard was reworded to clarify that it only applies to timber management practices that regenerate a forest (clearcut, seed tree, shelterwood, group selection).

Guideline VEG G1. The LCAS also recommended creating forage (winter snowshoe hare habitat) where it was lacking. *This is reflected as Guideline VEG G1 in Alternative B.* This guideline is retained in the selected alternative. The wording clarifies that the priority areas for creating forage should be in those forests that are in the stem-exclusion, closed canopy structural stage to enhance habitat conditions for lynx and their prey. Basically it says we should focus regeneration efforts in pure lodgepole stands, with little understory, especially where forage is lacking.

Other related comments. Other comments we received on the DEIS relating to the amount or spatial distribution of winter snowshoe hare habitat were in regards to including a standard to limit type conversion, and limiting the size of clearcuts and other regeneration harvest units (FEIS Vol. 1 p. 75-76 and FEIS Vol. 2 27-27, 56-57, 59-60). Neither of these standards were recommended in the LCAS.

Objectives VEG O1, VEG O2, VEG O3 and VEG O4 describe the desired conditions of lynx habitat and all are consistent with the intent to minimize habitat conversions. Projects and activities should be designed to meet or move towards objectives; therefore a standard for type conversion was not necessary.

Openings created by even-aged harvest are normally 40 acres or less. Creating larger openings requires 60-day public review and Regional Forester approval, with some exceptions (R1 Supplement Forest Service Handbook 2400-2001-2; R2 Supplement 2400-99-2). Koehler (1990) speculated that openings created by regeneration harvest, where the distance-to-cover was greater than 325 feet, might restrict lynx movement and use patterns until the forest re-grows. While it is assumed lynx would prefer to travel where there is forested cover, the literature contains many examples of lynx crossing unforested openings (Roe et al. 2000).

Larger openings can often more closely resemble vegetative patterns similar to natural disturbance events (e.g. fire, windthrow, and insect outbreaks) (FEIS, Vol. 1, Appendix P). A disturbance pattern characterized by a few large blocks may be desirable if large areas of forested habitat are a management goal, or if the predation and competition that occur at the edges between vegetation types is a problem (Ruggiero et al. 2000, p. 431). While it is true lynx may not use large openings initially, once they have re-grown and can provide cover, generally after ten to 30 years, such areas may be important to lynx (FEIS, Vol. 1, Appendix P, p. 40092).

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The selected alternative already contains direction to consider natural disturbances and maintain habitat connectivity. Based on this management direction and evaluating the information in the *Ecology and Conservation of Lynx in the United States* (Ruggiero et al. 2000) and the LCAS, we decided that a standard limiting the size of openings was unnecessary to improve lynx conservation.

Standards and guidelines relating to quality of winter snowshoe hare habitat

Snowshoe hare are the primary prey for lynx. Winter snowshoe hare habitat is a limiting factor for lynx persistence. Snowshoe hare habitat consists of forests where young trees or shrubs grow densely. In addition to dense young regenerating forests, multistory forests that have trees whose limbs come down to snow level and have an abundance of trees in the understory, also provide winter snowshoe hare habitat. During winter, hare forage is limited to twigs and stems that protrude above the snow and the hares can reach. The LCAS recommended management direction to address winter snowshoe hare habitat in relation to precommercial thinning. Alternative B, the proposed action, splits the management direction to address actions occurring in winter snowshoe hare habitat in young regenerating forests (Standard VEG S5) and actions occurring in winter snowshoe hare habitat found in multistory forests (Standard VEG S6).

Standard VEG S5. The LCAS recommended no precommercial thinning that reduces winter snowshoe hare habitat in the *stand initiation structural stage*. This is reflected in Alternative B *Standard VEG S5*. Precommercial thinning within 200 feet of administrative sites, dwellings, or outbuildings has been allowed under current practices because it was found to have no effect to lynx due to location near structures.

Some people said this standard should apply to all vegetation management projects, not just precommercial thinning. Precommercial thinning is the primary activity that occurs in young regenerating forests. On occasion, other activities such as fuel treatments or prescribe burning, could occur. Alternatives C and D were expanded to apply to all vegetation management projects. Alternative E, the DEIS preferred alternative, only applied it to precommercial thinning projects.

Only a few comments were received on the DEIS saying the standard should apply to all type of projects. FWS did not comment on the more narrow application of the standard.

Standard VEG S5 in the selected alternative only applies to precommercial thinning because it is the predominate activity in young regenerating forests and it is has been identified as the risk factor for reducing winter snowshoe hare habitat (LCAS, Ruggiero et al. 2000, USDA FS and USDI BLM 2000, USDI FWS 2000a, 2000b, USDI FWS 2003).

As noted earlier in the issues section, some people said precommercial thinning should be allowed to restore tree species in decline or to encourage future large trees. Alternative D addresses this issue by allowing precommercial thinning of planted

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western white pine, whitebark pine, aspen, and larch, ponderosa pine, and lodgepole pine in certain situations. Alternative E, the DEIS preferred alternative, only allowed precommercial thinning adjacent to structures, for research or genetic tests, or for fuel treatment projects identified in a collaborative manner.

Several comments on the DEIS said the allowances for precommercial thinning in Alternative D should be incorporated into the final alternative. Several comments said that some allowance for adaptive management should be incorporated and that thinning should be allowed where it could be done to promote or prolong winter snowshoe hare habitat.

FWS comments on the DEIS said thinning adjacent to administrative sites, dwellings, or outbuildings and for research and genetic tests would have little effect on lynx or their habitat. In addition, they said the following thinning activities would have cumulatively little effect upon lynx habitat and, in some cases, advance natural ecological conditions. These include: (1) daylight thinning of planted rust-resistant western white pine where 80 percent of winter snowshoe hare habitat is maintained; (2) thinning within whitebark pine stands; (3) western white pine pruning; and (4) thinning for Christmas trees.

We evaluated the comments and incorporated the following elements into the selected alternative:

- Since Standard VEG S5 is concerned with reduction of winter snowshoe hare habitat, western white pine pruning and thinning for Christmas trees can occur if winter snowshoe hare habitat is not reduced. Generally these activities are done on an individual tree basis and do not change the characteristics of the habitat.
- Precommercial thinning can be done adjacent to administrative sites, dwellings, or outbuildings and for research and genetic tests since these would have benign effects on lynx.
- Precommercial thinning can be done for planted rust-resistant western white pine, whitebark pine, and aspen. Thinning to enhance whitebark pine and aspen would benefit other wildlife species and effects only limited acres in lynx habitat (FEIS, Vol. 1 Lynx section). Daylight thinning will be allowed around individual planted rust-resistant western white pine where 80 percent of the winter snowshoe hare habitat is retained. This may reduce some habitat effectiveness, but since this tree species has declined 95 percent across its range, we determined it was important to allow a limited amount of thinning to retain the species on the landscape.

Under these exceptions, about 64,000 acres could be precommercial thinned in occupied lynx habitat over the next decade - assuming full funding. This is likely to affect less than 2 percent of winter snowshoe hare habitat (FEIS Vol. 1 p. 188, USDI FWS 2007).

We also considered allowing precommercial thinning in vast areas of young regenerating forests where precommercial thinning could be done to prolong winter snowshoe hare habitat. We also considered precommercial thinning in young regenerating forests composed primarily of western larch with more than 10,000 trees

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per acre – where larch would be removed to favor other species that provide better winter snowshoe hare habitat. In both these situations the general belief is that these activities may be beneficial to lynx in the long term, but information is not available at this time to support that hypothesis. So, the standard was modified to provide an avenue to consider new information that may in the future prove or disprove these hypotheses. The criterion provided in the selected alternative states:

Based on new information that is peer reviewed and accepted by the regional level of the Forest Service and the state level of FWS, where a written determination states:

- a. that a project is not likely to adversely affect lynx; or
- b. that a project is likely to have short term adverse effects on lynx or its habitat, but would result in long-term benefits to lynx and its habitat.

This criterion allows incorporation of new peer reviewed information, but requires agreement by FWS before it may be utilized.

Standard VEG S6. The LCAS recommended no precommercial thinning that reduces *winter snowshoe hare habitat in multistory forests*. This is reflected in Alternative B *Standard VEG S6*. Precommercial thinning within 200 feet of administrative sites, dwellings or outbuildings has been allowed under current practices because it was found to have no effect to lynx due to location near structures. The LCAS did not contain a recommendation related to other management actions.

As noted in Issue #3 some people said the management direction should preclude all activities that reduce winter snowshoe hare habitat in multistory forest. Alternatives C, D, and F would apply the management direction to all vegetation management activities in multistory forests that provide winter snowshoe hare habitat. Each alternative has different allowances for vegetation management. Alternative E, the DEIS preferred alternative, changed the management direction from a standard to Guideline VEG G8. The intent of the guideline was to direct vegetation projects to provide winter snowshoe hare habitat through time.

Multistory forest structures can develop from natural processes, such as insects and diseases and fire, or management actions like timber harvest that create small openings where trees and shrubs can grow.

Comments on the DEIS suggested that management direction for multistory forests should be in the form of a standard. FWS suggested the agencies review the latest information or research on lynx use of forests in multistoried structural stages prior to developing a final preferred alternative.

Recent research in northwest Montana demonstrates that mature multistoried forests provide important winter snowshoe hare habitat and are more important than younger stands (FEIS, Vol. 1, p. 22). In fact, the researchers questioned whether or not the LCAS would provide for lynx viability and recovery if only precommercial thinning were precluded.

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Based on this new information we retained Standard VEG S6 in the selected alternative, but we preclude *all* vegetation management activities that reduce winter snowshoe hare habitat in multistory forests, not just precommercial thinning as recommended in the LCAS. We would allow minor reductions in winter snowshoe hare habitat for activities within 200 feet of structures, research or genetic tests, and for incidental removal during salvage harvest (associated with skid trails). Fuel treatment projects within the WUI are also exempt from this standard (see fuel treatment discussion further in this decision). We also allow timber harvest in areas that have the potential to improve winter snowshoe hare habitat but presently have poorly developed understories.

We believe and FWS concurred that protecting winter snowshoe hare habitat in multistoried forests will further retain and promote important lynx habitat components.

Standards and guidelines relating to denning habitat

Woody debris - piles of wind-thrown trees, root wads, or large down trees - provides lynx denning sites. Large woody debris gives kittens an escape route from predators, as well as cover from the elements. During the first few months of life, when kittens are left alone while the mother hunts, denning habitat must be available throughout the home range (Bailey 1974). The LCAS recommended two standards and two guidelines related to denning habitat. These are reflected in Alternative B as *Standards VEG S3 and VEG S4 and Guidelines VEG G2 and VEG G3*.

In Alternative B Standard VEG S3 defers vegetation management projects in places with the potential to develop into denning habitat if an LAU contains less than ten percent denning habitat. Standard VEG S4 limits salvage harvest in some situations. Guideline VEG G2 says when more denning habitat is desired to leave standing trees and coarse woody debris. Guideline VEG G3 says to locate denning habitat where there is a low probability of stand-replacing fire.

Development of alternatives for the DEIS

Some people said that den sites can be found in old regenerating forests and the agency should be allowed the flexibility to create denning habitat in regeneration units, especially since denning habitat should be located in or adjacent to forage. In Maine, 17 den sites were located in a variety of stand types, including 10-20 year old clearcuts adjacent to residual stands (FEIS, Vol. 1, Appendix P).

After reviewing the literature, we determined it was reasonable to have an alternative that allows for flexibility to mitigate or create denning habitat, especially when there is less than 10 percent denning habitat. Alternatives D and E modify Standard VEG S3 to say where there is less than 10 percent denning habitat either: 1) defer management, or 2) move towards 10 percent by leaving standing dead trees or piles of coarse woody debris. This combined the guidance in Alternative B, Guideline VEG G2 with the Standard VEG S3.

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Some people said salvage harvest should not be singled out because it is not the only management action that removes denning habitat. Standard VEG S4 limits salvage harvest after a disturbance kills trees in areas five acres or smaller – if there is less than 10 percent denning habitat.

We evaluated whether other management actions, such as prescribed burning, chipping, piling and burning, etc. should be precluded. Salvage harvest is the primary management action that removes denning habitat because it removes dead and down timber; therefore we determined other actions did not need to be constrained. However, we determined that Standard VEG S4 should be a guideline in Alternatives D and E because it provides guidance on how to design projects. The guideline says when there is less than 10 percent denning habitat, then units should consider retaining small areas of dead trees. As noted in Alternatives D and E, Standard VEG S3, units can mitigate when there is less than 10 percent denning habitat. It is possible to create denning habitat or retain pockets, but units should be allowed to evaluate denning needs on a site specific basis.

The intent of Alternatives D and E, is where denning habitat is lacking, units should recognize it, retain large and small patches and/or mitigate, especially if it denning habitat can be created in or near new forage areas. In most areas denning habitat is likely not limiting because it is found in such a variety of stand conditions and ages.

Considerations for alternatives in the FEIS

In comments on the DEIS some people said there was no basis for retaining ten percent denning habitat – they wanted the standard dropped altogether. Others wanted more denning habitat required. Some people asked for an alternative to prohibit harvest in old growth or mature timber to protect denning habitat. Others said that all old growth should be protected by management direction because some administrative units do not meet old growth standards.

Some people said allowing salvage logging in disturbed areas smaller than five acres lacked a scientific basis and that all salvage harvest should be deferred. Most comments on the DEIS said that management direction for denning habitat should be in the form of standards.

In their comments on the DEIS FWS supported Standard VEG S3, including conditions 1 and 2 in Alternative E, but was concerned about changing Standard VEG S4 into Guideline VEG G7. FWS recommended development of a standard that: 1) maintains ten percent denning habitat within an individual LAU; 2) is randomly/evenly distributed across the LAU; and 3) ensures recruitment of future denning habitat.

Based on these comments, we reconsidered the management direction for denning habitat. We held discussions with the researchers, lynx biology team and FWS to further explore denning habitat – where it is found, how to measure it, and how to ensure plans provide the appropriate level of management direction.

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Where denning habitat is found: Since 1989 researchers have discovered that lynx denning habitat is found in a variety of structural stages from young regenerating forests to old forests. The integral component of lynx den sites appears to be the amount of downed, woody debris, not the age of the forest stand (Mowat, et al. 2000). Research by Squires (pers. com. Oct. 30, 2006) has found that of 40 den sites in northwest Montana most were located under large logs, but “jack-strawed” small diameter wind thrown trees, root wads, slash piles, and rock piles were also used (FEIS, Vol. 1 p. 172-173). These structural components of lynx den sites can often be found in managed (logged) and unmanaged (e.g. insect damaged, wind-throw) stands.

How to measure denning habitat: Retaining ten percent denning habitat is based on maintaining lynx habitat over time (Brittel et al. 1989). Brittel recommended a balance of conditions – 30 percent forage, 30 percent unsuitable that would grow into forage, 30 percent travel, and ten percent denning.

We evaluated how to measure 10 percent denning based on where the habitat can be found. We evaluated using mature and over-mature forests as a first approximation of denning habitat. Generally mature and over-mature forests contain a component of dead and down trees which lynx use. If these two components were used then all units would show much more than ten percent denning habitat as all forests have at least twenty percent of their forest in mature stand structures (Project file/ Analysis/ Forests/ FEIS/ Data). In addition, these stand structures do not account for all the stand conditions where denning habitat can be found because denning habitat can be found in young forests with slash piles, lodgepole forests with insect and disease outbreaks, areas recently burned in wildfires, as well as variety of other forest conditions. Based on these discussions, we decided, with agreement from FWS, that using stand structures as a proxy would show an abundance of denning habitat; therefore the requirement to retain ten percent was found not to be a useful measure.

How to provide for denning habitat:

We considered restricting harvest in mature forests and old growth. The important component for all lynx den sites appears to be the amount of down woody debris present, not the age of the forest (Mowat et al. 2000, Appendix P). Old growth and mature forests can provide denning habitat, but based on review of research a variety of forest structures also provide denning habitat. We considered prohibiting timber harvest in old growth but dismissed this from detailed consideration because denning habitat is found in a variety of forest structures (FEIS, Vol. 1 p. 81).

We considered restricting salvage harvest. Standard VEG S4 in Alternatives B and C limits salvage harvest after a disturbance kills trees in areas five acres or smaller – if there is less than 10 percent denning habitat. The standard was changed to a guideline in Alternatives D and F. The guideline says that when there is less than 10 percent denning habitat, then units should consider retaining small areas of dead trees.

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Salvage harvest can remove denning habitat. However, den sites are found in areas with large logs, “jack-strawed” small diameter wind thrown trees, root wads, slash piles, and rock piles. These areas need not be extensive – they are generally small areas that provide sufficient cover for lynx den sites.

We reevaluated whether or not denning habitat is a limiting factor for lynx. Based on discussions with research, we reaffirmed that denning habitat is found in a variety of forest conditions, they are found in small pockets scattered across an area and are generally found across the landscape, and lynx denning sites are not believed to be a limiting factor (J. Squires, pers. com. Oct. 30, 2006). In addition, management actions can create denning habitat by strategically leaving piles of woody debris, or leaving residual trees where denning habitat is lacking.

Therefore, we determined that restricting salvage harvest was not necessary, but that projects should consider the abundance and distribution of denning habitat in their project design and leave den site components (piles of down wood, or standing dead trees) where it is lacking.

We considered management direction in the form of standards vs. guidelines. We determined management direction for denning habitat should be incorporated into one set of management direction. Incorporating all the direction into one standard or guideline reduces the potential for conflicts between directions, focusing on the important components of denning habitat.

We determined a guideline would be best suited for this management direction because denning habitat can be found in a variety of forest structures and in small areas, is not a limiting factor for lynx, and the management direction would provide design features for projects. Therefore we developed Guideline VEG G11 in the selected alternative. The guidance is to: 1) have denning habitat distributed across an LAU (in the form of pockets of large woody debris, either down logs or root wads, or large piles of jack-strawed trees); and 2) if denning habitat is lacking, projects should be designed to retain coarse woody debris – by leaving piles or retaining residual trees that can become denning habitat later.

