CHAPTER 1. PROJECT DESCRIPTION

1.1 Introduction

Large, intense wildfires during the early part of the 20th century occurred across much of the South Fork Deep Creek watershed. Forested stands that developed after those fires were uniform in age and structure over thousands of acres. Extreme competition for water, light, and nutrients, and an absence of disturbance, has characterized growing conditions since the fires. Many forested stands in the watershed, therefore, lack the large tree component that historically existed prior to the fires.

Timber harvest in the South Deep project area was initially proposed in 1998 as a research project, to examine the economic viability of harvest of small-diameter trees, known as "Creating Opportunities" or CROP. Commercial harvest units were added to treat forest health and forest stand structure concerns, and to generate a timber sale to support the local economy. With the advent of the National Fire Plan and associated legislation (from 2000 to 2003), treatments to reduce fuels in wildland/urban interface areas were also identified. About 3,490 acres of the project area meet criteria for identified wildland/urban interface area. The initial CROP research was completed in other areas and was dropped from the proposal. The current proposal includes fuels reduction treatments, precommercial thinning, commercial timber harvest to meet forest health concerns and to provide timber volume for the local economy, and an area for post-and-pole cutting.

The South Deep Management Project has the potential to meet multiple resource objectives through integrated vegetative treatments. The proposed activities must be considered within the framework of protecting wildlife, sensitive plant, hydrologic, soil, visual, heritage, and range resources, discouraging the introduction and spread of noxious weeds, and answering local, regional, and national public concerns.

1.2 The South Deep Project Area[1]

1.2.1 Legal Description

The South Deep Project Area lies about 15 air miles northeast of Colville, Washington, which is the County Seat for Stevens County. The Project Area includes the following sections (Table 1-1).

Table 1-1. South Deep Watershed and Project Area Sections

Township and Range[2]	Sections[3]
T 36 N, R 41 E	**1-4, 10, 11**
T 37 N, R 40 E	**1-4, 9-15, 22-24**
T 37 N, R 41 E	**1-4**, 5, **6-7**, 8, **9-29, 33-36**
T 37 N, R 42 E	**6-7**, 18, **30-31**
T 38 N, R 41 E	**3**, 4, 9, **10, 11, 14, 15**, 16, **21-28, 33-35,** 36
T 38 N, R 42 E	**29-32**

[1] A distinction between the terms *project area* and *watershed* needs to be recognized. The South Deep *watershed* includes lands outside the administrative boundary of the Colville National Forest. The South Deep *project area* is limited to the portion of the South Deep *watershed* that is located within the administrative boundary of the Colville National Forest (see map on page 1-4)
[2] Willamette Meridian.
[3] Sections in the Project Area that include National Forest System lands are listed in **boldface**.

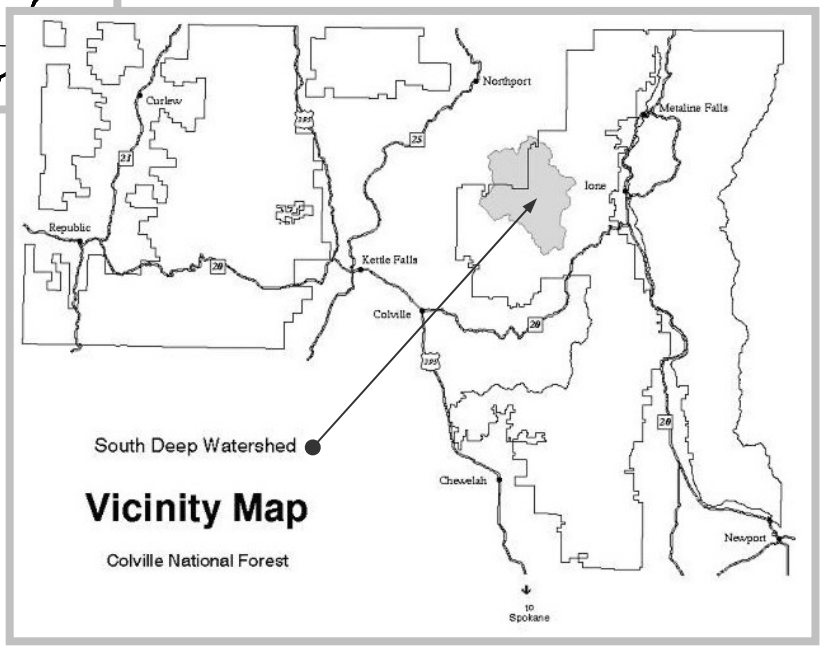
T 38 N, R 40 E, Sections 12-15, 22-27, 34-36; T 38 N, R 41 E, Sections 5, 7, 8, 17-20, 29-32 are in the South Fork Deep Creek watershed. Figures 1-2 and 1-3 show the general location of the South Fork Deep Creek watershed including that part of the watershed that falls outside the boundaries of the Colville National Forest and the South Deep Project Area.