Objectives VEG O1, VEG O2, VEG O3, and VEG O4 and Standards VEG S1, VEG S2, and VEG S6 also indirectly promote the development and retention of the structure needed for denning habitat through vegetation management that promotes a mosaic of forest conditions across the landscape (USDI FWS 2007). Based on the above, FWS determined that projects were unlikely to reduce denning structure to levels that result in adverse effects to lynx (USDI FWS 2007).

In addition, the Lynx Biology Team (the team responsible for the LCAS) is in the process of updating the LCAS denning habitat recommendations based on this new information about where denning habitat is found and its distribution.

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Consideration of fuel treatment projects

Most lynx habitat consists of high-elevation spruce/fir and lodgepole pine forests, but some lynx habitat may be found in mixed conifer forests. Generally, forests in lynx habitat are close to historic conditions, meaning the long fire return interval has not been affected to any large degree by more recent fire suppression as is the case in dryer forests with short fire return intervals. However, some stand conditions are conducive to extreme fire behavior because of insect and disease mortality or the amount of tree limbs that provide ladder fuels. Fuel treatments designed to reduce ladder fuels and/or reduce the potential size (Finney 2001) and severity of wildland fires may be proposed in lynx habitat.

After the 2000 wildfire season, which burned a substantial amount of acreage, the Forest Service began to set goals for wildfire management. Several documents serve to provide a national prioritization system for the selection of hazardous fuel treatments on Federal lands with close coordination among the Federal, State, and other agencies, as well as Tribes and communities. The criteria for prioritizing lands for hazardous fuels treatment generally correspond to: (1) closest proximity to communities at risk in the WUI; (2) strategic areas outside the WUI that prevent wildland fire spread into communities or critical infrastructure; (3) areas outside of WUI that are in Condition Classes 2 or 3; and (4) other considerations (FEIS, Vol. 1 p. 215).

The LCAS did not specifically address fuel treatments. During scoping we identified wildland fire risk as an issue, issue # 2 (FEIS, Vol. 1 p. 21-22). We developed a range of alternatives to address this issue.

In Alternative A, there would be no change in existing plan direction on the treatment of fuels.

Alternative B would allow fuel treatments to go forward if they:

- Meet the 10 percent denning standard (Standard VEG S3 and S4)
- Meet 30 percent unsuitable habitat standard (Standard VEG S1) or 15 percent unsuitable habitat created by timber harvest standard (Standard VEG S2)
- Use methods other than precommercial thinning in winter snowshoe hare habitat (Standards VEG S5 and VEG S6)

Alternatives C and D would not allow any type of fuel reduction project that reduced winter snowshoe hare habitat - except within 200 feet of structures.

Alternative E, the DEIS preferred alternative would not apply the vegetation standards (Standards VEG S1, S3, and S5) to fuel treatments developed in a collaborative manner, as described in the *10-Year Comprehensive Strategy Implementation Plan* (USDA FS 2001). This exception was used because a multi-party Memorandum of Understanding was signed in 2003 by the FS, BLM, and FWS (USDA FS et al. 2003) concerning fuel treatments and collaboration.

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Many comments were received on the DEIS regarding fuel treatments. Some people suggested there be no exemptions for fuel treatments. Several groups suggested that only fuel treatments within 500 yards of human residences and other structures be allowed because these areas are generally not appropriate to restore lynx anyway. Others felt the exemptions should only apply to the WUI and that the agencies should define the WUI. Others liked the exemptions as they were written in Alternative E.

FWS cautioned against exempting a broad range and unknown number of actions from plan direction. They felt, as currently worded in Alternative E, the exemption was sufficiently vague that it did not allow an adequate analysis of potential effects upon lynx or lynx habitat and it could result in extensive adverse effects to lynx.

FWS suggested Standard VEG S5 be modified to restrict precommercial thinning to within one mile of structures. They did not believe any exemptions were needed for Standards VEG S1 or S2 since so very few LAUs were near the thresholds identified in these standards. They felt very few proposals would be constrained by the standards. They also questioned why Condition Class 1 forests were not specifically excluded from the exemptions. Condition Class 1 forests include areas where fires have burned as often as they did historically; the risk of losing key ecosystem components is low; and vegetation composition and structure is intact and functioning. The FWS went on to say they recommended that processes, actions, or types that would be exempt be clearly identified.

We reviewed and discussed the comments with FWS and decided to modify the fuel treatment exemption for the selected alternative. We thoroughly discussed the issue of how to allow for fuel treatments to reduce the hazard to communities – while providing for the conservation and recovery of lynx (Project File/Alternatives/FEIS alternatives).

Based on our discussions we decided none of the vegetation standards will apply to fuel treatment projects within the WUI as defined by the Healthy Forests Restoration Act (HFRA), within a certain limit. We constrained the number of acres that do not meet the standards to 6 percent of lynx habitat within a National Forest, and we added the FWS term and condition that fuel treatment projects can cause no more than 3 adjacent LAUs to not meet standard VEG S1.

In addition we added Guideline VEG G10 which says fuel treatment projects within the WUI should be designed *considering* Standards VEG S1, S2, S5, and S6. The intent in adding this guideline is that although these vegetation standards do not apply to fuel treatment projects within the WUI as defined by HFRA, these projects should still consider the standards in the development of the proposal. In many cases projects can be designed to reduce hazardous fuels while providing for lynx needs. This guideline ensures lynx are considered in the project design – but allows for the flexibility of not meeting the standards in situations where meeting the standards would prevent the project from reducing the hazardous fuels in the WUI.

The following describes some of the considerations in the development of this direction.

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Application to Standards VEG S1 and S2: Under Standards VEG S1 and S2 it is likely very few projects would exceed the 30 percent and 15 percent criteria because many fuel treatment projects are not regeneration harvest. If regeneration harvest is applied it is likely to be done to create a fuel break adjacent to communities or to break up the continuity of fuels (Finney 2001). Since part of our direction under the Healthy Forests Initiative is to look for ways to expedite fuel reduction projects we determined that we did not want to have to amend forest plans for the few cases where not meeting the standards may be necessary.

Application to Condition Class 1: Many forests in lynx habitat are in Condition Class 1, meaning these forests have not missed a fire cycle because large, stand-replacing fire only occurs every 100 to 200 years. However, some of these Condition Class 1 forests can still be a threat to communities. An example is lodgepole pine forests which are at the age of being susceptible to mountain pine beetle outbreaks. Regenerating lodgepole pine, adjacent to a community, may be needed to reduce the severity and size of a wildland fire. Fire is a natural process in these ecosystems; but there is a need to balance the natural process with the risk of fire destroying homes; therefore we did not limit the standard to particular condition classes.

What locations should be exempted: We evaluated various options regarding where the standards should be applied and we used a variety of criteria to evaluate which option to carry forward for detailed consideration. The criteria included: 1) is there a defined area; 2) can effects be meaningfully evaluated; 3) would it provide for community protection; and 4) does it meet the purpose and need. (For further detail see FEIS, Vol. 1 pp. 85-86 which summarizes the options and considerations and the Project File/Alternatives/FEIS Alternatives/documents July 29, 2004 through February 24, 2005).

Based on comments, national direction regarding fuel treatments, and the effects on lynx, we decided exempting fuel treatment projects within the WUI, within limits would be a reasonable balance. We decided to use the definition established by Congress in the HFRA as it established a national procedure for determining the extent of the WUI (USDI, USDA FS 2006).

What limit(s) should be applied: We elected to put a limit on the amount of fuel treatment projects that could exceed the vegetation standards, since WUI has not been mapped on all units. We evaluated the WUI based on a mile of where people live (FEIS, Vol. 1 p. 217). A one mile buffer from communities was used because HFRA describes WUI as ½ mile or 1 ½ miles depending on certain features. One mile splits this difference and is easy to approximate. Based on this analysis, we found that about 6 percent of lynx habitat is within 1 mile of communities; therefore we limited the amount of acres that can exceed the standards to 6 percent of each National Forest.

In addition, FWS identified two terms and conditions (TC) to minimize impacts of incidental take of lynx due to fuel treatment projects. TC 1 (6 percent limit) was already incorporated as described above; TC 2 says fuel treatment projects shall not result in

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more than three adjacent LAUs exceeding the standard. This TC has been incorporated into the management direction – see Attachment I.

Summary. Exempting fuel treatment projects within the WUI provided a defined area, as requested by FWS; we could evaluate the effects (FEIS, Vol. 1 Lynx section); it provides for community protection by reducing delay; and meets the purpose and need by constraining the area where adverse effects could occur. In addition we compiled information from each forest's 5 year fuel treatment program to evaluate effects – FEIS, Vol. 1, Lynx section and Appendix M, and USDI FWS 2007. This information was not available for the DEIS. We found that although we would limit adverse effects to 6 percent of lynx habitat, it is more likely only 1.4 percent or less of lynx habitat would have adverse effects. This is because the fuel treatment program of work within the WUI only amounts to 1.4 percent of lynx habitat and many projects can be designed to meet the vegetation standards. Regardless, the vegetation standards would apply to fuel treatments on 94 percent of lynx habitat.

In addition, by addressing the exemption and putting a limit on where adverse effects could occur this allowed us to take a cumulative look at the effects planning area wide vs. amending standards project-by-project.

FWS findings related to the vegetation management direction

The vegetation management direction set forth in the selected alternative conserves the most important components of lynx habitat: a mosaic of early, mature, and late successional staged forests, with high levels of horizontal cover and structure. These components ensure the habitat maintains its inherent capability to support both snowshoe hare prey base and adequate lynx foraging habitat (and denning habitat) during all seasons. These standards are required for all vegetation management actions on at least 93.5 percent of lynx habitat in the planning area. Areas within the WUIs (totaling six percent of lynx habitat) are exempt from these standards; however VEG G10 would apply and at least requires some consideration of the standards in designing fuel reduction treatments. Precommercial thinning, allowed under the exceptions, may affect an additional 0.5 percent of lynx habitat. Where these standards are applied to vegetation management projects, we anticipate few, if any, would have adverse effects on lynx. Collectively, application of these standards for vegetation management is expected to avoid adverse effects on lynx and promote the survival and recovery of lynx populations (USDI FWS 2007).

Management direction related to grazing

Livestock grazing may reduce or eliminate foraging habitat in areas that grow quaking aspen and willow in riparian areas (LCAS). These localized changes in habitat may affect individual lynx; however, no information indicates that grazing poses a threat to overall lynx populations (FEIS, Vol. 1, Appendix P, p. 40083). Appropriate grazing management can rejuvenate and increase forage and browse in key habitats such as riparian areas. Grazing was not mentioned in the original listing decision as a threat to

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lynx, nor is it discussed in *the Ecology and Conservation of Lynx in the United States* (Ruggiero et al. 2000). In addition, FWS noted that they have found no research that provides evidence of lynx being adversely affected by grazing within the planning area or elsewhere, or of lynx movements within home ranges being impeded by grazing practices (USDI FWS 2007).

The LCAS recommended four standards for grazing management. These are reflected in Alternative B. *Standards GRAZ S1, GRAZ S2, GRAZ S3, and GRAZ S4* provide management direction for grazing in fire and harvest created openings, aspen stands, riparian areas and willow carrs, and shrub-steppe habitat. Alternatives C and D retain the management direction as standards. Alternative E changes the management direction to Guidelines GRAZ G1, GRAZ G2, GRAZ G3, and GRAZ G4 because neither the Remand Notice nor the *Ecology of Conservation of Lynx in the United States* recognized grazing as a threat to lynx.

Many people commented on Alternative E, the preferred alternative in the DEIS, and said the guidelines should be standards in the final alternative. Others said grazing should not be allowed at all, while two said the grazing guidelines should be retained. The FWS did not comment on the level of grazing management direction in Alternative E. We considered these comments in the FEIS Vol. 1 pp. 86-87, as well as Vol. 2, 75-76.

We decided the management direction for grazing in the selected alternative should be in form of guidelines, Guidelines GRAZ G1 through GRAZ G4 because there is no evidence grazing adversely affects lynx. These guidelines provide project design criteria for managing grazing in fire and harvest created openings, aspen, willow, riparian areas, and shrub-steppe habitats. The guidelines are designed to minimize potential adverse effects and improve habitat conditions. FWS found that with the application of these measures in most cases, there would be no effects or discountable effects to lynx (USDI FWS 2007). In addition, the Lynx Biology Team is in the process of updating the LCAS grazing recommendations.

Management direction related to human uses

Over-the-snow winter recreation

Lynx have very large feet in relation to their body mass, providing them a competitive advantage over other carnivores in deep snow. Various reports and observations have documented coyotes using high elevation, deep snow areas (Buskirk et al. 2000). Coyotes use open areas because the snow is more compacted there, according to research conducted in central Alberta (Todd et al. 1981). In another study in Alberta, coyotes selected hard or shallow snow more often than lynx did (Murray et al. 1994).

The LCAS recommended two objectives and two standards relating to winter dispersed recreation. These are reflected in Alternative B, *Objectives HU O1 and HU O3, and Standards HU S1 and HU S3*. In Alternative B, Standard HU S1 would maintain the existing level of groomed and designated routes. All action alternatives contain

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Objectives HU O1 and HU O3 that discourage expanding snow-compacting human activities. Alternatives B, C, and D contain Standard HU S1 that would allow existing over-the-snow areas to continue but not expand into new, un-compacted areas. Alternative E, the DEIS preferred alternative, contains Guideline HU G11 that discourages the expansion of designated over-the-snow routes and play areas into uncompact areas. All alternatives would allow existing special use permits and agreements to continue.

In comments on the DEIS some people asked that no dispersed over-the-snow use be allowed off groomed or designated trails and areas, saying the no net increase in groomed or designated routes did not go far enough. Others said the management direction should be in the form of a standard, not a guideline.

Some people said standards related to over-the-snow use should be removed. They said there is no evidence to show that coyotes and other predators use packed snow trails to compete with lynx for prey, and the amount of compaction created by snowmobiles is insignificant compared to the compaction created naturally by the weather. They were particularly concerned that if such language was introduced into plans, it could be difficult to change, incrementally restricting the places where snowmobiling is allowed. Others wanted an allowance made to increase use. These comments were considered for management direction – see FEIS Vol. 1 pp. 90-93.

In their comments on the DEIS the FWS agreed it is prudent to maintain the status quo and restrict expansion of over-the-snow routes until more information is available because of the possibility that, over time, unregulated expansion could impair further conservation efforts. They also said current, ongoing research in Montana may shed some information on the effects of snow compaction on lynx. They suggested careful consideration of the most recent information and the reality of possible impairment of options for the future. They suggested considering language that could provide more guidance on conditions where the expansion of over-the-snow routes would be warranted and acceptable.

We reviewed the results of research conducted since the DEIS was released. In northwestern Montana (within the northern lynx core area) Kolbe et al. (in press) concluded there was “little evidence that compacted snowmobile trails increased exploitation competition between coyotes and lynx during winter on our study area.” Kolbe et al. (in press) suggested that compacted snow routes did not appear to enhance coyotes’ access to lynx and hare habitat, and so would not significantly affect competition for snowshoe hare. They found that coyotes used compacted snow routes for less than 8 percent of travel, suggesting normal winter snow conditions allowed access by coyotes, regardless of the presence or absence of compacted snow routes. Kolbe was able to directly measure relationships between coyotes, compacted snow routes and snowshoe hare in an area that also supports a lynx population (USDI FWS 2007). In this study coyotes primarily scavenged ungulate carrion that were readily

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available while snowshoe hare kills comprised only three percent of coyote feeding sites (Kolbe et al. in press).

In the Uinta Mountains of northeastern Utah and three comparative study areas (Bear River range in Utah and Idaho, Targhee NF in Idaho, Bighorn NF in Wyoming) Bunnell (2006) found that the presence of snowmobile trails was a highly significant predictor of coyote activity in deep snow areas.

From track surveys it was determined the vast majority of coyotes (90 percent) stayed within 350 meters of a compacted trail and snow depth and prey density estimates (snowshoe hares and red squirrels) were the most significant variable in determining whether a coyote returned to a snowmobile trail (Bunnell 2006). Of the four study areas recent lynx presence has only been documented on the Targhee NF. Bunnell indicated that “circumstantial evidence” suggested the existence of competition.

To date, research has confirmed lynx and coyote populations coexist, despite dietary overlap and competition for snowshoe hare, the primary prey of lynx, and alternate prey species. In some regions and studies, coyotes were found to use supportive snow conditions more than expected, but none confirm a resulting adverse impact on lynx populations in the area. The best scientific information (Kolbe’s study) is from an occupied core area within our planning area. Radio-collared lynx and coyotes were monitored in this study, unlike the Bunnell study. This area is occupied by both lynx and coyotes and the study concludes coyotes did not require compacted snow routes to access winter snowshoe hare habitat.

Based on this information, we reevaluated management direction related to over-the-snow activities. An alternative to prohibit all snow-compacting activities or to limit dispersed use was evaluated, but not considered in detail because current research indicates this level of management direction is unwarranted (USDI FWS 2000a; FEIS, Vol. 1, Appendices O and P).

An alternative to drop all direction limiting snow compaction was not developed in detail because there is evidence competing predators use packed trails, suggesting a potential effect on individual lynx. We decided it was prudent to maintain the status quo and not let over-the-snow routes expand. However, we also decided it was reasonable to retain the direction as a guideline in the selected alternative which can be used in project design. The intent is to follow the management direction in guidelines. However, there may be some cases where expansion of over-the-snow routes would be warranted and acceptable, or where research indicates there would be no harm to lynx. Guidelines are better suited to adaptive management.

There is also no basis to establish any particular threshold of allowable increases. However, the selected alternative allows expanding winter recreation in some places where heavy public use existed in 1998, 1999, or 2000 – see Guideline HU G11.

The FWS concluded the Objectives HU O1 and O3, and Guideline HU G11 would be sufficient to maintain habitat effectiveness for lynx by limiting the expansion of

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compacted snow routes and this conclusion would be tested through monitoring required in this decision. The best information available has not indicated compacted snow routes increase competition from other species to levels that adversely affect lynx populations, and under the selected alternative the amount of areas affected by snow compacted routes would not substantially increase (USDI FWS 2007).

Developed recreation

The LCAS identified risk factors associated with ski areas, including *short-term effects* on denning, foraging, and diurnal security habitat and *long-term effects* on movement within and between home ranges (LCAS, p. 2-10). Ski areas may eliminate habitat and pose a threat to movements; but most were constructed before lynx became a conservation issue (Hickenbottom et al. 1999, p. 70). Mitigation measures can be developed at the project level to lessen the effects of existing developments.

The LCAS recommended various objectives, standards, and guidelines in relation to developed recreation, specifically ski areas. These are reflected Alternative B, *Objectives ALL O1, HU O2, HU O3, and HU O4; Standards ALL S1 and HU S2; and Guidelines HU G1, HU G2, HU G3, and HU G10*. Objectives and standards (*LINK O1 and LINK S1*) regarding habitat connectivity also address concerns about developed recreation. These objectives, standards, and guidelines provide management direction about ski area development, expansion, and operations to provide for lynx movement, security, and habitat needs.

The alternatives retain similar management direction as Alternative B, except Alternatives C, D, and E changed Standard HU S2 to Guideline HU G10. Standard HU S2 requires diurnal habitat to be maintained, if needed. There is no evidence that diurnal security habitat is required by, or where it occurs on ski areas is used by lynx (USDI FWS 2007). Since the need to provide diurnal habitat is questionable, we determined it was better suited as a guideline.

In commenting on the DEIS some people said ski areas should be removed or at least prevented from expanding. Others recommended the final preferred alternative retain Standard HU S2. There are 24 existing down hill and cross country ski areas in occupied habitat in the planning area, which affect about 17,500 acres out of the 12.5 million acres of occupied habitat. Eight down hill ski areas are planned for expansion. One new ski area is proposed. Most of the ski areas are located on individual mountain ranges, not several together as in other areas in the west (FEIS, Vol. 1 p. 285). There is no indication these ski areas affect lynx travel because these ski areas are spread across the planning area. There is no information that indicates removal of ski areas is warranted, nor is limiting their expansion, as long as lynx needs are considered. The selected alternative includes standards to provide for lynx habitat connectivity, and includes guidelines to be use in the development of ski area expansion. Many adverse effects of developed recreation will be minimized under the selected alternative (USDI FWS 2007).

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Minerals and energy

The LCAS said the main risk factors associated with minerals and energy development is related to the potential for plowed roads to provide access for lynx competitors.

These recommendations are reflected in Alternative B, *Objectives ALL O1, HU O1, and HU O5, Standards ALL S1 and HU S3, and Guidelines HU G4, and HU G5* which provide management direction for mineral and energy development. All except standard HU S3 remain essentially the same in all alternatives. Standard HU S3 says to keep mineral and energy development to designated routes. This standard was changed to Guideline HU G12 in Alternative E and in the selected alternative to be consistent with the application of management direction regarding over-the-snow routes discussed above.

In commenting on the DEIS some people said lease stipulations identifying constraints on developing oil and gas, coal, or geothermal resources should be one of the decisions made as a part of the management direction. This comment is addressed in the FEIS, Vol. 1 p. 94-95. FWS did not comment on the management direction related to minerals and energy development.

Forest roads

Lynx are known to have been killed by vehicle-collisions in Colorado (reintroduced population; paved, high-speed highways), in Minnesota (paved, high-speed highways) and in Maine (high-speed, relatively straight gravel roads on flatter terrain). The best information suggests that the types of roads managed by the Forest Service do not adversely affect lynx (USDI FWS 2007). Lynx mortality from vehicle strikes are unlikely, and to date none have been documented on National Forest System lands within the planning area, given the relatively slow speeds at which vehicles travel on these roads (due to topography and road conditions) and generally low traffic volumes.

Roads may reduce lynx habitat by removing forest cover. Along less-traveled roads where the vegetation provides good hare habitat, sometimes lynx use the roadbeds for travel and foraging (Koehler and Brittell 1990; LCAS, p. 2-12). A recent analysis on the Okanogan NF in Washington showed lynx neither preferred nor avoided forest roads, and the existing road density does not appear to affect lynx habitat selection (McKelvey et al. 2000; USDI FWS 2000a, p. 39).

Although many species of wildlife are disturbed when forest roads are used (Ruediger 1996), preliminary information suggests lynx do not avoid roads (Ruggiero et al. 2000) except at high traffic volumes (Apps 2000). In denning habitat, when roads are used during summer, lynx may be affected if they move their kittens to avoid the disturbance (Ruggiero et al. 2000; LCAS, p. 2-12).

The LCAS recommended several guidelines to address potential impacts of forest roads, including upgrading, cutting and brushing, and public use. These guidelines generally discourage improving access for people or reduce the likelihood people would see lynx near roads. These guidelines are reflected in Alternative B, *Guidelines*

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HU G6, HU G7, HU G8, and HU G9. All the alternatives, including the selected alternative retain these guidelines.

In commenting on the DEIS some people said more restrictions on roads were needed to conserve lynx. They wanted new road construction halted, road densities identified and existing roads closed or eliminated, or they wanted the roads guidelines turned into standards. Other people said there should be no road-related standards or guidelines, saying no evidence exists that roads harm lynx. Some people said Guideline HU G9 should be deleted because there are no compelling reasons to close roads. The FEIS, Vol. 1, pp. 95 to 96 describes how these were considered in the development of the management direction. FWS had no comments related to these guidelines.

Based on our review we found no information indicating road building should be banned or that further restrictions were needed. The guidelines adequately address the known risks associated with roads. We determined guidelines were the appropriate level of management direction because guidelines provide information and guidance for project design and decision-making. Some guidance on how to design projects is warranted because roads may affect individual lynx.

Management direction related to linkage areas

Highways and connectivity

Highways impact lynx by fragmenting habitat and impeding movement. As traffic lanes, volumes, speeds, and rights-of-way increase, the effects on lynx are increased. As human demographics change, highways tend to increase in size and traffic density.

The LCAS recommended one objective, two standards, and a guideline directly or indirectly related to highways and connectivity. These are reflected in Alternative B, *Objective ALL O1, Standards ALL S1 and LINK S1, and Guideline ALL G1.* Objective ALL O1 and Standard ALL S1 are intended to maintain connectivity. Standard LINK S1 is intended to provide a process for identifying wildlife crossings across highways.

Alternatives C, D, E and the selected alternative have the same objective and standards.

In comments on the DEIS some people said more should be done than just identifying highway crossings. FWS did not comment on management direction related to highways.

The LCAS recommended project standards for highways. It says to “Identify, map and prioritize site-specific locations, using topographic and vegetation features, to determine where highway crossings are needed to reduce highway impacts on lynx and other wildlife”. Alternatives B, C, D, E and the selected alternative include Standard LINK S1 which reflects the intent of the LCAS recommendations. In addition, Guideline ALL G1 says “Methods to avoid or reduce effects on lynx should be used when constructing or reconstructing highways or forest highways across federal land. Methods could include fencing, underpasses or overpasses.”

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As noted in Chapter 3, Transportation Section, portions of three highways are likely to be reconstructed in linkage areas in the next ten years. State agencies in Wyoming, Idaho, and Montana are incorporating wildlife crossings into their highway design packages (Wyoming Department of Transportation, 2005; Idaho Transportation Department 2004; Montana DOT, FHWA, Confederated Kootenai and Salish Tribes 2006). Therefore no further management direction regarding wildlife crossings in the form of standards was found to be warranted.

Other considerations in linkage areas

Coordination among different land management agencies is important to the recovery of lynx because lynx have large home ranges and may move long distances. The LCAS recommended guidance for working with landowners to pursue solutions to reduce potential adverse effects. This recommendation is reflected in Alternative B, *Objective LINK 01*. This objective is the same among all alternatives, including the selected alternative.

In addition, it is important to mention the Forest Service is a lead member in the interagency Lynx Steering Committee and the Lynx Biology Team (FEIS, Vol. 1 Chapter 4), and played a key coordination role for the Lynx Science Team. These efforts facilitate relationships with other Federal and non-Federal landowners, including the States and provide a source for non-Federal land management guidance, through products such as the LCAS and Forest Plans. The Steering Committee would also provide a forum to build and sustain cooperative efforts with Canada to maintain lynx connectivity across the international border, if and when the need arises (USDI FWS 2007). The Forest Service also led the interagency effort to identify linkage areas.

Use of standards and guidelines

The selected alternative incorporates standards for those risk factors found to threaten lynx populations. Standards are management requirements used to meet desired conditions. Standards were used in those situations where we wanted to provide sideboards for project activities. Guidelines were used for those risk factors that may have possible adverse affects on individual lynx. Guidelines are management actions normally taken to meet objectives. They provide design criteria to meet lynx objectives. We expect guidelines to be followed in most cases, however based on site-specific conditions there may be reason not to follow a guideline.

FWS found guidelines would be implemented in most cases and adverse effects would not always occur where guidelines are not implemented. Effects would be based on site-specific conditions, with compliance with Section 7 consultation for each project. The FWS does not expect adverse effects as a result of changes of LCAS standards to guidelines to reach levels that impact lynx populations. Changes from standards to guidelines occurred when the best available information indicated the action was not likely to adversely affect lynx, or not likely to adversely affect lynx in most cases (i.e. where no conclusive or reliable information supported the standard in the LCAS).

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Application of the standards, and for the most part guidelines, in core and occupied secondary areas substantively reduce the potential for adverse effects on lynx over the existing plans (USDI FWS 2007).

In addition, we will monitor the application of guidelines to see if our assumption they are normally applied is correct. Annually we will review the monitoring results to determine if further consideration is warranted.

Where to apply the decision

The selected alternative is incorporated into all forest plans in the planning area (FEIS, Vol. 1, Table 1-1 p. 5 and Figure 1-1). However, the management direction only applies to occupied lynx habitat. Those National Forests (the Beaverhead-Deerlodge, Bitterroot, Nez Perce in Region 1; the Bighorn in Region 2; and the Ashley, and Salmon-Challis in Region 4), or isolated portions of National Forests (the Custer, Gallatin, Helena and Lewis and Clark in Region 1), that presently are unoccupied by Canada lynx should consider the management direction that is now incorporated into their Forest Plans when developing projects, but are not required to follow the management direction until such time as they are occupied by Canada lynx.

According to the Conservation Agreement (USDA FS, USDI FWS 2006a), an area is considered occupied when: (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 reproduction on the national forest.

This direction is in keeping with the current Conservation Agreement which only applies to projects and activities in occupied habitat. The FWS species lists on those forests and portions of forests that are unoccupied do not show lynx as a species for consideration. However, as noted in the Biological Opinion, the FWS said, and we agree that lynx detection is needed to assess whether further management direction is warranted (USDI FWS 2007). Therefore, we agree to work with the FWS to develop and complete an acceptable protocol to survey currently unoccupied lynx habitat in secondary areas as described in the Biological Opinion, Term and Condition #4.

Incorporation of terms and conditions

On March 16, the FWS issued its Biological Opinion on the Northern Rockies Lynx Management Direction (USDI FWS 2007). In the opinion the FWS concluded that the management direction would overall be beneficial, but that some adverse effects to lynx would still be anticipated. It determined the management direction would not jeopardize the continued existence of lynx. The opinion also provides an incidental take statement which specifies the impact of any incidental taking of lynx. It also provides reasonable and prudent measures that are necessary to minimize the impacts of the take and sets forth terms and conditions which must be complied with in order to implement the reasonable and prudent measures.

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The opinion identified three reasonable and prudent measures (RPM) with four associated terms and conditions (TC). We incorporated TC 1 through 3 into the management direction. The TCs are shown in italics in Attachment 1. TC #4 is agreed to as described below.

RPM #1: Minimize harm from fuels management by ensuring the acres impacted are not concentrated in a geographic area or several adjacent LAUs

Ensure fuels management projects conducted under the exemptions from Standards VEG S1, S2, S5 and S6 in occupied habitat:

- TC 1. do not occur in greater than 6 percent of lynx habitat on any forest; and
- TC 2. do not result in more than 3 adjacent LAUs not meeting the VEG S1 standard.

TC 1 was already part of the management direction. TC 2 has been added to Standard VEG S1.

RPM #2: Minimize harm from precommercial thinning and vegetation management by ensuring that LAUs either retain sufficient foraging habitat, or do not substantially reduce foraging habitat.

TC 3. In occupied habitat, precommercial thinning and vegetation management projects allowed per the exceptions listed under VEG S5 and S6, shall not occur in any LAU exceeding VEG S1, except for projection of structures. This requirement has been added to Standards VEG S5 and VEG S6.

RPM #3: On those Forests with currently unoccupied lynx habitat, lynx detection is needed to assess whether further management direction is warranted, including application of the management direction.

TC 4. Within 18 months of the date of the Biological Opinion, the Forest Service shall work with the Service to develop and complete an acceptable protocol to survey currently unoccupied lynx habitat in secondary areas. We agree to work with the FWS to develop and complete the protocol in unoccupied secondary areas.

The FWS also identified several monitoring and reporting requirements related to the above terms and conditions. We have incorporated these elements in the selected alternative – see Attachment 1, page 9.

Consideration of conservation recommendations

The FWS also identified three conservation recommendations which are discretionary agency activities to minimize or avoid adverse effects of a proposed action on listed species or critical habitat, to help implement recovery programs, or to develop information.

Recommendation 1. The FS should ensure to the extent possible, that unoccupied habitat continues to facilitate and allow dispersal of lynx into the future. Therefore the

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FWS recommends the management direction regarding linkage areas and connectivity by applied in the unoccupied areas (ALL O1, ALL S1, ALL G1; LINK O1, LINK S1 and LINK G1). The Forest Service already considers and applies this management direction in our current program of work; therefore we have decided to not apply the direction in unoccupied areas until such time the areas are occupied.

Habitat connectivity is considered in the design of permanent developments and vegetation management. Few, if any, vegetation projects affect habitat connectivity. Most, if not all units, have some level of riparian area protection requirements in their existing plans. This direction facilitates movement of lynx through riparian areas.

The greatest risk to impeding connectivity is in relation to roads and highways. The Forest Service already works with the State and Federal Highway agencies and is part of the steering team that produced the document *Eco-logical: An Ecosystem Approach to Developing Infrastructure Projects* (USDOT, 2006), FEIS Transportation Section. Also noted in this section is the highway work planned and projected in all lynx habitat and how the states have incorporated wildlife crossings into the design of those future projects. The FEIS p. 198 evaluated the effects of not applying the management direction to unoccupied areas and discloses that there would be minimal effects, especially to linkage areas because similar management direction or the intent of the direction already exists.

Recommendation 2. The Forest Service should coordinate with the Service to develop, within 18 months a method to monitor the amount and condition of lynx habitat in unoccupied secondary habitat. The Forest Service agrees to this recommendation.

Recommendation 3. The Forest Service should continue to be a leader in lynx conservation and understanding. The Forest Service agrees to this recommendation.

Canada Lynx Recovery Outline

On September 12, 2005 the FWS issued a Recovery Outline for Canada lynx (USDI FWS 2005). The outline is to serve as an interim strategy to guide and encourage recovery efforts until a recovery plan is completed. In the Recovery Outline, FWS categorized lynx habitat as: 1) core areas; 2) secondary areas; and 3) peripheral areas. The areas with the strongest long-term evidence of the persistence of lynx populations within the contiguous United States are defined as “core areas.” As we discuss below and illustrated on the enclosed map (Figure 1-1), we have two core areas in the analysis area. Core areas have both persistent verified records of lynx occurrence over time and recent evidence of reproduction. According to FWS, focusing lynx conservation efforts on these core areas will ensure the continued persistence of lynx in the contiguous United States by addressing fundamental principles of conservation biology (USDI FWS 2007). The Recovery Outline says “Recovery of lynx will be achieved when conditions have been attained that will allow lynx populations to persist long-term within each of the identified core areas.” (USDI FWS 2005).

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At this time, the role of areas outside of these core areas in sustaining lynx populations is unclear. The fluctuating nature of lynx population dynamics and the ability of lynx to disperse long distances have resulted in many individual occurrence records outside of core areas, without accompanying evidence of historic or current presence of lynx populations. Areas classified as “secondary areas” are those with historical records of lynx presence with no record of reproduction; or areas with historical records and no recent surveys that document the presence of lynx and/or reproduction. We have one area of secondary habitat in the analysis area (Figure 1-1). Much of the secondary habitat is unoccupied. FWS hypothesizes that secondary areas may contribute to lynx persistence by providing habitat to support lynx during dispersal movements or other periods, allowing animals to then return to “core areas.”

In “peripheral areas” the majority of historical lynx records are sporadic and generally corresponds to periods following cyclic lynx population highs in Canada. There is no evidence of long-term presence or reproduction that might indicate colonization or sustained use of these areas by lynx. However, some of these peripheral areas may provide habitat enabling the successful dispersal of lynx between populations or subpopulations. We have four areas of peripheral habitat in the analysis area (Figure 1-1). At this time, FWS does not have enough information to clearly define the relative importance of secondary or peripheral areas to the persistence of lynx in the contiguous United States (USDI FWS 2005, USDI FWS 2007).

In the Recovery Outline, FWS presented four preliminary recovery objectives. Below, we summarize FWS findings (USDI FWS 2007) of how the selected alternative meets the recovery objectives.

Preliminary recovery objective 1: *Retain adequate habitat of sufficient quality to support the long-term persistence of lynx populations within each of the identified core areas.*

FWS concludes the selected alternative fulfills this objective and adequately manages the two core areas within the planning area to support lynx recovery. The selected alternative supports the long-term persistence of lynx populations within the Northwestern Montana/Northeastern Idaho and Greater Yellowstone core areas, which constitutes one third of the core areas nationwide (USDI FWS 2007).

Preliminary recovery objective 2: *Ensure that sufficient habitat is available to accommodate the long-term persistence of immigration and emigration between each core area and adjacent populations in Canada or secondary areas in the United States.*

FWS concludes the selected alternative contributes to this recovery objective in part.

Lynx have the ability to move great distances, through varied terrain and habitat. Dispersing lynx use a variety of habitats and prey resources compared to lynx attempting to establish a home range and territory (USDI FWS 2007).

Connectivity between the United States and Canada appears intact thus far, as the Northwestern Montana/Northeastern Idaho core area is directly adjacent to Canada

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and includes Glacier Park along its northeastern edge. The selected alternative provides and conserves core area lynx habitat directly adjacent to and contiguous with lynx habitat in Canada. Such habitat should accommodate both immigration of lynx from Canada and emigration from core areas to secondary areas or Canada.