1.2.2 Land Ownership Statistics

There are 50,192 acres within the South Fork Deep Creek watershed. Approximately 38,346 acres in the watershed are within the boundaries of Colville National Forest, and within the South Deep Project Area. Approximately 12,575 acres of the Project Area are within Pend Oreille County and 25,770 acres are within Stevens County. Table 1-2 (page 1-8) displays the land ownership in the project area and South Fork Deep Creek watershed.

Figure 1-1. Project Location Map

Figure 1-2. Vicinity Map



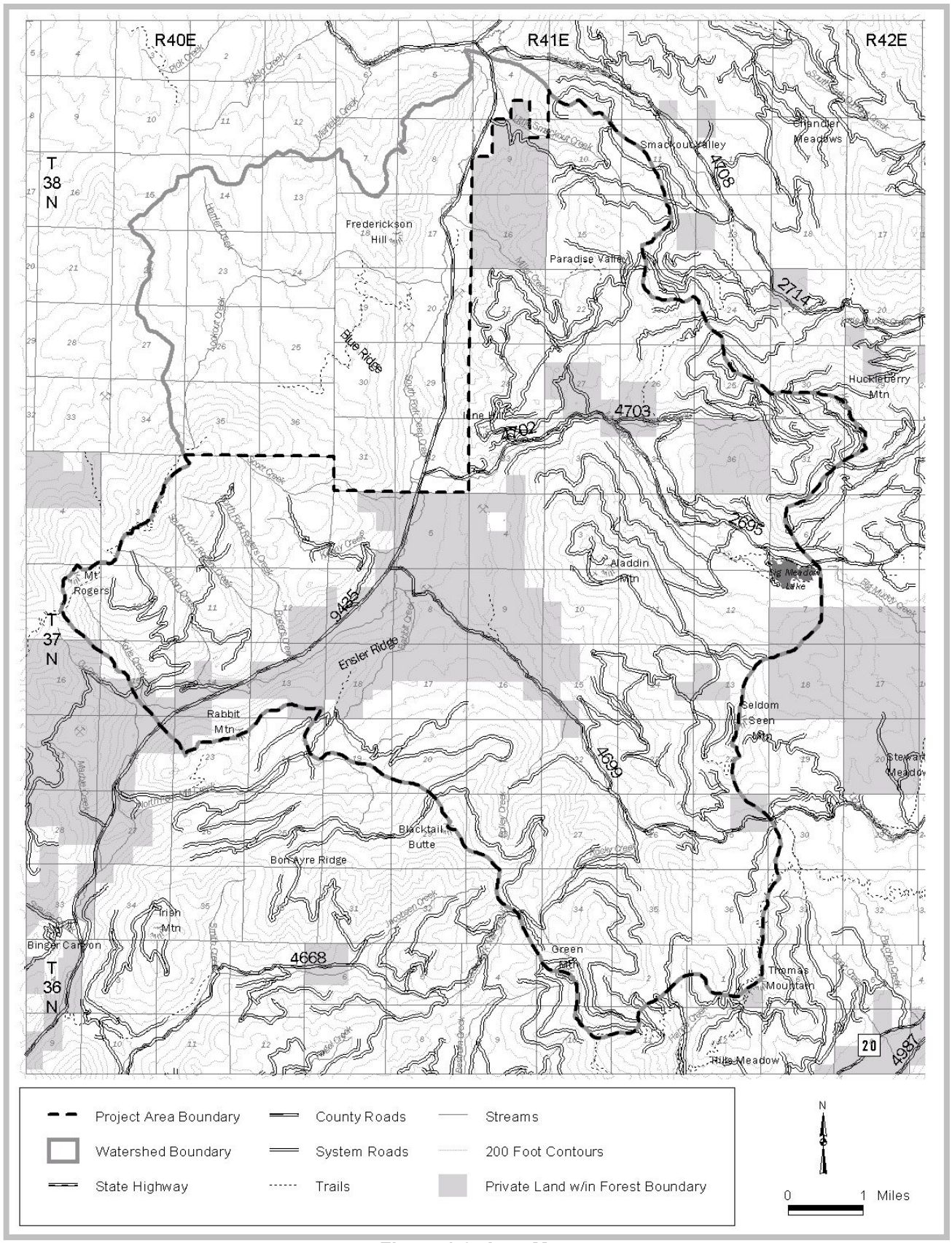


Figure 1-3. Area Map

Table 1-2. Land Ownership in the South Deep Project Area

	BLM	WA State	Private	Colville NF	Total
Within the FS Boundary	0	1,524	7,082	29,740	38,346
Within the Watershed	362	2,150	17,940	29,740	50,192

1.2.3 Existing Transportation System

This section describes the transportation system within the Colville National Forest administrative boundary. The *Roads Analysis Report for the South Deep Management Project* discusses the road system for the entire watershed; this document is available in the South Deep project file at the Three Rivers Ranger District office.

The main access route into the project area is the Aladdin Highway, County Road #9435, which runs roughly north/south through the analysis area. County roads C.4699 (Rocky Creek) and C.4702 (Meadow Creek) take off from the Aladdin Route to the east. The Rogers Mountain Road, Forest Service Road 7000500, is the main access to National Forest lands on the west side of the project area (Figure 1-3).

There are no inventoried roadless areas within, or adjacent to, the South Deep project area. The area was homesteaded and explored for mineral extraction around the turn of the century and logged after the large scale fires in the early part of the 1900's. There is evidence of human use and habitation, including old stumps and old road templates, throughout the project area.

Approximately 17 miles of *unclassified roads*[4] were identified and mapped during the South Deep Road Analysis process. It was determined that they are not needed for this project. There are additional old road templates within the analysis area but there is not enough information to map them.

Based on the Forest Service's data for travel routes and other constructed features (INFRA database), there are 194 miles of *classified roads*[5]in the South Deep project area, of which 163 miles (84%) are National Forest System roads; the others are county and private roads. Of the Forest Service roads, 75 miles (46%) are closed to vehicular travel.

Road Maintenance Levels

Forest Service classified roads are maintained according to assigned Road Maintenance Levels (1-5). Roads in the South Deep project area are assigned to Maintenance Levels 1-3 (Table 1-3), which are described below. There are no roads within the South Deep analysis area at Maintenance Levels 4 or 5.

Maintenance Level 1

Assigned to intermittent service roads during the time they are closed to vehicular traffic. The closure can be seasonal but is usually one year or longer. Basic custodial maintenance and monitoring is performed to keep damage to adjacent resources 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 natural closure of a road may occur at this level.

[4] *Unclassified roads* are roads that are **not intended to be part of, and are not managed as part of, the National Forest transportation system such as unplanned roads, off-road vehicle tracks, or abandoned travelways. (36 CFR 212.1)**

[5] *Classified roads* are roads within National Forest System lands planned or managed for motor vehicle access including state roads, county roads. (36CFR 212.1).

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 to vehicle traffic. However, while being maintained at Level 1, they are closed to vehicular traffic, but may be open and suitable for non-motorized uses. There are about 75 miles of Forest Service Level 1 roads in the South Deep project area.

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. This is the minimum level required for commercial product haul to occur. There are 74 miles of Forest Service Level 2 roads in the South Deep area.

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 at this level are typically low speed, single lane with turnouts and spot surfacing. Some roads may be fully surfaced with either native or processed material. There are 10 miles of Forest Service roads at this maintenance level within the South Deep analysis area.