The selected alternative applies to all core areas and occupied secondary areas. The direction includes objectives, standards, and guidelines to actively maintain or restore lynx habitat connectivity in and between linkage areas and LAUs (lynx home ranges). Because these measures apply in both core and occupied secondary areas, the selected alternative clearly meets the recovery objective of accommodated long-term connectivity across these broad areas.

The selected alternative is less clear in its effects in unoccupied secondary areas between the Northwestern Montana/Northeastern Idaho and Greater Yellowstone core areas. The management direction will not be applied to these areas until they become occupied. In the meantime existing plan direction will be followed.

Information indicates the likely impact of projected vegetation management on connectivity in this area may not be excessive. Fuel treatment projects in unoccupied habitat would likely occur in no more than two to three percent of all lynx habitat on any forest in secondary areas (FEIS Vol. 1, p. 195, USDI FWS 2007). In unoccupied areas precommercial thinning could occur on about 67,000 acres (about 1 percent) with full funding and 23,000 acres (0.4 percent) or less with projected funding. Timber harvest in unoccupied areas could result in creating stand initiation openings in more than 30 percent of an LAU. However, very few LAUs exceed this amount now and those that were in excess were in that condition due to past wildfires (FEIS, Vol. p. 155).

Information regarding projected timber harvest was not available, but based on the past harvest history (Project File/Forests/FEIS/Data) it is unlikely regeneration harvest will occur to the same levels it did historically (1970s and 1980s). Based on this, FWS found vegetation management, under existing plan direction, would not preclude connectivity or opportunistic foraging conditions (USDI FWS 2007).

Development is another factor that may impede lynx movement. Four ski areas, affecting about 3,800 acres occur on National Forest System lands, in unoccupied secondary habitat; two of the four are planning expansions. None of these ski areas impede connectivity of lynx habitat at this time (USDI FWS 2007).

Connectivity for lynx could be more impacted by development such as highway expansions. Under existing plans and national efforts, methods to provide for safe wildlife crossings are currently being researched by all state highway departments and are being incorporated into highway improvements (FEIS, Vol. 1 p. 294-295).

In secondary unoccupied habitat, units should consider the management direction until such time the area becomes occupied. Given the estimates of projected impacts and the best information available regarding lynx dispersal movements, FWS concluded that under existing plan direction, these unoccupied secondary areas would reasonably be

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expected to provide adequate connectivity and opportunistic foraging habitat for lynx to allow dispersal (USDI FWS 2007).

Preliminary recovery objective 3: *Ensure habitat in secondary areas remain available for continued occupancy by lynx.*

FWS found the selected alternative contributes to this recovery objective in part.

The recovery outline discusses the relative importance of core and secondary areas to lynx recovery. The selected alternative will fully provide management direction in occupied lynx habitat – both core and secondary. This measure ensures habitat in currently occupied secondary habitat remains available for continued occupancy by lynx.

The forests should consider the management direction in currently unoccupied secondary habitat. As noted in Objective 3, management actions could adversely affect unoccupied secondary lynx habitat. If and when lynx attempt to establish home ranges in secondary areas, individual lynx could be affected. It is also important to note that about 70 percent of unoccupied secondary lynx habitat in the planning area is in roadless or wilderness status where forest management actions are minimal and natural processes predominate.

Occupancy could occur if lynx populations in core areas were to expand, as periodically happens in lynx populations in Canada. However, given the projected impacts described in Objective 3, non-developmental areas, and existing habitat conditions, FWS believes it is reasonable to expect some lynx would occupy these secondary areas despite lack of mandatory direction in plans, but at a lower density than core. Further, if detected, once lynx occupy a previously unoccupied area, the management direction will apply. In the meantime, our vegetation management actions may degrade lynx habitat, but resulting conditions are typically temporary, not permanent. The risks of most vegetation management actions, such as timber harvest, precommercial thinning and other modifications of habitat, are reversible since typically forests regenerate overtime, with or without active restoration. Based on this FWS found lynx habitat on National Forests System lands in secondary areas will likely remain available for recovery of lynx over time (USDI FWS 2007).

The Opinion goes on to say the selected alternative does not fulfill Objective 3 entirely, as it lacks requirements for further or continued monitoring or surveying of unoccupied secondary areas for the amount and condition of lynx habitat and lynx presence, as recommended in the recovery outline.

However, through this decision we agree to work with the FWS to develop and complete a protocol to survey and to develop a method to monitor the amount and condition of lynx habitat in unoccupied secondary habitat. Our agreement to these items will aid in fulfilling Objective 3.

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Preliminary recovery objective 4: *Ensure threats have been addressed so that lynx populations will persist in the contiguous United State for at least the next 100 years.*

FWS found that although plans do not apply for 100 years and thus cannot directly fulfill this objective, the selected alternative will allow lynx populations to persist on lands within core areas in the planning area within the foreseeable future. The selected alternative addresses the threat to the distinct population segment (DPS), inadequate regulatory measures, within core areas in the planning area by limiting, reducing or avoiding major adverse impacts of federal land management on lynx, as well as several other impacts or influences that do not rise to the level of a threat to the DPS. Further, a large portion of lynx habitat within the planning area (67 percent) remains in non-developmental status, where natural processes predominate. Finally, unoccupied lynx habitat within secondary and peripheral lynx areas is likely to retain habitat that provides opportunistic foraging habitat and connectivity adequate for dispersal of lynx, despite the lack of specific direction for lynx habitat management (USDI FWS 2007).

Findings Required by Laws, Regulation, and Policies

National Environmental Policy Act

The National Environmental Policy Act (NEPA) requires analysis of decisions to ensure the anticipated effects on the environment within the analysis area are considered prior to implementation (40 CFR 1502.16). The analysis for the Northern Rockies Lynx Management Direction followed the NEPA guidelines as provided by the Council on Environmental Quality. Alternatives were developed based on the Purpose and Need, the primary issues, public comments, lynx needs as identified by the LCAS, research, and other publications. A total of six alternatives were considered in detail, including the No Action Alternative as required by NEPA (FEIS, pp. 26 to 69 and 107 to 134). Additional management direction was considered but eliminated from detailed study (FEIS, pp. 71 to 106). The range of alternatives is appropriate given the scope of the proposal, the public issues expressed, and the Purpose and Need for action (FEIS, Chapter 1).

Unavoidable adverse effects

The selected alternative does not represent an irreversible or irretrievable commitment of resources. Any disturbance to resources cannot occur without further site-specific analyses, section 7a consultation required under ESA and decision documents. For a detailed discussion of effects of this decision, see Chapter 3 of the FEIS (pp. 135 to 350).

Environmentally preferable alternative(s)

Regulations implementing NEPA require agencies to specify “the alternative or alternatives which are considered to be environmentally preferable” (40 CFR 1505.2(b)). The environmentally preferable alternative causes the least damage to the biological and physical environments and best protects, preserves, and enhances historical,

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cultural, and natural resources. Based on the description of the alternatives considered in detail in the FEIS and in this ROD, we determined the selected alternative best meets the goals of Section 101 of the NEPA, and is therefore the environmentally preferable alternative for this proposed federal action.

FWS found timber harvest can be beneficial, benign, or detrimental depending on harvest method, and the spatial and temporal occurrence on the landscape (FEIS, Vol. 1, Appendix P). The vegetation standards in the selected alternative ensure the timber management program is beneficial to lynx. Standard VEG S1 limits the amount of lynx habitat that is in the stand initiation stage to 30 percent of each LAU at any time, ensuring a continuous rotation of all forest stages through time that supply lynx habitat in each LAU (FEIS, Vol. 2, p. 60). Standard VEG S2 allows no more the 15 percent of the lynx habitat to change to the stand initiation stage through timber harvest in a 10-year period. This limits the rate of change within an LAU to ensure sufficient habitat for lynx through time.

Precommercial thinning can impact lynx habitat. Standard VEG S5 precludes precommercial thinning except in certain situations that FWS has determined would have little effect upon lynx or their habitat, but would advance natural ecological conditions (FWS comment letter on the DEIS, pp. 8 and 9). While these exceptions have little effect on lynx (0.5 percent of lynx habitat) they have important positive impacts on other resources and situations such as maintaining aspen, western white pine, and whitebark pine, and fuel reduction near buildings.

Since the LCAS was published it has become clear that multistory mature stands with dense horizontal cover are important to lynx. In the selected alternative, Standard VEG S6 is instrumental in maintaining winter snowshoe hare habitat in multistoried forests which will aid in lynx persistence.

The selected alternative allows for management of fuels in the WUI under Guideline VEG G10, rather than standards. Under VEG G10 fuel reduction projects in the WUI should consider the VEG standards, but may deviate from them, up to a cap of 6 percent of the lynx habitat on each National Forest. Lynx habitat is still considered; however, if the fuel reduction needs are such that any of the four VEG standards cannot be met while at the same time meeting fuel treatment objective, the project may proceed under Guideline VEG G10. Fuel treatment actions in 94 percent of the lynx habitat must follow the VEG standards, while at the same time fuel treatment projects in the WUI can protect other valuable resources.

The selected alternative contains guidelines for the various activities on National Forest System land that may have possible adverse affects on individual lynx. Standards were changed to guidelines when the best available information indicated the action was not likely to adversely affect lynx, or not likely to adversely affect lynx in most cases (i.e. where no conclusive or reliable information supported the standard in the LCAS).

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The selected alternative contributes to lynx conservation and recovery on National Forest System lands, but allows for management of other resources. Considering all this, the selected alternative is the environmentally preferred alternative because it causes the least damage to the biological and physical environments and best protects, preserves, and enhances natural resources.

National Forest Management Act

Significance determination: The purpose of this proposal is to incorporate management direction into plans for the conservation and recovery of Canada lynx.

In January 2005, the Forest Service removed the November 9, 2000 National Forest System Land and Resource Management Planning Regulations at 36 CFR 219, subpart A and replaced them with newly adopted regulations. The new regulations set forth a process for land management planning, including the process for developing, amending, and revising land management plans (36 CFR 219.1). These regulations also incorporate effective dates and transition periods. Section 219.4(e) says “Plan development, plan amendments or plan revision initiated before the transition period (starting January 5, 2005) may continue to use the provisions of the planning regulations in effect before November 9, 2000” - in this case the 1982 regulations. This proposal was initiated on September 11, 2001, which is before the transition period; therefore it is being completed under the requirements of the 1982 regulations.

The National Forest Management Act (NFMA) provides that forest plans may be amended in any manner, but if the management direction results in a significant change in the plan, the same procedure as that required for development and approval of a plan shall be followed. The 1982 regulations at 36 CFR 219.10(f) requires the agency to determine whether or not a proposed amendment will result in a significant change in the plan. If the change resulting from the amendment is determined not to be significant for the purposes of the planning process, then the agency may implement the amendment following appropriate public notification and satisfactory completion of NEPA procedures.

Forest Service Manual (FSM) 1920, section 1926.5 (Jan. 31, 2006) identifies factors to consider in determining whether an amendment is significant or non-significant for those plans using planning regulations in effect before November 9, 2000.

Changes to the land management plan that are not significant can result from:

1. Actions that do not significantly alter the multiple-use goals and objectives for long-term land and resource management.
2. Adjustments of management area boundaries or management prescriptions resulting from further on-site analysis.
3. Minor changes in standards and guidelines.
4. Opportunities for additional projects or activities.

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Examples of significant changes include:

1. Changes that would significantly alter the long-term relationship between levels of multiple-use goods and services originally projected.
2. Changes that may have an important effect on the entire land management plan or affect land and resources throughout a large portion of the planning area during the planning period.

The selected alternative will change in plans similar to examples of non-significant changes #1 and #3. The effects of this decision are not similar to either example of significant plan changes. These findings are discussed in further detail below.

Under the selected alternative the management direction will only apply to occupied habitat. At this time the Beaverhead-Deerlodge, Bitterroot, Nez Perce, Salmon-Challis, Ashley and Bighorn NFs are unoccupied; therefore these units should consider the management direction but will not have to apply it. Several mountain ranges on the Custer, Gallatin, Helena, and Lewis and Clark NFs are also unoccupied and the management direction will not have to be applied in these areas until lynx occupy the site. However, since the selected alternative could be applied to all units at some point in time, the following analyzes the effects on the planning area as a whole.

Changes in standards and guidelines are minor

The selected alternative adds one goal to forest plans; conserve Canada lynx. This goal is consistent with other goals in existing plans and other legal requirements to provide for habitat needs for threatened and endangered species. The selected alternative adds several objectives to the plans. These objectives require consideration of natural ecosystem process and functions, and consideration of lynx habitat needs. The additional objectives provide more species-specific guidance but do not alter the overall objectives to provide for habitat needs for threatened and endangered species. The proposal does not change any Management Area (MA) designation.

The selected alternative adds seven standards and twenty-four guidelines. The addition of these new standards and guidelines are minor as discussed below.

Changes would not significantly alter the long-term relationship between levels of multiple-use goods and services originally projected.

The management direction would not substantially alter outputs for grazing, minerals, energy, transportation systems, developed recreation areas, such as ski areas or winter recreation. These activities will not be prohibited by the management direction; however, habitat needs for lynx will need to be considered when managing these resources. The new direction will also not substantially alter timber outputs, even though it may affect growth and yield.

The selected alternative limits precommercial thinning in winter snowshoe hare habitat in young regenerating forests, with some exceptions – see Standard VEG S5.

Precommercial thinning is allowed to restore aspen, whitebark pine and planted rust-

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resistant western white pine. Precommercial thinning will also be allowed if new research indicates it will benefit or only have short-term adverse effects to lynx. Precommercial thinning is not allowed in young regenerating lodgepole pine forests, unless new research indicates it is beneficial or benign. Limiting precommercial thinning in lodgepole pine forests could affect growth and yield, and the potential to produce some products in the future, because these forests tend to stop growing if not thinned; however overall cubic foot volume would not be affected.

The Beaverhead-Deerlodge and the Bridger-Teton are the only units that have a majority of their precommercial thinning identified over the next ten years in lynx habitat and in lodgepole pine; therefore they are the only units that could see a reduction to growth and yield (FEIS, Vol. 1, Appendix K-5). Under current programs, the units only have accomplished a portion of their thinning program (approximately 34 percent) due to budgets, so it is difficult to tease out the effects from the management direction in this proposal from effects of budgets. In addition, Standard VEG S5 allows for consideration of new information. Over the next ten to fifteen years information may become available that indicates some precommercial thinning in lodgepole pine forests may be beneficial to snowshoe hare (see DEIS comment letter #505).

Limiting precommercial thinning is unlikely to affect long-term sustained yield (LTSY), as defined by NFMA and FSH 1909.12, Chapter 60.5, because the cubic foot volume on the site does not substantially change. The volume is spread among more, smaller trees without thinning versus fewer, larger diameter trees with thinning. In addition, some precommercial thinning may be allowed in the future if new information becomes available. Timber outputs have never been at the level of LTSY over the life of these plans, so changes in LTSY are unlikely to lead to changes in outputs, especially if outputs are measured in cubic feet, which is the appropriate measure of LTSY.

In addition, the ASQ should not be affected on any units because the management direction does not preclude timber harvest. Standards VEG S1 and S2 may defer regeneration harvest in some areas, but Guideline VEG G1 encourages projects creating winter snowshoe hare habitat where it is lacking. It is likely there would be no change in overall timber outputs, but there may be changes in what material is harvested and where.

Changes would not have an important effect on the entire land management plan or affect land and resources throughout a large portion of the planning area during the planning period.

There are approximately 38.5 million acres within the 18 National Forests in the planning area. Of this, approximately 18 million acres or 48 percent has been mapped as lynx habitat (see table 3.1). Of the 18 million acres of mapped lynx habitat, approximately 8 million acres are in land allocations that allow for management actions. Therefore the management direction only potentially affects about 20 percent of the planning area. The most noticeable effects are likely to be the location and amount of precommercial thinning. The potential acreage that could be affected is between 11,000 to 15,000 acres per year. This is less than one percent of the planning area. It should be

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noted that precommercial thinning is not constrained on an additional 18,000 acres per year outside lynx habitat (FEIS, Vol. 1 p 247-248).

Summary: Considering the three factors, we determined this management direction is not a significant change under NFMA to the 18 forest plans because it imposes minor changes over a limited area of these national forests.

While this amendment is not significant, the planning process necessary for significant amendments is ongoing or will begin soon on most units affected by this decision. In particular interest to the precommercial thinning discussion on the previous page, both the Beaverhead-Deerlodge and Bridger-Teton National Forests are being revised. The Beaverhead-Deerlodge should complete the revision process in 2007. Their DEIS for the Forest Plan recognizes the cumulative contribution the Northern Rockies Lynx Amendment may have on reducing growth and yield (DEIS, page 326). The Bridger-Teton should complete its revision in 2008.

Viability determination: This management direction is being adopted in accordance with the 1982 NFMA regulations for amending land and resource management plans. Plan amendments initiated before January 5, 2005 may proceed using the provisions of these regulations. The transition period to regulations implementing the 2005 planning rule ends on a unit's establishment of an Environmental Management System, or no later than January 7, 2008.

According to the 1982 NFMA regulations, fish and wildlife habitat shall be managed to maintain viable populations of Canada lynx in the planning area (36 CFR 219.19, 2000). For the purpose of this decision, the planning area is the range of lynx encompassed by the national forests subject to this decision. This is based on a biological delineation of the Northern Rockies made in the LCAS.

A viable population is, "one which has the estimated numbers and distribution of reproductive individuals to insure its continued existence is well-distributed in the planning area." It is not possible to reliably predict future population demographics for lynx, and continued existence of lynx may be dependent on threats that exist outside of the planning area (health of Canadian populations, or linkage across other ownerships).

The national forests subject to this new direction will provide habitat to maintain a viable population of lynx in the Northern Rockies by maintaining the current distribution of occupied lynx habitat, and maintaining or enhancing the quality of that habitat. Based on the best scientific information available, and for the specific reasons provided below, this management direction will provide habitat to support persistence of lynx in the Northern Rockies in the long-term.

The LCAS was used as the basis for developing the selected alternative. The FWS Remand Notice (FEIS, Vol. 1, Appendix P), and other new information and research were also evaluated, and became the basis for updating standards and guidelines based upon the current state of knowledge regarding threats to lynx since the LCAS was compiled.