Table 1-3. Existing Classified Roads within the South Deep Project Area

	Forest Service	Private	County	All
Closed Roads (Maintenance Level 1)				
	75.0	0.1	0	75.1
Open Roads				
Maintained for High Clearance Vehicles (Maintenance Level 2)				
	73.7	4.8	0.0	78.5
Maintained for Passenger Car Use (Maintenance Level 3)				
	10.3	0.0	25.7	35.7
Total Open Roads	84.0	4.8	25.7	118.8
Total Closed Roads	75.0	0.1	0.0	75.1
Total Classified Roads	159.0	4.9	25.7	193.9

On the Colville National Forest, all of the Operational Maintenance Level 3-5 roads are maintained annually; 25% of Maintenance Level 2 and 16% of Maintenance Level 1 roads are maintained annually by the Forest Service. An additional 5% of forest roads are maintained through stewardship, timber sale, and other permits and contracts.

1.3 Management Direction

1.3.1 Forest Plan

The Land and Resource Management Plan for the Colville National Forest (Forest Plan), December 29, 1988, provides the management direction for the activities proposed in the South Deep Management Project. The Forest Plan includes amendments that are also management direction for this project. They are:

Regional Forester's Forest Plan Amendment #2 entitled *Revised Continuation of Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales* (Lowe, 1995). This amendment replaced the interim ecosystem standard and the interim wildlife standard from Regional Forester's Forest Plans Amendment #1 (Lowe, 1994). In this interim direction, the Regional Forester directed the National Forests in eastern Oregon and eastern Washington to maintain and/or enhance Late and Old Structural Stages in stands subject to timber harvest. Forest Plan Amendment #2 is hereafter referred to as the "Eastside Screens".

The *Inland Native Fish Strategy* (Salwasser, Bosworth, and Lowe, 1995) replaced the interim riparian standard from Regional Forester's Forest Plans Amendment #1. The *Inland Native Fish Strategy* is often referred to as "INFISH Direction."

Regional Forester's October 11, 2005 amendment to Forest Plans in Region 6, *Preventing and Managing Invasive Plants* (Preventing and Managing Invasive Plants Record of Decision, Appendix 1-1) includes invasive plant prevention and treatment/restoration standards intended to help achieve stated desired future conditions, goals, and objectives.

The activities proposed under this project comply fully with the Forest Plan as amended. Forest-wide standards and guidelines provide overall management direction, and are described in the Forest Plan on pages 4-35 to 4-60.

Forest Plan Management Areas

The Forest Plan established thirteen unique management areas across the Forest. Management Areas are defined by the Forest Plan as units of land to which a prescription or set of prescriptions is applied in order to achieve a particular management objective.

The management area prescriptions define the type and intensity of resource activities that are or are not permitted within that management area. The Forest Plan identifies six different management areas within the South Deep Management Project planning area (see Table 1-4 and Figure 1-4).

Table 1-4. Management Areas: Emphasis and Goals

Mgt. Area Emphasis	Management Area Goal	Acres	% of NFS Lands
MA-1: Old Growth Dependent Species Habitat	Provide essential habitat for wildlife species that require old growth forest components, and contribute to the maintenance of diversity of wildlife habitats and plant communities.	1,326	4%
MA-3A: Recreation	Provide roaded and unroaded recreation opportunities in a natural appearing setting.	1,458	5%
MA-5: Scenic/Timber	Provide a natural appearing foreground, middle, and background along major scenic travel routes while providing wood products.	5,151	17%
MA-6: Scenic/Winter Range	Provide a natural appearing foreground, middle and background along major scenic travel routes while providing for winter range management.	2,354	8%
MA-7: Wood/Forage	Manage to achieve optimum production of timber products while protecting basic resources.	18,028	61%
MA-8: Winter Range	Meet the habitat needs of deer and elk to sustain carrying capacity at 120% of the 1980 level, while managing timber and other resources consistent with fish and wildlife management objectives.	1,423	5%
	Total =	29,740	100