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The greatest threats to lynx persistence and reproduction are from changes in vegetation structures that provide snowshoe hare habitat during summer and winter. Standards were developed under the selected alternative to provide direction for a variety of vegetation management activities that are most likely to affect lynx habitat (fuel treatments, precommercial thinning, timber harvest, etc.). These include standards for connectivity (ALL S1), habitat mapping (LAU S1), regeneration harvesting (VEG S2), precommercial thinning (VEG S5), and management of multistory mature and late successional forests (VEG S6). These standards are equal to or more protective than similar recommendations provided in the LCAS. In the Seeley Lake area of Montana, mature, spruce-fir forests with high horizontal cover are particularly important as winter foraging habitat and are more important than younger stands (Squires pers. com., Oct. 30, 2006) and the LCAS provides no specific management recommendations for these vegetative conditions within lynx habitat.

All of the core and secondary lynx habitat (100%) as defined in the *Recovery Outline* (USDI FWS 2005) that is occupied by lynx as defined in the *Occupied Mapped Lynx Habitat Amendment to the Canada Lynx Conservation Agreement* (USDA FS and USDI FWS 2006a) will be managed to conserve lynx.

The value of secondary habitat is unclear. The *Recovery Outline* (USDI FWS 2005) states “Compared to core areas, secondary areas have fewer and more sporadic current and historical records of lynx and, as a result, historical abundance has been relatively low. Reproduction has not been documented.” There currently is no evidence that suggest that unoccupied secondary habitat is considered necessary for a viable population of lynx. Secondary, unoccupied lynx habitat will have management direction implemented to conserve lynx if and when those administrative units become occupied. These National Forests (Beaverhead-Deerlodge, Bitterroot, Salmon-Challis and Nez Perce) which have secondary, unoccupied lynx habitat account for only about 30 percent of the total acres of core and secondary lynx habitat.

Even though the 6 percent limit (reflected in the vegetation standards) does not currently apply to unoccupied lynx habitat, those unoccupied forests would treat an average of 3.2 percent of lynx habitat within the WUI for fuel reduction over the next ten years (FEIS, Vol. 1, Lynx Section, and Appendix M). This is well below the 6 percent cap provided in the Biological Opinion (USDI FWS 2007). Overall fuel treatments, in and outside the WUI, in lynx habitat, average 5 percent within lynx habitat on these Forests.

In addition, The FWS Biological Opinion (2007) concluded that the proposed action is not likely to jeopardize the continued existence of lynx within the contiguous United States DPS. It also found the selected alternative will allow lynx populations to persist on lands in occupied core and secondary areas within the foreseeable future, and unoccupied secondary and peripheral habitat is likely to retain habitat that provides opportunistic foraging habitat and connectivity adequate for dispersal of lynx, despite the lack of specific direction for lynx management. The opinion goes on to say the

Record of Decision – Northern Rockies Lynx Management Direction

incorporation of the management direction over the large geographic area occupied by lynx within 12 of the 18 National Forests (12,150,000 acres) contributes to the landscape level direction necessary for the survival and recovery of lynx in the northern Rockies ecosystem.

Endangered Species Act

The Endangered Species Act creates an affirmative obligation “. . . that all federal departments and agencies shall seek to conserve endangered and threatened species” of fish, wildlife, and plants. This obligation is further clarified in a National Interagency Memorandum of Agreement (August, 2000) which states our shared mission is to “. . . enhance conservation of imperiled species while delivering appropriate goods and services provided by the lands and resources.”

We completed biological assessments (BAs) for all listed species; one for wildlife and fish, and one for plants. For all listed species, except for Canada lynx, we determined the preferred alternative would have “no effect” or would be “not likely to adversely affect” them. The determination for Canada lynx was that, while the management direction in selected alternative would improve lynx conservation, the plans amended by selected alternative would still be “likely to adversely affect” lynx because individuals could be adversely affected as a result of the exemptions and exceptions to the vegetation standards for fuel treatments projects and precommercial thinning. The BAs were submitted to the FWS. The FS consulted with the FWS on the determinations and they concurred with the “no effect” and “not likely to adversely affect” determinations. The FWS provided written review as required by Section 7 of the ESA (USDI FWS 2007).

FWS issued a Biological Opinion on the “likely to adversely affect” determination on lynx (USDI FWS 2007). The opinion acknowledges the beneficial and adverse effects of the selected alternative. The opinion states that given the large number of acres covered by the proposed action, the existing plan language, and the beneficial effects of the management direction in the balance of these acres, the selected alternative is likely to have overall beneficial effects to lynx by addressing the primary threat identified at the time of listing: the inadequacy of existing regulatory mechanisms. Even acknowledging some adverse effects could still occur, primarily due to the allowance for fuel treatment projects and precommercial thinning, the opinion found the selected alternative is not likely to jeopardize the continued existence of Canada lynx. The Opinion identifies incidental take and reasonable and prudent measure, with associated terms and conditions to reduce take. These measures have either been incorporated into the management direction (TC 1, 2, and 3) or agreed to in this decision (TC 4).

Further section 7a consultation will occur on future site-specific projects and activities if they result in adverse affects to lynx. Future consultation will reference back to the BO issued on this decision to ensure the effects of the specific projects are commensurate with the effects anticipated in the opinion issued on this decision (USDI FWS 2007).

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Critical habitat

On November 9, 2006, FWS published the final rule for the designation of Canada lynx critical habitat (Federal Register, Vol. 71, No. 217, pp. 66008 to 66061). National Forest System lands were not included in the critical habitat designation. There is no adverse modification to designated critical habitat from implementation of selected alternative.

National Historic Preservation Act

This decision is a programmatic action and does not authorize site-specific activities. Projects undertaken following the management direction will comply fully with the laws and regulations that ensure protection of cultural resources. It is our determination this plan direction complies with the National Historic Preservation Act and other statutes that pertain to the protection of cultural resources.

Clean Air Act

This decision is a programmatic action and does not authorize site-specific activities. Projects undertaken following the management direction will comply fully with the laws and regulations that ensure protection of air quality. It is our determination this plan direction complies with the Clean Air Act and other statutes that pertain to the protection of air quality.

Clean Water Act

This decision is a programmatic action and does not authorize site-specific activities. Projects undertaken following the management direction will comply fully with the laws and regulations that ensure protection of water quality. It is our determination this plan direction complies with the Clean Water Act and other statutes that pertain to the protection of water quality.

Invasive Species (Executive Order 13112)

Executive Order 13112 directs federal agencies not to authorize any activities that would increase the spread of invasive species. This decision is a programmatic action and does not authorize site-specific activities. We determined this plan direction complies with Executive Order 13112.

Environmental Justice (Executive Order 12898)

Executive Order 12898 directs federal agencies to identify and address, as appropriate, any disproportionately high and adverse human health or environmental effects on minority populations and low-income populations. We determined from the analyses disclosed in the FEIS that this plan direction complies with Executive Order 12898.

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Prime Farmland, Rangeland, and Forest Land

We determined from the analyses disclosed in the FEIS that prime farmland, rangeland, and forest land will not be affected by this decision because the selected alternative is a programmatic action and does not authorize site-specific activities.

Equal Employment Opportunity, Effects on Minorities, Women

The FEIS describes the impacts to social and economic factors in Chapter 3. The selected alternative will not have a disproportionate impact on any minority or low-income communities. We determined the selected alternative will not differentially affect the civil rights of any citizens, including women and minorities.

Wetlands and Floodplains (Executive Orders 11988 and 11990)

The selected alternative is a programmatic action and does not authorize site-specific activities. We determined the selected alternative will not have adverse impacts on wetlands and floodplains and will comply with Executive Orders 11988 and 11990.

Other policies

The existing body of national direction for managing National Forest System lands remains in effect.

Implementation and appeal provisions

The management direction will become effective 30 days after publication of the notice of availability of the FEIS in the Federal Register. Requests to stay implementation of the amended plans shall not be granted pursuant to 36 CFR 217.10.

This decision is subject to review pursuant to 36 CFR 217.3 (available at <http://www.fs.fed.us/r1/planning/lynx.html>). Any appeals must be postmarked or received by the Appeal Reviewing Officer within 45 days of the date the legal notices are published in the The Missoulian, the newspaper of record.

Appeals sent through the US Postal Service must be sent to:

USDA Forest Service
Attn: EMC Appeals
Mail Stop 1104
1400 Independence Ave., SW
Washington, DC 20250-1104

Appeals sent through FedEx, UPS, or a courier service must be sent to:

USDA Forest Service
Ecosystem Management Coordination
Attn: Appeals
Yates Bldg., 3CEN
201 14th Street, SW
Washington, DC 20250

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Appeals may be hand-delivered to the above address during regular business hours, 8:00 AM to 4:30 PM Monday through Friday, excluding holidays; or sent by fax to (202) 205-1012; or by email to appeals-chief@fs.fed.us. Emailed appeals must be submitted in rich text format (.rtf) or Word (.doc) and must include the decision name in the subject line. Any notice of appeal must be fully consistent with 36 CFR 217.9 and include at a minimum:

- A statement that the document is a Notice of Appeal filed pursuant to 36 CFR Part 217;
- The name, address, and telephone number of the appellant;
- Identify the decision to which the objection is being made;
- Identify the document in which the decision is contained, by title and subject, date of the decision, and name and title of the Deciding Officer;
- Specifically identify the portion(s) of the decision or decision document to which objection is made;
- The reasons for the appeal, including issues of fact, law, regulation, or policy and, if applicable, specifically how the decision violates law, regulation, or policy; and
- Identification of the specific change(s) in the decision that the appellant seeks.

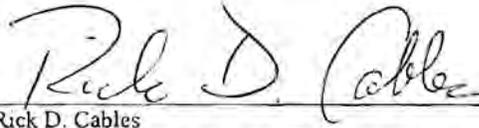
Further information and contact person

The Northern Rockies Lynx Management Direction FEIS, the Summary, this ROD and the FWS Biological Opinion, as well as other background documents are available on the Web at <http://www.fs.fed.us/r1/planning/lynx.html>.

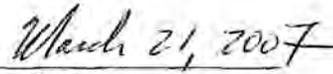
For further information regarding the FEIS, ROD, or the plan direction for Canada lynx contact:

Timothy Bertram, Lynx Coordinator
USDA Forest Service, Northern Region
P.O. Box 7669
Missoula, MT 59807
Telephone: (406) 329-3611

I am the Responsible Official for incorporating the Northern Rockies Lynx Management Direction into the Land and Resource Management Plans for the Bighorn and Shoshone National Forests in the Rocky Mountain Region of the Forest Service.



Rick D. Cables
Regional Forester, Rocky Mountain Region

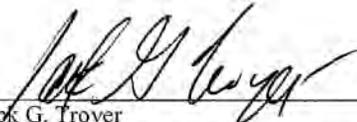


Date

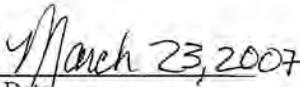
Record of Decision—Northern Rockies Forest Plan Direction for Canada Lynx Habitat

Record of Decision – Northern Rockies Lynx Management Direction

I am the Responsible Official for incorporating the Northern Rockies Lynx Management Direction into the Land and Resource Management Plans for the Ashley, Bridger-Teton, Targhee, and Salmon-Challis National Forests in the Intermountain Region of the Forest Service.



Jack G. Troyer
Regional Forester, Intermountain Region



Date

Record of Decision – Northern Rockies Lynx Management Direction

I am the Responsible Official for incorporating the Northern Rockies Lynx Management Direction into the Land and Resource Management Plans for the Beaverhead-Deerlodge, Bitterroot, Clearwater, Custer, Flathead, Gallatin, Helena, Idaho Panhandle, Kootenai, Lewis & Clark, Lolo, and Nez Perce National Forests in the Northern Region of the Forest Service.

Kathleen A. McAllister

Kathleen A. McAllister
Acting Regional Forester, Northern Region

March 23, 2007

Date

Record of Decision – Northern Rockies Lynx Management Direction

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Record of Decision - Northern Rockies Lynx Management Direction

ATTACHMENT 1

Northern Rockies Lynx Management Direction

Northern Rockies Lynx Management Direction

The following management direction applies to all National Forest System lands that are known to be **occupied** by Canada lynx. At the time of this decision the following National Forests in the Northern Rockies lynx planning area are known to be occupied: Bridger-Teton, Clearwater, Custer, Flathead, Idaho Panhandle, Kootenai, Lolo, Shoshone, Targhee. Portions of the Custer, Gallatin, Helena, and Lewis & Clark are also occupied.

The following National Forests in the Northern Rockies lynx planning area are **not occupied** by Canada lynx: Ashley, Beaverhead-Deerlodge, Bighorn, Bitterroot, Nez Perce, Salmon-Challis. In addition, isolated mountain ranges on the Custer, Gallatin, Helena and Lewis and Clark are unoccupied – see Figure 1-1. Until such time as these National Forest System lands become occupied they should consider the following management direction, but are not required to follow it.

GOAL¹⁴

Conserve the Canada lynx.

ALL MANAGEMENT PRACTICES AND ACTIVITIES (ALL). The following objectives, standards, and guidelines apply to all management projects in lynx habitat in lynx analysis units (LAUs) in occupied habitat and in linkage areas, subject to valid existing rights. They do not apply to wildfire suppression, or to wildland fire use.

Objective³⁰ ALL O1

Maintain²⁶ or restore⁴⁰ lynx habitat²³ connectivity¹⁶ in and between LAUs²¹, and in linkage areas²².

Standard⁴⁴ ALL S1

New or expanded permanent development³³ and vegetation management⁴⁹ projects³⁶ must maintain²⁶ habitat connectivity¹⁶ in an LAU²¹ and/or linkage area²².

Guideline¹³ ALL G1

Methods to avoid or reduce effects on lynx should be used when constructing or reconstructing highways¹⁸ or forest highways¹² across federal land. Methods could include fencing, underpasses, or overpasses.

Standard⁴⁴ LAU S1

Changes in LAU²¹ boundaries shall be based on site-specific habitat information and after review by the Forest Service Regional Office.

Northern Rockies Lynx Management Direction

VEGETATION MANAGEMENT ACTIVITIES AND PRACTICES (VEG). The following objectives, standards, and guidelines apply to vegetation management projects³⁶ in lynx habitat within lynx analysis units (LAUs) in occupied habitat. With the exception of Objective VEG O3 that specifically concerns wildland fire use, the objectives, standards, and guidelines do not apply to wildfire suppression, wildland fire use, or removal of vegetation for permanent developments such as mineral operations, ski runs, roads, and the like. None of the objectives, standards, or guidelines apply to linkage areas.

Objective³⁰ VEG O1

Manage vegetation⁴⁹ to mimic or approximate natural succession and disturbance processes while maintaining habitat components necessary for the conservation of lynx.

Objective VEG O2

Provide a mosaic of habitat conditions through time that support dense horizontal cover¹⁹, and high densities of snowshoe hare. Provide winter snowshoe hare habitat⁵¹ in both the stand initiation structural stage and in mature, multi-story conifer vegetation.

Objective VEG O3

Conduct fire use¹¹ activities to restore⁴⁰ ecological processes and maintain or improve lynx habitat.

Objective VEG O4

Focus vegetation management⁴⁹ in areas that have potential to improve winter snowshoe hare habitat⁵¹ but presently have poorly developed understories that lack dense horizontal cover.

Standard⁴⁴ VEG S1

Where and to what this applies: Standard VEG S1 applies to all vegetation management⁴⁹ projects³⁶ that regenerate³⁸ forests, except for fuel treatment¹³ projects³⁶ within the wildland urban interface⁵⁰ (WUI) as defined by HFRA¹⁷, subject to the following limitation:

Fuel treatment projects³⁶ within the WUI⁵⁰ that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 shall occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest). *In addition, fuel treatment projects may not result in more than three adjacent LAUs exceeding the standard.*

For fuel treatment projects³⁶ within the WUI⁵⁰ see guideline VEG G10.

The standard: Unless a broad scale assessment has been completed that substantiates different historic levels of stand initiation structural stages⁴⁵ limit disturbance in each LAU as follows:

Northern Rockies Lynx Management Direction

If more than 30 percent of the lynx habitat in an LAU is currently in a stand initiation structural stage that does not yet provide winter snowshoe hare habitat, no additional habitat may be regenerated by vegetation management projects³⁶.

Standard VEG S2

Where and to what this applies: Standard VEG S2 applies to all timber management⁴⁷ projects³⁶ that regenerate³⁸ forests, except for fuel treatment¹³ projects³⁶ within the wildland urban interface⁵⁰ (WUI) as defined by HFRA¹⁷, subject to the following limitation:

Fuel treatment projects³⁶ within the WUI⁵⁰ that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 shall occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest).

For fuel treatment projects³⁶ within the WUI⁵⁰ see guideline VEG G10.

The standard: Timber management⁴⁷ projects³⁶ shall not regenerate³⁸ more than 15 percent of lynx habitat on NFS lands within an LAU in a ten-year period.

Standard VEG S5

Where and to what this applies: Standard VEG S5 applies to all precommercial thinning³⁵ projects³⁶, except for fuel treatment¹³ projects³⁶ that use precommercial thinning as a tool within the wildland urban interface⁵⁰ (WUI) as defined by HFRA¹⁷, subject to the following limitation:

Fuel treatment projects³⁶ within the WUI⁵⁰ that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 shall occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest).

For fuel treatment projects³⁶ within the WUI⁵⁰ see guideline VEG G10.

The Standard: Precommercial thinning projects³⁶ that reduce snowshoe hare habitat may occur from the stand initiation structural stage⁴⁵ until the stands no longer provide winter snowshoe hare habitat only;

1. Within 200 feet of administrative sites, dwellings, or outbuildings; or
2. For research studies³⁹ or genetic tree tests evaluating genetically improved reforestation stock; or
3. Based on new information that is peer reviewed and accepted by the regional level of the Forest Service, and state level of FWS, where a written determination states:
 - a. that a project³⁶ is not likely to adversely affect lynx; or
 - b. that a project³⁶ is likely to have short term adverse effects on lynx or its habitat, but would result in long-term benefits to lynx and its habitat; or
4. For conifer removal in aspen, or daylight thinning⁵ around individual aspen trees, where aspen is in decline; or

Northern Rockies Lynx Management Direction

5. For daylight thinning of planted rust-resistant white pine where 80 % of the winter snowshoe hare habitat⁵¹ is retained; or
6. To restore whitebark pine.