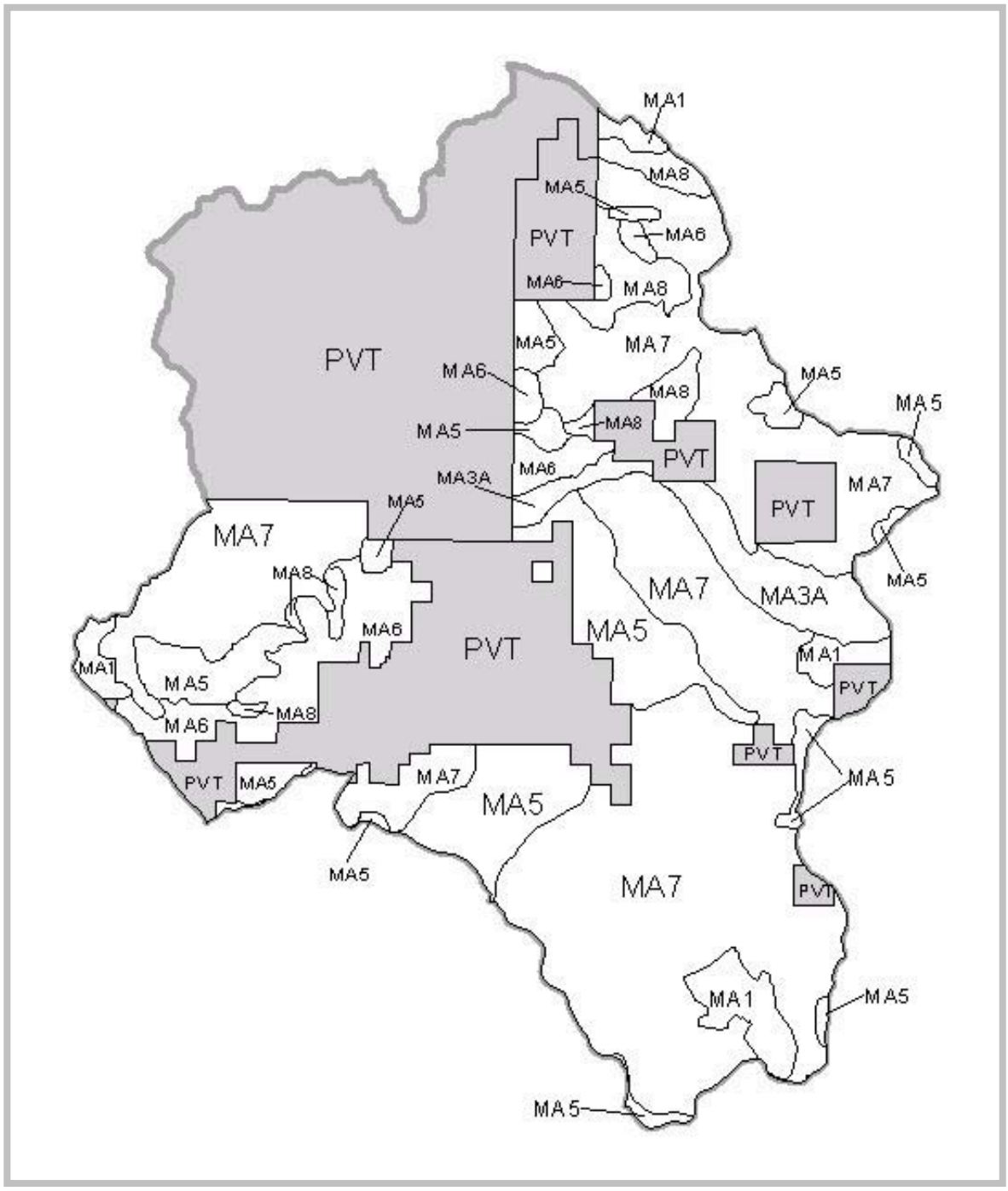


Figure 1-4. Management Areas

Forest Plan Management Requirement Areas for Old Growth Indicator Species

During the development of the Forest Plan, the Regional Forester directed that specific management requirement areas be established to address the habitat needs of wildlife species dependent on old growth/mature forest. Indicator Species dependent on old growth/mature forest specifically addressed by the Forest Plan were barred owl, pileated woodpecker, pine marten, and northern three-toed woodpecker. The following text briefly describes the various management requirement areas (also referred to as Management Requirement Units) for these species in the Forest Plan, and their status in the South Deep project area. Maps and site-specific discussion for the South Deep project area are located in the Environmental Consequences--Wildlife section of this Environmental Assessment. See Forest Plan Appendix K for more discussion of this topic.

Barred Owl habitat needs were met with Management Area 1 areas. (See Figure 1-4 for locations of MA-1 areas).

- No modifications to MA-1 areas are proposed in the South Deep project area.

For pileated woodpecker, the minimum requirement is to have 300 acres of old-growth or mature stands per pair nesting area, and an additional 300 acres of foraging habitat, preferably as a contiguous unit. Forest Plan direction states that these areas shall be distributed with one unit every five miles. Within the nesting area, the mean average of more than or equal to 2 hard snags[6]/acre (more than or equal to12 inches in diameter) should be maintained, with 45 of these 600 snags having more than 20" diameter. Within the feeding area, more than or equal to 2 hard snags (more than 10 inches in diameter)/acre are to be maintained.

- In the South Deep Management Project, one Pileated Woodpecker Management Areas would be modified. (See Figure 4-1, section 4.2.5 Wildlife Management Indicator Species.)

To maintain viable pine marten populations, the management requirements were set to distribute one marten habitat unit, at least 160 acres in size per 4,000-5,000 acres, with a spatial separation of approximately 3 miles. For three-toed woodpeckers, the requirement of one unit larger than 75 acres per 2,000-2,500 acres, with a spatial separation of approximately 2 miles, was determined to be sufficient for maintaining continuity of a viable population. To accomplish both of these objectives on the Colville National Forest, three-toed woodpecker management requirement areas were combined with pine marten management requirement areas and distributed on a grid system with one unit greater than 160 acres in size every 2-2.5 miles. This strategy provides for a greater number of marten management requirement units across the Colville National Forest than required by the Regional Forester, reduces the average dispersal distance between them, and allows for greater marten movement across the landscape. By providing areas that are large enough to support at least 2 pair of three-toed woodpeckers, demographic viability appears to be more certain. The snag densities prescribed for marten habitat also meet the management requirements for three-toed woodpeckers.

- In the South Deep Management Project, three Pine Marten Management Areas would be modified. (See Figure 4-1, Section 4.2.5 Wildlife Management Indicator Species.)

Transportation Management Direction

The Forest Plan provides forest-wide standards for transportation (Forest Plan pages 4-55 through 4-56). The standards include:

[6] A **snag** is a standing dead tree or the standing portion of a dead tree.

- Provide and maintain public road and trail access to National Forest System lands. User safety will be the primary emphasis.
- Road construction and reconstruction standards will be the minimum necessary to meet user and resource needs.
- Implement seasonal or long-term road and area closures where necessary to protect public safety, protect resource values, prevent damage to the road system, comply with cost-share agreements, protect non-public facilities, and reduce road maintenance costs.
- New single-purpose Service Level D roads (i.e., roads constructed for a timber sale) will be closed after the resource activity is completed unless the environmental analysis requires keeping them open.

On January 12, 2001 the Forest Service adopted a Transportation System Final Administrative Policy (66 FR 3206) that requires the forest to:

- Address both access benefits and ecological costs of road-associated effects.
- Give priority to reconstructing and maintaining needed roads and decommissioning unneeded roads, or, where appropriate, converting them to less costly and more environmentally beneficial uses.
- Use a road analysis process to ensure that road management decisions are based on identification and consideration of social and ecological effects.
- Add new roads only where resource objectives and benefits are clearly demonstrated and where long-term funding obligations have been carefully considered.

1.3.2 Other Direction

In addition to direction found in the Forest Plan, there are also policies that serve as overriding guidance for Forest Service management activities. Several of these in the past few years have attracted national attention. The most notable have been inventoried roadless area management, transportation planning, the *National Fire Plan*, and watershed analysis.

Inventoried Roadless Areas

The Department of Agriculture published *Special Areas: State Petitions for Inventoried Roadless Area Management,* or "Final Rule," in the Federal Register (May 13, 2005 Volume 70, Number 92.) The adoption of the Final Rule establishes a petitioning process that provides Governors an opportunity to seek establishment of, or adjustment to, management requirements for National Forest System inventoried roadless areas within their states. Until state and federal agencies complete the process as described in the final rule, protection and management of inventoried roadless areas will remain in effect. The administrative policy published in the Federal Register on July16, 2004 states that, until a land management plan is revised or an amendment is adopted that considers their protection and management, inventoried roadless areas shall, as a general rule, be managed to preserve their roadless characteristics. The South Deep planning area does not include any inventoried roadless areas or other lands which would be included under this rule.