Exceptions 2 through 6 shall only be utilized in LAUs where Standard VEG S1 is met.

Standard VEG S6

Where and to what this applies: Standard VEG S6 applies to all vegetation management⁴⁹ projects³⁶ except for fuel treatment¹³ projects³⁶ within the wildland urban interface⁵⁰ (WUI) as defined by HFRA¹⁷, subject to the following limitation:

Fuel treatment projects³⁶ within the WUI⁵⁰ that do not meet Standards VEG S1, VEG S2, VEG S5, and VEG S6 shall occur on no more than 6 percent (cumulatively) of lynx habitat on each administrative unit (a unit is a National Forest).

For fuel treatment projects³⁶ within the WUI⁵⁰ see guideline VEG G10.

The Standard: Vegetation management projects³⁶ that reduce snowshoe hare habitat in multi-story mature or late successional forests²⁹ may occur only:

1. Within 200 feet of administrative sites, dwellings, outbuildings, recreation sites, and special use permit improvements, including infrastructure within permitted ski area boundaries; or
2. For research studies³⁹ or genetic tree tests evaluating genetically improved reforestation stock; or
3. For incidental removal during salvage harvest⁴² (e.g. removal due to location of skid trails).

Exceptions 2 and 3 shall only be utilized in LAUs where Standard VEG S1 is met.

(NOTE: Timber harvest is allowed in areas that have potential to improve winter snowshoe hare habitat but presently have poorly developed understories that lack dense horizontal cover [e.g. uneven age management systems could be used to create openings where there is little understory so that new forage can grow]).

Guideline VEG G1

Vegetation management⁴⁹ projects³⁶ should be planned to recruit a high density of conifers, hardwoods, and shrubs where such habitat is scarce or not available. Priority for treatment should be given to stem-exclusion, closed-canopy structural stage⁴⁶ stands to enhance habitat conditions for lynx or their prey (e.g. mesic, monotypic lodgepole stands). Winter snowshoe hare habitat⁵¹ should be near denning habitat⁶.

Guideline VEG G4

Prescribed fire³⁴ activities should not create permanent travel routes that facilitate snow compaction. Constructing permanent firebreaks on ridges or saddles should be avoided.

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Guideline VEG G5

Habitat for alternate prey species, primarily red squirrel³⁷, should be provided in each LAU.

Guideline VEG G10

Fuel treatment projects³⁶ within the WUI⁵⁰ as defined by HFRA¹⁷ should be designed considering Standards VEG S1, S2, S5, and S6 to promote lynx conservation.

Guideline VEG G11

Denning habitat⁶ should be distributed in each LAU in the form of pockets of large amounts of large woody debris, either down logs or root wads, or large piles of small wind thrown trees (“jack-strawed” piles). If denning habitat appears to be lacking in the LAU, then projects³⁶ should be designed to retain some coarse woody debris⁴, piles, or residual trees to provide denning habitat⁶ in the future.

LIVESTOCK MANAGEMENT (GRAZ): The following objectives and guidelines apply to grazing projects in lynx habitat in lynx analysis units (LAUs) in occupied habitat. They do not apply to linkage areas.

Objective³⁰ GRAZ O1

Manage livestock grazing to be compatible with improving or maintaining²⁶ lynx habitat²³.

Guideline¹⁵ GRAZ G1

In fire- and harvest-created openings, livestock grazing should be managed so impacts do not prevent shrubs and trees from regenerating.

Guideline GRAZ G2

In aspen stands, livestock grazing should be managed to contribute to the long-term health and sustainability of aspen.

Guideline GRAZ G3

In riparian areas⁴¹ and willow carrs³, livestock grazing should be managed to contribute to maintaining or achieving a preponderance of mid- or late-seral stages²⁸, similar to conditions that would have occurred under historic disturbance regimes.

Guideline GRAZ G4

In shrub-steppe habitats⁴³, livestock grazing should be managed in the elevation ranges of forested lynx habitat in LAUs²¹, to contribute to maintaining or achieving a preponderance of mid- or late-seral stages, similar to conditions that would have occurred under historic disturbance regimes.

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HUMAN USE PROJETS (HU): The following objectives and guidelines apply to human use projects, such as special uses (other than grazing), recreation management, roads, highways, and mineral and energy development, in lynx habitat in lynx analysis units (LAUs) in occupied habitat, subject to valid existing rights. They do not apply to vegetation management projects or grazing projects directly. They do not apply to linkage areas.

Objective³⁰ HU O1

Maintain²⁶ the lynx's natural competitive advantage over other predators in deep snow, by discouraging the expansion of snow-compacting activities in lynx habitat²³.

Objective HU O2

Manage recreational activities to maintain lynx habitat and connectivity¹⁶.

Objective HU O3

Concentrate activities in existing developed areas, rather than developing new areas in lynx habitat.

Objective HU O4

Provide for lynx habitat needs and connectivity when developing new or expanding existing developed recreation⁹ sites or ski areas.

Objective HU O5

Manage human activities, such as special uses, mineral and oil and gas exploration and development, and placement of utility transmission corridors, to reduce impacts on lynx and lynx habitat.

Objective HU O6

Reduce adverse highway¹⁸ effects on lynx by working cooperatively with other agencies to provide for lynx movement and habitat connectivity¹⁶, and to reduce the potential of lynx mortality.

Guideline¹⁵ HU G1

When developing or expanding ski areas, provisions should be made for adequately sized inter-trail islands that include coarse woody debris⁴, so winter snowshoe hare habitat⁵¹ is maintained.

Guideline HU G2

When developing or expanding ski areas, lynx foraging habitat should be provided consistent with the ski area's operational needs, especially where lynx habitat occurs as narrow bands of coniferous forest across mountain slopes.

Guideline HU G3

Recreation developments and operations should be planned in ways that both provide for lynx movement and maintain the effectiveness of lynx habitat²³.

Guideline HU G4

For mineral and energy development sites and facilities, remote monitoring should be encouraged to reduce snow compaction.

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Guideline HU G5

For mineral and energy development sites and facilities that are closed, a reclamation plan that restores⁴⁰ lynx habitat should be developed.

Guideline HU G6

Methods to avoid or reduce effects on lynx should be used in lynx habitat²³ when upgrading unpaved roads to maintenance levels 4 or 5, if the result would be increased traffic speeds and volumes, or a foreseeable contribution to increases in human activity or development.

Guideline HU G7

New permanent roads should not be built on ridge-tops and saddles, or in areas identified as important for lynx habitat connectivity¹⁶. New permanent roads and trails should be situated away from forested stringers.

Guideline HU G8

Cutting brush along low-speed²⁵, low-traffic-volume roads should be done to the minimum level necessary to provide for public safety.

Guideline HU G9

On new roads built for projects³⁶, public motorized use should be restricted. Effective closures should be provided in road designs. When the project³⁶ is over, these roads should be reclaimed or decommissioned, if not needed for other management objectives.

Guideline HU G10

When developing or expanding ski areas and trails, consider locating access roads and lift termini to maintain and provide lynx security habitat¹⁰, if it has been identified as a need.

Guideline HU G11

Designated over-the-snow routes or designated play areas should not expand outside baseline areas of consistent snow compaction¹, unless designation serves to consolidate use and improve lynx habitat. This may be calculated on an LAU basis, or on a combination of immediately adjacent LAUs.

This does not apply inside permitted ski area boundaries, to winter logging, to rerouting trails for public safety, to accessing private inholdings, or to access regulated by Guideline HU G12.

Use the same analysis boundaries for all actions subject to this guideline.

Guideline HU G12

Winter access for non-recreation special uses and mineral and energy exploration and development, should be limited to designated routes⁸ or designated over-the-snow routes⁷.

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LINKAGE AREAS (LINK): The following objective, standard, and guidelines apply to all projects within linkage areas in occupied habitat, subject to valid existing rights.

Objective³⁰ LINK O1

In areas of intermingled land ownership, work with landowners to pursue conservation easements, habitat conservation plans, land exchanges, or other solutions to reduce the potential of adverse impacts on lynx and lynx habitat.

Standard⁴⁴ LINK S1

When highway¹⁸ or forest highway¹² construction or reconstruction is proposed in linkage areas²², identify potential highway crossings.

Guideline¹⁵ LINK G1

NFS lands should be retained in public ownership.

Guideline LINK G2

Livestock grazing in shrub-steppe habitats⁴³ should be managed to contribute to maintaining or achieving a preponderance of mid- or late-seral stages²⁸, similar to conditions that would have occurred under historic disturbance regimes.

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REQUIRED MONITORING

Map the location and intensity of snow compacting activities and designated and groomed routes that occurred inside LAUs during the period of 1998 to 2000. The mapping is to be completed within one year of this decision, and changes in activities and routes are to be monitored every five years after the decision.

When project decisions are signed report the following:

1. Fuel treatments:
 - a. Acres of fuel treatment in lynx habitat by forest and LAU, and whether the treatment is within *or outside* the WUI as defined by HFRA.
 - b. Whether or not the fuel treatment met the vegetation standards or guidelines. If standard(s) are not met, report which standard(s) are not met, why they were not met, and how many acres were affected.
 - c. *Whether or not 2 adjacent LAUs exceed standard VEG S1 (30% in a stand initiation structural stage that is too short to provide winter snowshoe hare habitat), and what event(s) or action(s) caused the standard to be exceeded.*
2. *Application of exception in Standard VEG S5*
 - a. *For areas where any of the exemptions 1 through 6 listed in Standard VEG S5 were applied: Report the type of activity, the number of acres, and the location (by unit, and LAU) and whether or not Standard VEG S1 was within the allowance.*
3. *Application of exceptions in Standard VEG S6*
 - a. *For areas where any of the exemptions 1 through 3 listed in Standard VEG S6 were applied: Report the type of activity, the number of acres, and the location (by unit, and LAU) and whether or not Standard VEG S1 was within the allowance.*
4. *Application of guidelines*
 - a. *Document the rationale for deviations to guidelines. Summarize what guideline(s) was not followed and why.*

Directions in italics were terms and conditions that were incorporated from the FWS Biological Opinion (USDI FWS 2007).

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GLOSSARY

¹ *Area of consistent snow compaction* – An area of consistent snow compaction is an area of land or water that during winter is generally covered with snow and gets enough human use that individual tracks are indistinguishable. In such places, compacted snow is evident most of the time, except immediately after (within 48 hours) snowfall. These can be areas or linear routes, and are generally found in or near snowmobile or cross-country ski routes, in adjacent openings, parks and meadows, near ski huts or plowed roads, or in winter parking areas. Areas of consistent snow compaction will be determined based on the acreage or miles used during the period 1998 to 2000.

² *Broad scale assessment* – A broad scale assessment is a synthesis of current scientific knowledge, including a description of uncertainties and assumptions, to provide an understanding of past and present conditions and future trends, and a characterization of the ecological, social, and economic components of an area. (LCAS)

³ *Carr* – Deciduous woodland or shrub land occurring on permanently wet, organic soil. (LCAS)

⁴ *Course woody debris* – Any piece(s) of dead woody material, e.g., dead boles, limbs, and large root masses on the ground or in streams. (LCAS)

⁵ *Daylight thinning* – Daylight thinning is a form of precommercial thinning that removes the trees and brush inside a given radius around a tree.

⁶ *Denning habitat (lynx)* – Denning habitat is the environment lynx use when giving birth and rearing kittens until they are mobile. The most common component is large amounts of coarse woody debris to provide escape and thermal cover for kittens. Denning habitat must be within daily travel distance of winter snowshoe hare habitat – the typical maximum daily distance for females is about three to six miles. Denning habitat includes mature and old growth forests with plenty of coarse woody debris. It can also include young regenerating forests with piles of coarse woody debris, or areas where down trees are jack-strawed.

⁷ *Designated over-the-snow routes* – Designated over-the-snow routes are routes 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. The determination of baseline snow compaction will be based on the miles of designated over-the-snow routes authorized, promoted or encouraged during the period 1998 to 2000.

⁸ *Designated route* – A designated route is a road or trail that has been identified as open for specified travel use.

⁹ *Developed recreation* – Developed recreation requires facilities that result in concentrated use. For example, skiing requires lifts, parking lots, buildings, and roads; campgrounds require roads, picnic tables, and toilet facilities.

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¹⁰ *Security habitat (lynx)* – Security habitat amounts to places in lynx habitat that provide secure winter bedding sites for lynx in highly disturbed landscapes like ski areas. Security habitat gives lynx the ability to retreat from human disturbance. Forest structures that make human access difficult generally discourage human activity in security habitats. Security habitats are most effective if big enough to provide visual and acoustic insulation and to let lynx easily move away from any intrusion. They must be close to winter snowshoe hare habitat. (LCAS)

¹¹ *Fire use* – Fire use is the combination of wildland fire use and using prescribed fire to meet resource objectives. (NIFC) Wildland fire use is the management of naturally ignited wildland fires to accomplish resource management objectives in areas that have a fire management plan. The use of the term wildland fire use replaces the term prescribed natural fire. (Wildland and Prescribed Fire Management Policy, August 1998)

¹² *Forest highway* – A forest highway is a forest road under the jurisdiction of, and maintained by, a public authority and open to public travel (USC: Title 23, Section 101(a)), designated by an agreement with the FS, state transportation agency, and Federal Highway Administration.

¹³ *Fuel treatment* – A fuel treatment is a type of vegetation management action that reduces the threat of ignition, fire intensity, or rate of spread, or is used to restore fire-adapted ecosystems.

¹⁴ *Goal* – A goal is a broad description of what an agency is trying to achieve, found in a land management plan. (LCAS)

¹⁵ *Guideline* – A guideline is a particular management action that should be used to meet an objective found in a land management plan. The rationale for deviations may be documented, but amending the plan is not required. (LCAS modified)

¹⁶ *Habitat connectivity (lynx)* – Habitat connectivity consists of an adequate amount of vegetation cover arranged in a way that allows lynx to move around. Narrow forested mountain ridges or shrub-steppe plateaus may serve as a link between more extensive areas of lynx habitat; wooded riparian areas may provide travel cover across open valley floors. (LCAS)

¹⁷ *HFRA (Healthy Forests Restoration Act)* – Public Law 108-148, passed in December 2003. The HFRA provides statutory processes for hazardous fuel reduction projects on certain types of at-risk National Forest System and Bureau of Land Management lands. It also provides other authorities and direction to help reduce hazardous fuel and restore healthy forest and rangeland conditions on lands of all ownerships. (Modified from Forest Service HFRA web site.)

¹⁸ *Highway* – The word highway includes all roads that are part of the National Highway System. (23 CFR 470.107(b))

¹⁹ *Horizontal cover* – Horizontal cover is the visual obscurity or cover provided by habitat structures that extend to the ground or snow surface primarily provided by tree stems

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and tree boughs, but also includes herbaceous vegetation, snow, and landscape topography.

²⁰ *Isolated mountain range* - Isolated mountain ranges are small mountains cut off from other mountains and surrounded by flatlands. On the east side of the Rockies, they are used for analysis instead of sub-basins. Examples are the Little Belts in Montana and the Bighorns in Wyoming.

²¹ *LAU (Lynx Analysis Unit)* - An LAU is an area of at least the size used by an individual lynx, from about 25 to 50 square miles (LCAS). An LAU is a unit for which the effects of a project would be analyzed; its boundaries should remain constant.

²² *Linkage area* - A linkage area provides connectivity between blocks of lynx habitat. Linkage areas occur both within and between geographic areas, where basins, valleys, or agricultural lands separate blocks of lynx habitat, or where lynx habitat naturally narrows between blocks. (LCAS updated definition approved by the Steering Committee 10/23/01)

²³ *Lynx habitat* - Lynx habitat occurs in mesic coniferous forest that experience cold, snowy winters and provide a prey base of snowshoe hare. In the northern Rockies, lynx habitat generally occurs between 3,500 and 8,000 feet of elevation, and primarily consists of lodgepole pine, subalpine fir, and Engelmann spruce. It may consist of cedar-hemlock in extreme northern Idaho, northeastern Washington and northwestern Montana, or of Douglas-fir on moist sites at higher elevations in central Idaho. It may also consist of cool, moist Douglas-fir, grand fir, western larch and aspen when interspersed in subalpine forests. Dry forests do not provide lynx habitat. (LCAS)

²⁴ *Lynx habitat in an unsuitable condition* - Lynx habitat in an unsuitable condition consists of lynx habitat in the stand initiation structural stage where the trees are generally less than ten to 30 years old and have not grown tall enough to protrude above the snow during winter. Stand replacing fire or certain vegetation management projects can create unsuitable conditions. Vegetation management projects that can result in unsuitable habitat include clearcuts and seed tree harvest, and sometimes shelterwood cuts and commercial thinning depending on the resulting stand composition and structure. (LCAS)

²⁵ *Low-speed, low-traffic-volume road* - Low speed is less than 20 miles per hour; low volume is a seasonal average daily traffic load of less than 100 vehicles per day.

²⁶ *Maintain* - In the context of this decision, maintain means to provide enough lynx habitat to conserve lynx. It does not mean to keep the status quo.

²⁷ *Maintenance level* - Maintenance levels define the level of service provided by and maintenance required for a road. (FSH 7709.58, Sec 12.3) Maintenance level 4 is assigned to roads that provide a moderate degree of user comfort and convenience at moderate travel speeds. Most level 4 roads have double lanes and an aggregate surface. Some may be single lane; some may be paved or have dust abated. Maintenance level 5 is assigned to roads that provide a high degree of user comfort and convenience.

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Normally, level 5 roads are have double lanes and are paved, but some may be aggregate surfaced with the dust abated.

²⁸ *Mid-seral or later* – Mid-seral is the successional stage in a plant community that is the midpoint as it moves from bare ground to climax. For riparian areas, it means willows or other shrubs have become established. For shrub-steppe areas, it means shrubs associated with climax are present and increasing in density.

²⁹ *Multi-story mature or late successional forest* – This stage is similar to the *old multistory structural stage* (see below). However, trees are generally not as old, and decaying trees may be somewhat less abundant.