Transportation Planning

The National Forest Roads and Trails Act of 1964 provides the underlying basis on which the forest road system was developed. That act declared that an adequate system of roads and trails within and near the National Forests is essential if increasing demands for timber, recreation, and other uses are to be met. The Forest and Rangeland Renewable Resources Planning Act of 1974 (as amended) provides additional direction on the development of a forest road system.

In August 1999, the Washington Office of the US Department of Agriculture, Forest Service published Miscellaneous Report FS-643 titled "*Roads Analysis: Informing Decisions about*

Managing the National Forest Transportation System." The objective of analyzing the road system in the South Deep Project Area was to provide the Decision Maker with critical information to develop road systems that are safe and responsive to public needs and desires, are affordable and efficiently managed, have minimal negative ecological effects on the land, and are in balance with available funding for needed management actions. In October 1999, the agency published Interim Directive 7710-99-1 authorizing units to use, as appropriate, the road analysis procedure embodied in FS-643, to assist land managers making major road management decisions. In June 2000, the Colville National Forest adopted the *USFS Region 2, Road Analysis Guide* for use as a supplement to Appendix 1 of FS-643. On January 12, 2001 the Forest Service issued the final National Forest System Road Management Rule. This rule revises regulations concerning the management, use, and maintenance of the National Forest Transportation System. Forest Service Manual (FSM) Washington Office Amendment 7700-2003-2 was issued on December 16, 2003. This directive outlines the objectives, policies, responsibilities, and requirements for analyzing transportation needs and issues and for documenting the transportation system. Guidance for conducting a roads analysis at the watershed/project scale is identified in Section 7712.13c.

The Colville National Forest Roads Analysis was completed in June of 2005. This forest scale roads analysis provides recommendations for road management as well as guidance for completing a project scale roads analysis. The original South Deep Roads Analysis was completed in 2002 and revised in 2006. The revised document kept the original analysis and format but used the recommendations from the Forest document where appropriate.

The 2002 *Roads Analysis for the South Deep Management Project (revised in 2006)* provided a set of possible issues and analysis questions. In addressing the issues and answering the questions, the Interdisciplinary Team provided the Responsible Official with choices concerning road system management. The product of an analysis is a report that documents the information and analyses used to identify opportunities and set priorities for future national forest road systems. Included in the report is a map displaying the known road system for the South Deep Project Area, and the management opportunities for each road or segment of road. The current transportation system was analyzed, including problem areas and future needs, and opportunities for decommissioning selected existing roads were identified. This report helped to identify one of the Key Issues in this environmental assessment.

The National Fire Plan

The National Fire Plan was recommended in a report to the President in September 2000 and subsequently adopted by the Forest Service in conjunction with other federal wildland management agencies and published in the Federal Register on November 9, 2000. The purpose of the plan is to:

- Improve the resilience and sustainability of forests and grasslands at risk
- Conserve priority watersheds, species, and biodiversity
- Reduce wildland fire costs, losses and damages
- Better ensure public and firefighter safety

Priorities for treatment are the wildland/urban interface, readily accessible municipal watersheds, threatened and endangered species habitats, and maintenance of existing low-risk areas. Wildland/urban interface areas are defined as areas where humans and their development meet or intermix with undeveloped wild areas that may be vulnerable to forest or rangeland fires. (See Figure 3-2, Wildland Urban Interface Boundary and Mapped Structures, in section 3.1.3). Uncontrolled fires moving from wildland areas into interface areas are becoming more common as more people move to rural settings and as fuels build up in wildland areas.

For the South Deep project, the wildland/urban interface boundary was delineated using a collaborative process; it is about 1.5 miles from clusters of structures, on average, and in most

places follows defensible features such as ridges and roads. The largest clusters of homes and structures are along the Aladdin Highway.

Treatments of wildland/urban interface areas, as well as use of prescribed fire for reduction of natural fuels, are included in both action alternatives and is a Key Issue for this project.

Watershed Analysis

Watershed analysis has never been a requirement for Colville National Forest, as it is for areas covered by the Northwest Forest Plan. However, it is considered to be a useful tool in identifying and prioritizing a program of work to improve watersheds. For that reason, the Forest Service conducted a watershed analysis (formally called Ecosystem Analysis at the Watershed Scale) for the South Fork Deep Creek watershed.