³⁰ *Objective* – An objective is a statement in a land management plan describing desired resource conditions and intended to promote achieving programmatic goals. (LCAS)

³¹ *Old multistory structural stage* – Many age classes and vegetation layers mark the old forest, multistoried stage. It usually contains large old trees. Decaying fallen trees may be present that leave a discontinuous overstory canopy. On cold or moist sites without frequent fires or other disturbance, multi-layer stands with large trees in the uppermost layer develop. (Oliver and Larson, 1996)

³² *Old growth* – Old growth forests generally contain trees that are large for their species and the site, and are sometimes decadent with broken tops. Old growth often contains a variety of tree sizes, large snags, and logs, and a developed and often patchy understory.

³³ *Permanent development* – A permanent development is any development that results in a loss of lynx habitat for at least 15 years. Ski trails, parking lots, new permanent roads, structures, campgrounds, and many special use developments would be considered permanent developments.

³⁴ *Prescribed fire* – A prescribed fire is any fire ignited as a management action to meet specific objectives. A written, approved prescribed fire plan must exist, and NEPA requirements met, before ignition. The term prescribed fire replaces the term management ignited prescribed fire. (NWCG)

³⁵ *Precommercial thinning* – Precommercial thinning is mechanically removing trees to reduce stocking and concentrate growth on the remaining trees, and not resulting in immediate financial return. (Dictionary of Forestry)

³⁶ *Project* – All, or any part or number of the various activities analyzed in an Environmental Impact Statement, Environmental Analysis, or Decision Memo. For example, the vegetation management in some units or stands analyzed in an EIS could be for fuel reduction, and therefore those units or stands would fall within the term *fuel treatment project* even if the remainder of the activities in the EIS are being conducted for other purposes, and the remainder of those units or stands have other activities prescribed in them. All units in an analysis do not necessarily need to be for fuel reduction purposes for certain units to be considered a *fuel reduction project*.

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³⁷ *Red squirrel habitat* – Red squirrel habitat consists of coniferous forests of seed and cone-producing age that usually contain snags and downed woody debris, generally associated with mature or older forests.

³⁸ *Regeneration harvest* – The cutting of trees and creating an entire new age class; an even-age harvest. The major methods are clearcutting, seed tree, shelterwood, and group selective cuts. (Helms, 1998)

³⁹ *Research* – Research consists of studies conducted to increase scientific knowledge or technology. For the purposes of Standards VEG S5 and VEG S6, research applies to studies financed from the forest research budget (FSM 4040) and administrative studies financed from the NF budget.

⁴⁰ *Restore, restoration* – To restore is to return or re-establish ecosystems or habitats to their original structure and species composition. (Dictionary of Forestry)

⁴¹ *Riparian area* – An area with distinctive soil and vegetation between a stream or other body of water and the adjacent upland; includes wetlands and those portions of floodplains and valley bottoms that support riparian vegetation. (LCAS)

⁴² *Salvage harvest* – Salvage harvest is a commercial timber sale of dead, damaged, or dying trees. It recovers economic value that would otherwise be lost. Collecting firewood for personal use is not considered salvage harvest.

⁴³ *Shrub steppe habitat* – Shrub steppe habitat consists of dry sites with shrubs and grasslands intermingled.

⁴⁴ *Standard* – A standard is a required action in a land management plan specifying how to achieve an objective or under what circumstances to refrain from taking action. A plan must be amended to deviate from a standard.

⁴⁵ *Stand initiation structural stage* – The stand initiation stage generally develops after a stand-replacing disturbance by fire or regeneration timber harvest. A new single-story layer of shrubs, tree seedlings, and saplings establish and develop, reoccupying the site. Trees that need full sun are likely to dominate these even-aged stands. (Oliver and Larson, 1996)

⁴⁶ *Stem exclusion structural stage (Closed canopy structural stage)* – In the stem exclusion stage, trees initially grow fast and quickly occupy all of 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)

⁴⁷ *Timber management* – Timber management consists of growing, tending, commercially harvesting, and regenerating crops of trees.

⁴⁸ *Understory re-initiation structural stage* – In the understory re-initiation stage, a new age class of trees gets established after overstory trees begin to die, are removed, or no longer fully occupy their growing space after tall trees abrade each other in the wind. Understory seedlings then re-grow and the trees begin to stratify into vertical layers. A

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low to moderately dense uneven-aged overstory develops, with some small shade-tolerant trees in the understory. (Oliver and Larson, 1996)

⁴⁹ *Vegetation management* - Vegetation management 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.

⁵⁰ *Wildland urban interface (WUI)* - Use the definition of WUI found in the Healthy Forests Restoration Act. The full text can be found at HFRA § 101. Basically, the wildland urban interface is the area adjacent to an at-risk community that is identified in the community wildfire protection plan. If there is no community wildfire protection plan in place, the WUI is the area 0.5 mile from the boundary of an at-risk community; or within 1.5 miles of the boundary of an at-risk community if the terrain is steep, or there is a nearby road or ridgetop that could be incorporated into a fuel break, or the land is in condition class 3, or the area contains an emergency exit route needed for safe evacuations. (Condensed from HFRA. For full text see HFRA § 101.)

⁵¹ *Winter snowshoe hare habitat* - Winter snowshoe hare habitat consists of places where young trees or shrubs grow densely - thousands of woody stems per acre - and tall enough to protrude above the snow during winter, so snowshoe hare can browse on the bark and small twigs (LCAS). Winter snowshoe hare habitat develops primarily in the stand initiation, understory reinitiation and old forest multistoried structural stages.

Appendix C - Summary of the Analysis of the Management Situation

In the spring of 2002, the Forest Service announced the revision of the Kootenai and Idaho Panhandle National Forests land management plans. The Analysis of the Management Situation (AMS) and AMS Technical Report were released to the public in March 2003. The AMS and AMS Technical Report described the historic and current conditions for the Kootenai and Idaho Panhandle Planning Zone (KIPZ) and established the need for revising management direction for seven Revision Topics. These seven Revision Topics were identified through monitoring and evaluation, current science and assessments and through daily contacts with people who work in and recreate on the national forest. The Revision Topics include: Vegetation, Fire Risk, Timber Production, Wildlife, Watersheds and Aquatic Species, Inventoried Roadless Areas, Recommended Wilderness Areas, and Access and Recreation. The Revision Topics are broad categorizations of the issues that have been identified where resource conditions, technical knowledge, or public perception of resource management has created a potential “need for change.”

In 2006, the KIPZ released for public review and comment, a draft Comprehensive Evaluation Report (CER) along with the proposed Plans for both Forests. The CER was developed as a requirement under the 2005 (and 2008) Planning Rule and was intended to be a part of the Plan Set of Documents for each Forest Plan. The 2006 draft CER included the analysis and evaluation of conditions and trends for both Forests under the existing plans, and supplemented the AMS in documenting the need for changing the 1987 Forest Plans. The CER described the conditions and trends from proposed changes to both Forests Plans and described the probability of meeting the Desired Conditions in the 2006 Proposed Plans. The CER incorporated by reference the AMS and AMS Technical Report. It presented each Revision Topic and documented additional or updated information to the AMS and Technical Report.

Additional topics, not identified as primary revision topics, were identified to be addressed in the Forest Plan but did not meet the criteria for the main Revision Topics. In general, these additional topics represent inadequate or outdated Forest Plan direction; however, addressing these topics would not necessarily require a significant amendment to the Forest Plan. The additional topics include: Minerals, Designated Wilderness Management and Wilderness Study Areas, Facilities, Research Natural Areas (RNAs), Heritage Resources, Scenery Management, Lands, Special Areas (SAs), Wild and Scenic Rivers, and Range.

Following is a brief summary of the demand and supply conditions for production potentials, use, and opportunities for resources that are applicable to the Revision Topics. This analysis provides the sideboards or decision space used in developing alternatives for the Environmental Impact Statement (EIS).

Recreation

A wide variety of recreation opportunities are offered on the Kootenai National Forest (KNF), with an emphasis on dispersed recreation. There are 93,700 acres of designated Wilderness and an additional 639,100 acres of Inventoried Roadless Areas. There are 1,400 miles of trails, most of which are available to hikers, horseback riders, and mountain bikers. Almost 11 percent of the trails are also available for motorized use. Nearly 45 percent of approximately 7,900 miles of roads are open to motorized public use. There are 21 developed and 14 dispersed campgrounds. A ski area and several areas for backcountry cross-country skiing are also located on the KNF.

The majority of recreation on the KNF is dispersed, meaning it does not rely on or concentrate around constructed facilities. Based on National Visitor Use Monitoring, recreation use in 2007 was estimated at 919,300 visits. The majority of this (more than 80 percent) was dispersed use. Demand for both dispersed and developed recreation is expected to continue growing at 13 percent per decade, based on projected population growth over the next 10 years in the western U.S. (2000 U.S. Census data, Population Projections Table 6). The KNF has the capacity to support demand for developed and dispersed activities for at least the next 50 years.

Demand for Wilderness recreation experiences, based on visitation only, is currently about 12,000 visits (USDA, 2009). Demand for Wilderness recreation is also expected to continue growing at 13 percent per decade. Demand for Wilderness based on ecological and societal need is more difficult to quantify as it applies to a single forest, but is addressed by the Region 1 Wilderness Needs Assessment (USDA, 2003). This Forest Plan identifies 112,800 acres of Recommended Wilderness.

Timber Production

The timber demand was derived using a capacity and capability analysis for the Forest. This analysis was conducted by the University of Montana's Bureau of Business and Economic Research, resulting in a report prepared for the KNF (Keegan et al., 2005). Virtually all of the KNF non-reserved timberland is located in two Montana counties: Lincoln and Sanders. More than 35 percent of the recent (1998) timber harvest in this two-county area originated from the KNF.

The KNF identified a five-county area as the "Kootenai National Forest Impact Zone." The counties comprising the Kootenai National Forest Impact Zone are Bonner and Boundary counties in Idaho; and Flathead, Lincoln, and Sanders counties in Montana. As of September 1, 2005, capacity to process timber in the Kootenai National Forest Impact Zone is 191,020 thousand cubic feet (MCF), with slightly less than 78 percent of capacity being used. Mills in the Kootenai National Forest Impact Zone are currently using about 148,899 MCF of timber annually. Slightly less than 87 percent (129,209 MCF) of the volume processed in the Impact Zone is composed of trees with diameter at breast height (DBH) greater than or equal to 10 inches. Nearly 13 percent (18,977 MCF) of the volume processed comes from trees 7.0 - 9.9 inches DBH, while less than 1 percent (714 MCF) of processed volume comes from trees less than 7 inches DBH.

The capacity and capability analysis indicates there is not much of a market for the small diameter trees (less than 7 inches DBH). There is strong demand for larger trees (greater than 10 inches DBH).

From 1988 to 2009, the KNF sold an average of 83.1 MMBF (16,600 MCF) annually. The amount of timber sold has declined from the mid-1990s, from a high of 203 MMBF in 1992 to a low of 24 MMBF in 2003, with an average of 44.4 MMBF/year (8,900 MCF/year) over the past five years.

Under this forest plan, approximately 791,400 acres are suitable for timber production. The allowable sale quantity (ASQ) from the lands suitable for timber production is 70.2 MMBF (13.2 MMCF) for the first decade with a long term sustained yield capacity of 16.7 MMCF. The predicted timber volume sold from suitable lands under this forest plan, given current budget levels, is 47.5 MMBF (8.7 MMCF) for the first decade.

Vegetation Treatment and Wildlife Habitat

Moving vegetation towards desired future conditions (DFC) contributes to sustainable and resilient vegetation and habitat. Vegetation conditions are dynamic and change over time based on succession and disturbance. Management actions can aide in moving vegetation towards desired condition. Vegetation treatments such as timber harvest and prescribed burning provide opportunities to change the trajectory for vegetation and move it closer to desired conditions.

Modeling vegetation treatments tracks changes in vegetation over time and analyzes movement towards DFC. The model runs with an objective to move vegetation towards desired condition. Acres that are not within desired conditions generate penalty points. The goal of each run is to minimize these penalty points (e.g., minimize land outside of desired conditions). Two benchmarks were run to analyze the effects of maximum or minimum management on vegetation condition. A benchmark where no management was allowed had the maximum penalty points for not achieving desired condition at more than 73,500,000 points. The benchmark where all lands suitable for timber production were managed resulted in 15,000,000 points or about an 80 percent reduction in penalties. These benchmarks did not include constraints for wildlife, watershed, operational limitations, or budget. Under this forest plan, the penalties for not achieving desired condition are at 28,400,000 points. Movement towards desired condition under the forest plan is an improvement over no management, but not as great as if all suitable lands were managed.

Appendix D - KNF Designated Utility Rights-of-Way Corridors, Communication Sites and Areas Withdrawn from Mineral Entry

Table D-1. Designated Utility Rights-of-Way Corridors in the KNF

Corridor Name	Authorized User
Cabinet – Noxon	Avista
Cabinet – Rathdrum	Avista
Noxon – Hot Springs	Avista
Noxon – Pine Creek	Avista
Bonnars Ferry – Troy No. 1	BPA ¹
Troy – Libby	BPA
Columbia Falls – Trego No. 1	BPA
Lancaster – Noxon No. 1	BPA
Libby – Conkelly No. 1	BPA
Libby – Libby (PP&L) No. 1	BPA
Libby PH – Libby No. 1	BPA
Libby PH – Libby No.2	BPA
Noxon – Hot Springs No. 1	BPA
Noxon – Libby No. 1	BPA
Montanore	²
Rock Creek	²

Note : Includes corridors that only partially cross NFS lands.

¹ Bonneville Power Administration.

² Dependent on final authorization.

Table D-2. Designated Communication Sites on the KNF

Communication Site Name	Location (District)	Designated For	Restrictions
Allen Peak	Libby	Non-broadcast	Gov't Use Only
Banfield Mountain	Libby	Non-broadcast	
Black Butte	Rexford	Non-broadcast	
Blue Mountain	Libby	Non-broadcast	
Calx Mountain	Libby	Non-broadcast	
Canoe Gulch	Libby	Non-broadcast	Gov't Use Only
Cougar Peak	Plains (Lolo NF)	Non-broadcast	Gov't Use Only
Eighty Peak	Cabinet	Non-broadcast	Gov't Use Only
Eureka	Rexford	Non-broadcast	Gov't Use Only
Flower Point	Libby	Non-broadcast	
Garver Creek	Three Rivers	Non-broadcast	
Government Mountain	Cabinet	Non-broadcast	Gov't Use Only
Grave Creek	Fortine	Non-broadcast	
Green Mountain	Cabinet	Broadcast, Non-broadcast	
Hawkins Lake	Three Rivers	Non-broadcast	
Helibase	Libby	Non-broadcast	Gov't Use Only
Indianhead Mountain	Libby	Broadcast	
King Mountain	Three Rivers	Broadcast, Non-broadcast	
Libby Cache	Libby	Non-broadcast	Gov't Use Only
Meadow Peak	Libby	Non-broadcast	
Mt. Baldy	Three Rivers	Non-broadcast	Gov't Use Only
Mt. Henry	Three Rivers	Non-broadcast	Gov't Use Only
Mt. Marston	Fortine	Non-broadcast	
Murphy Lake	Fortine	Non-broadcast	Gov't Use Only
Pinkham Mountain	Rexford	Non-broadcast	
Poorman Creek	Libby	Non-broadcast	
Sheldon Mountain	Libby	Broadcast, Non-broadcast	
Stahl Peak	Fortine	Non-broadcast	
Swede Mountain	Libby	Broadcast	
SO	Libby	Non-broadcast	Gov't Use Only
Tony Peak	Libby	Non-broadcast	
Trout Creek	Cabinet	Non-broadcast	Gov't Use Only
Troy	Three Rivers	Non-broadcast	Gov't Use Only
Troy (Preacher)	Three Rivers	Non-broadcast	
Webb Mountain	Rexford	Non-broadcast	Gov't Use Only

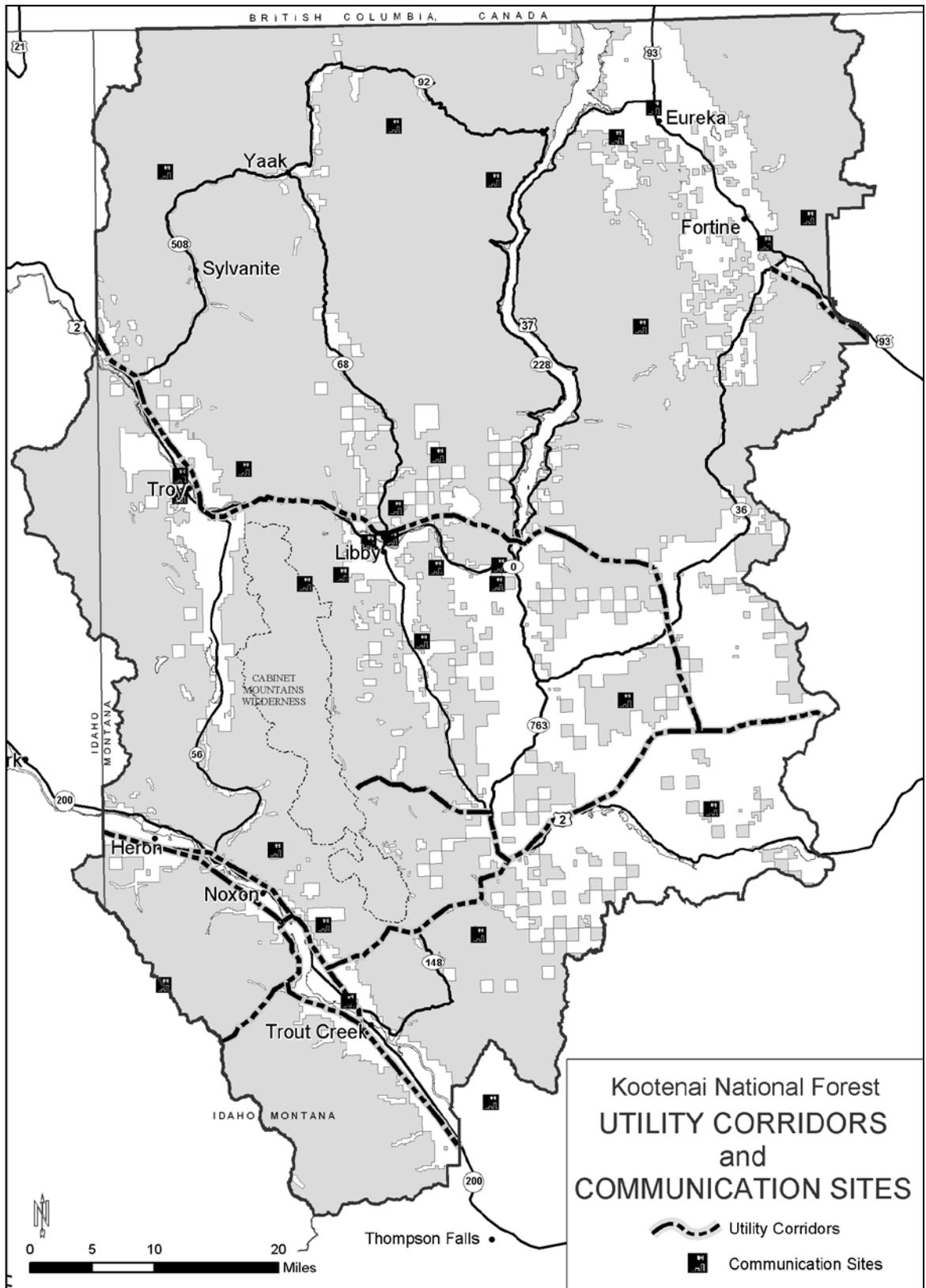


Figure D-1. Designated Utility Rights-of-Way Corridors and Communication Sites on the KNF.

Minerals

Table D-3. Lands withdrawn from mineral entry on the KNF.

Name	Township (T), Range (R), Section (Sec.)	Acres
Ant Flat Admin. Site	T34N R25W Sec 7	80
Bad Medicine Rec. Area	T28N R33W Sec 4	37.46
Baldy Mountain Lookout	T35N R33W Sec 6	10
Big Bend Admin. Site	T30N R29W Sec 8	160
Big Creek Rec. Area	T34N R29W Sec 2	10
Big Eddy Rec. Area.	T27N R34W Sec 25	16.25
Big Swede Lookout	T30N R30W Sec 17	10
Big Creek Baldy Lookout	T33N R31W Sec 12	10
Black Butte Lookout	T36N R27W Sec 20	10
Blue Mountain Lookout	T32N R30W Sec 32	20
Bull River Bay Rec. Area	T26N R33W Sec 10	32.5
Bull River Ranger Station	T27N R32W Sec 7	79.28
Bunch Grass Flat R.S.	T35N R25W Sec 6	151.76
Cabinet Mountain Wilderness	T25N R31W Sec 1,2,3; T26N R30W Sec 19,30; T26N R31W Sec 2-18,21-28,33-36; T26N R32W Sec 1,12; T27N R31W Sec 5-8,16-21,28-34; T27N R32W Sec 1-3,10-16,21-27,35-36; T28N R31W Sec 6-7,18-19,30-32; T28N R32W Sec 1-29,35-36; T28N R33W Sec 1; T29N R32W Sec 3-11,14-24,26-35; T29N R33W Sec 1,11-15,22-27,34-36; T30N R32W Sec 5-8,16-22,25-36; T30N R33W Sec 1-2,10-15,23-26,36; T31N R32W Sec 29-32; T31N R33W Sec 25-26,35-36	94,596.76
Cabinet Ranger Station	T31N R34W Sec 2	159.31
Callahan Creek R.S.	T31N R34W Sec 23	160
Calx Mountain Lookout	T28N R28W Sec 10	10
Camp 32 Recreation Area	T36N R28W Sec 35	25
Caribou Creek Rec Area	T37N R30W Sec 21-22,28	12.5
Dorr Skeels	T29N R33W Sec 20	45.9
East Dickey Lake	T34N R25W Sec 14	7.62
Enco Development Corp.	T33N R34W Sec 26,27	240
Eureka Hydroelectric Co	T35N R25W Sec 5,6	191
Fairview Ranger Station	T30N R27W Sec 22	160
Frank Lake Rec. Area	T35N R26W Sec 17	35.31
Garver Mountain Lookout	T37N R32W Sec 32	10
Glacier Silver Led Mn Co	T29N R31W Sec 6,7,12	237.92
Grasshopper R.S.	T26N R33W Sec 3	107.8
Horse Hill Lookout	T28N R30W Sec 30,33	20
Horse Thief Ranger Station	T27N R33W Sec 4	10
Howard Lake Rec. Area	T27N R31W Sec 13	50
International Boundary	T37N R24W Sec 4; T37N R25W Sec 1,3,4; T37N R26W Sec 1-6; T37N R28W Sec 2-6; T37N R29W Sec 1-5; T37N R30W Sec 3,5; T37N R31W Sec 3-6; T37N R32W Sec 1-6; T37N R33W Sec 1-6; T37N R34W Sec 1; T37N R25W Sec 2,5,6; T37N R26W Sec 3; T37N R29W Sec 6; T37N R30W Sec 1,2,4,6; T37N R31W Sec 1; T37N R31W Sec 2; T37N R24W Sec 6	342.86
Jack Pine Flats Rec. Area	T22N R32W Sec 12	65
Kenelty Mountain Lookout	T27N R29W Sec 22	10

Name	Township (T), Range (R), Section (Sec.)	Acres
Kilbrennan Adm. Site	T33N R33W Sec 29	22.5
Kootenai Power Const.	T31N R32W Sec 18	184
Kootenai Power Const.	T31N R33W Sec 13	216.3
Lake Creek Campground	T26N R30W Sec 5,8	40
Lastchance Admin. Site	T32N R34W Sec 5,8	194.02
Libby Dam Project	T29N R27W Sec 17; T29N R29W Sec 4,22; T30N R26W Sec 3,4; T30N R27W Sec 22; T30N R29W Sec 4,8,18,34; T31N R26W Sec 5,8,16,20,27,28; T31N R29W Sec 1-4,8,10-12,15,16,22,27,28,32,34; T32N R26W Sec 5-8,17-20,29-32; T32N R28W Sec 5-8,18-19; T32N R29W Sec 1,10-15,22-28,34,35; T33N R25W Sec 1,6; T33N R26W Sec 1,12-14,21,22,27,28,33,34; T33N R28W Sec 7,17-21,27-30,32-34; T33N R29W Sec 2,3,10-13,24; T33N R29W Sec 11; T34N R25W Sec 20-22,25-29,31,32,35; T34N R29W Sec 1-4,10-12,14,15,22,23,26,27,34,35; T35N R28W Sec 4-7,30,31; T35N R29W Sec 1,11-14,23-26,33-36; T36N R28W Sec 2,3,9,10,12,15-17,20-22,28,29,31-33; T37N R27W Sec 30; T37N R28W Sec 12,13,24,25; T37N R28W Sec 26,35	43,423.17
Libby R.S.	T31N R31W Sec 34	80
Liberty Metals Co.	T30N R34W Sec 2,10,11,34	215
Loon Lake Rec. Site	T33N R32W Sec 25	10
Lower Big Therriault Lk.	T37N R25W Sec 30	20
Lower Spar Lake Rec. Area	T29N R34W Sec 22	10
Marston Lookout	T35N R25W Sec 26	10
Mcgregor Lake	T26N R26W Sec 12	94.16
Montana Power Co	T24N R31W Sec 15	85.04
Mount Henry Lookout	T36N R30W Sec 17	20
Mud Lake Lookout	T36N R28W Sec 25	40
Murphy Lake	T34N R25W Sec 5,8	71.88
Murphy Lake Admin. Site	T34N R25W Sec 6	20
North Dickey Lake	T34N R25W Sec 9	18.25
Noxon Admin Site	T26N R33W Sec 24	109.09
Olson Flat Admin. Site	T35N R32W Sec 3	45
Pacific Hydropower Co.	T33N R34W Sec 36	560
Paul Bunyan Rec. Area	T29N R30W Sec 30	45
Pete Creek Rec. Area	T35N R32W Sec 5	20
Pinkham Mountain Lookout	T33N R27W Sec 9	10
Pipecreek R.S.	T31N R31W Sec 2	80
Pleasant Valley Rec. Area	T26N R29W Sec 2	10
PSR 359	T25N R32W Sec 4	145.4
PSR 25	T24N R32W Sec 2,4,10,12,22,34	532.93
Raven Ranger Station	T26N R29W Sec 2	50
Redtop Creek Rec. Area	T35N R33W Sec 31	10
Rexford Ranger Station	T36N R28W Sec 21	40
Rock Lake Rec. Area	T35N R26W Sec 6	78.61
Rock Meadows Rec. Area	T26N R31W Sec 6,31,32	170
Rolling Rock Ranger Station	T27N R34W Sec 24	3.7
Ross Creek	T28N R34W Sec 12	20
Ross Creek Cedar	T28N R34W Sec 12	100
Scenery Mountain Lookout	T31N R32W Sec 29	10

Name	Township (T), Range (R), Section (Sec.)	Acres
Smith Mountain Lookout	T59N R3 Sec 32	10
South Dickey Lake	T34N R25W Sec 15	60.03
Stahl Peak Lookout	T37N R25W Sec 33	30
Sunday Mountain Lookout	T33N R25W Sec 29	10
Swamp Creek	T27N R30W Sec 11,12	50
Swamp Creek R.S.	T25N R31W Sec 20	60
Sylvan Lake Rec. Area	T25N R29W Sec 24	86.86
Sylvanite Admin. Site	T34N R33W Sec 9,16	116.8
Timberline	T32N R31W Sec 35	35
Trout Creek Admin. Site	T24N R31W Sec 6	105.83
Trout Creek R.S.	T24N R32W Sec 24	160
Troy Ranger Station	T31N R34W Sec 1	67.83
Turner Mt. Rec. Area	T33N R31W Sec 21	20
Turner Mt. Winter Sports	T33N R31W Sec 20	240
Turner Mtn. Ski Area	T33N R31W Sec 19,20,29	844.97
Twin Meadows R.S.	T32N R26W Sec 29	62
U.Ford Admin. Site	T36N R31W Sec 6,7,12	69.13
Upper Big Therriault Lk	T37N R25W Sec 29,32	60
Upper Spar Lake Rec. Area	T29N R34W Sec 16	20
Warland Ranger Station	T32N R29W Sec 27,34	76.63
Washington Water Power	T24N R31W Sec 15	126.05
Washington Water Power	T24N R32W Sec 2,5,12	191.36
Washington Water Power	T24N R33W Sec 1,11,12,14,15,20-22; T25N R32W Sec 4,9,10,16,22,27,28,31-34; T26N R32W Sec 20,33,34; T26N R33W Sec 5,6,8,10,14-16,23,24; T27N R33W Sec 30-32; T27N R34W Sec 9,21,25,27,28,32-34	2,637.26
Webb Mountain Lookout	T35N R29W Sec 10	10
West Bull Lake Rec. Area	T28N R33W Sec 4	27.3
White Pine R.S.	T23N R31W Sec 14	92.06
Whitetailcamp Expansion	T35N R32W Sec 6; T35N R33W Sec 1; T36N R32W Sec 31; T36N R33W Sec 36	55.31
Whitetail Creek Rec. Area	T35N R33W Sec 1	67.1
Willow Creek	T24N R29W Sec 3,4	20
Wm. Park Mills Pr. Project	T25N R29W Sec 32	150
Wm. Park Mills Pr. Project 11-Oct-1920	T24N R30W Sec 1	80
Wolf Creek Ranger Station	T29N R27W Sec 20	80
Yaak Falls Rec. Area	T33N R33W Sec 9	20
Yaak Mountain Lookout	T32N R34W Sec 2	10
Ziegler Mountain Lookout	T33N R28W Sec 31	10
Data Unavailable	T27N R34W Sec 21,34	34.77
Data Unavailable	T31N R33W Sec 14,15	352.58

Source: Bureau of Land Management

* = Data Not Available

Appendix E – Idaho Roadless Rule

Applicable direction for National Forest System (NFS) lands administered by the Idaho Panhandle National Forests (IPNF) within Idaho Roadless Areas based on the *Special Areas; Roadless Area Conservation; Applicability to the National Forests in Idaho; Final Rule and ROD* (October 2008) (36 CFR 294 Subpart C). The information below provides a summary of prohibitions and permissions, by Idaho Roadless Rule theme and Land Management Plan Management Area (MA).

Wild Land Recreation (MA1b, 1c)

Prohibits:

- Road construction and reconstruction, except the Regional Forester may authorize a road to be constructed or reconstructed in an area designated, if pursuant to statute, treaty, reserved or outstanding rights, or other legal duty of the United States.
- The cutting, sale, or removal of timber except for personal or administrative use (36 CFR part 223) or where incidental to the implementation of a management not otherwise prohibited.
- Mineral leasing activities.

Backcountry Restoration (MA5a, 5b, 5c)

Road construction and reconstruction is permissible where the Regional Forester determines:

- (i) A road is needed to protect public health and safety in cases of an imminent threat of flood, wildland fire, or other catastrophic event that, without intervention, would cause the loss of life or property;
- (ii) A road is needed to conduct a response action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or to conduct a natural resource restoration action under CERCLA, section 311 of the Clean Water Act, or the Oil Pollution Act;
- (iii) A road is needed pursuant to statute, treaty, reserved or outstanding rights, or other legal duty of the United States;
- (iv) A road realignment is needed to prevent irreparable resource damage that arises from the design, location, use, or deterioration of a road and cannot be mitigated by road maintenance. Road realignment may occur under this subsection only if the road is deemed essential for public or private access, natural resource management, or public health and safety;
- (v) Road reconstruction is needed to implement a road safety improvement project on a road determined to be hazardous based on accident experience or accident potential on that road; or
- (vi) The Secretary of Agriculture determines that a Federal Aid Highway project, authorized pursuant to Title 23 of the United States Code, is in the public interest or is consistent with the purpose for which the land was reserved or acquired and no other reasonable and prudent alternative exists.

Permissible Activities within the Community Protection Zone (CPZ):

- Timber cutting, sale, or removal to reduce hazardous fuel conditions within the community protection zone if in the responsible official's judgment the project generally retains large trees as appropriate for the forest type and is consistent with land management plan components.
- Temporary road construction for community protection zone activities (above) where the official's judgment the community protection objectives cannot be reasonably accomplished without a temporary road.
- Temporary road construction must be done in manner that minimizes the effects on surface disturbance and must be consistent with other land management plan components.
- Temporary road construction must be decommissioned upon completion of the project or expiration of the contract or permit, whichever is sooner. A road decommissioning provision will be required in all such contracts or permits and may not be waived.

Permissible Activities outside the CPZ:**(1) Timber cutting, sale, or removal:**

- a) To reduce hazardous fuel conditions outside the community protection zone where there is significant risk that a wildland fire disturbance event could adversely affect an at-risk community or municipal water supply system. A significant risk exists where the history of fire occurrence, and fire hazard and risk, indicate a serious likelihood that a wildland fire disturbance event would present a high risk of threat to an at-risk community or municipal water supply system;
- b) To improve threatened, endangered, proposed, or sensitive species habitat;
- c) To maintain or restore the characteristics of ecosystem composition, structure, and processes;
- d) To reduce the risk of uncharacteristic wildland fire effects;
- e) For personal or administrative use, as provided for in 36 CFR 223;
- f) Where incidental to the implementation of a management activity not otherwise prohibited by this subpart; or
- g) In a portion of an Idaho Roadless Area designated as Backcountry/Restoration that has been substantially altered due to the construction of a forest road and subsequent timber cutting. Both the road construction and subsequent timber cutting must have occurred prior to:
 - (2) Any timber cutting, sale or removal actions authorized pursuant to paragraph (ii) through (v) shall be approved by the Regional Forester and limited to situations that, in the Regional Forester's judgment:
 - (i) Maintains or improves one or more of the roadless characteristics over the long-term;
 - (ii) Maximizes the retention of large trees as appropriate for the forest type to the extent the trees promote fire-resilient stands; and
 - (iii) Is consistent with land management plan components as provided.

(2) Road Construction and Reconstruction:

The Regional Forester may approve temporary road construction or road reconstruction to reduce hazardous fuel conditions outside a CPZ where in the Regional Forester's judgment the circumstances set out below exist. Temporary road construction or road reconstruction to reduce hazardous fuel conditions under this provision will be dependent on forest type and is expected to be infrequent:

- (i) There is a significant risk that a wildland fire disturbance event could adversely affect an at-risk community or municipal water supply system. A significant risk exists where the history of fire occurrence, and fire hazard and risk, indicate a serious likelihood that a wildland fire disturbance event would present a high risk of threat to an at-risk community or municipal water supply system.
- (ii) The activity cannot be reasonably accomplished without a temporary road.
- (iii) The activity will maintain or improve one or more roadless characteristics over the long-term.
 - Prohibits road construction/reconstruction to access new mineral leases, but permits surface use and occupancy if allowed in the land management plans.

The purpose of the Community Protection Zone (CPZ) is to enable the necessary flexibility for protection of communities on the edges of Roadless areas from wildland fire. The CPZ has a geographic definition set forth in the Healthy Forest Restoration Act (HFRA) standards for Wildland-Urban Interface (WUI) lands, defined in section 101(16)(B). This section defines WUI as:

- (i) an area extending one-half mile from the boundary of an at risk community;
- (ii) an area within one and one-half 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; or

Significant Risk is a natural resource condition threatening a community or municipal water supply system. Its use in this preferred alternative is based on the 2003 Healthy Forests Restoration Act. The Department and the State of Idaho believe that reducing significant risks before they become imminent threats to local communities and their water supplies lets the Forest Service to be a good neighbor to adjacent landowners and communities by assuring continued forest health and protection of life and property. There will probably be only a limited number of projects based on specific requirements for these activities, funding limitations and mitigation measures needed to protect other resources. Not every acre at significant risk will be treated.

General Forest, Rangeland & Grassland (MA6)

Permissible Activities:

- Timber cutting and road construction when consistent with the applicable land management plan components.

Prohibits:

- Road construction/reconstruction to access new mineral leases (other than phosphate); but permits surface use and occupancy if allowed in the land management plans.

Forest Plan Special Areas (MA2, 3, 4 and 7)

These lands include special areas, wild and scenic rivers, research natural areas, and primary recreation areas (FEIS, Appendix Q, Table Q-1). These areas would be managed under the guidance provided in the applicable land management plan.