An interdisciplinary team consisting of Forest Service specialists was formed to monitor and assist the contractors. Chapters 1 through 4 of the *South Deep Creek Watershed Analysis* was completed by Shapiro and Associates, Inc., of Portland, Oregon, in association with David Evans and Associates, Inc., of Bellevue, Washington, in July 1999. These chapters included characterization of the watershed, identifying issues, comparing reference conditions and current conditions, and identifying findings for the identified issues. The Forest Service added a final summary chapter in 2002. This chapter reviewed the findings of the contract analysis team and identified management recommendations.

Recommendations of the Forest Service watershed analysis team include:

- Look for opportunities to manage stands dominated by small diameter trees, to decrease the risk of future widespread damage from insects and wildfire.
- Use [prescribed] fire on a landscape level to break up continuity and homogeneity of stand structures and compositions created by past fire exclusion, wildfire suppression, timber harvests, and other land use practices.
- Maintain patches of large diameter trees.
- Consider closing and/or decommissioning roads that are sediment sources, disrupt hydrologic function, or closely parallel riparian areas.
- Preserve major access routes to primary recreation sites (i.e. trailheads, concentrated use areas, and developed campgrounds).
- Carefully evaluate the need for new road construction or existing road reconstruction, and consider all methods for minimizing or avoiding such activities.
- Effectively close all new construction or reconstructed closed roads as soon as feasible after activities are complete.
- Retain or increase blocks of seclusion habitat (10 acres or larger) by either not building roads or by selectively closing roads.
- Adjust the location of MA-1 and MR areas [as needed], based on the current condition of stands that meet habitat requirements.
- Increase the forage to cover ratio in winter and summer range for ungulates where the ratio is less than optimum.
- Provide new transitory grazing range using timber harvest or prescribed fire to replace transitory range lost as areas of past timber harvest and fire revegetate.

1.3.3 Laws and Regulations

Each project must be in compliance with laws and other regulations. Project level analysis is subject to the *National Environmental Policy Act* and other applicable laws and regulations (Planning, FSM 1906.21, Amendment No. 1900-2006-1, January 31, 2006). The following is a partial list of laws to which any enacted project activities must adhere.

Organic Administration Act of June 4, 1897, (chapter 2, 30 Stat. 34-36)

Congress authorized the creation of what is now the National Forest System "to improve and protect" Federal forests. To carry out this mission, the USDA Forest Service is vested with broad authority "to regulate [the Forests] occupancy and use and to preserve the forests therein from destruction" (16 USC 551). In this act, Congress provided further direction and management authority for these forest reserves and reaffirmed its intent to provide for sustainable protection and use of these forest reserves. This law provided for the establishment of forest reserves "to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States…" (16 USC 475).

Multiple-Use Sustained-Yield Act of 1960 (MUSYA)

Congress again affirmed the application of sustainability to the broad range of resources over which the U. S. Forest Service has responsibility. MUSYA confirms the U. S. Forest Service's authority to manage the national forests and grasslands "for outdoor recreation, range, timber, watershed, and wildlife and fish purposes," (16 USC 528), and does so without limiting the U. S. Forest Service's broad discretion in determining the appropriate resource emphasis or levels of use of the lands of each national forest and grassland.

The National Forest Management Act of 1976 (NFMA) October 22, 1976 (P.O. 94-588, 90 Stat. 2949, as amended)

NFMA requires the U. S. Forest Service to manage the National Forest System lands according to land and resource management plans that provide for multiple-uses and sustained yield in accordance with MUSYA (16 USC 1604(e) and (g)(1)). In developing and maintaining these plans, NFMA calls for "integrated consideration of physical, biological, economic and other sciences" (16 USC 1604(b). Projects must be consistent with NFMA, although the instrument for NFMA consistency is the Forest Plan, which has already been proven consistent with NFMA. So, projects consistent with the Forest Plan will generally be consistent with NFMA.

The National Environmental Policy Act of 1969 (NEPA), as amended (Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982)

NEPA was enacted "to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man, and enrich the understanding of the ecological systems and natural resources important to the Nation" (42 USC 4321). Under NEPA, all U. S. Forest Service proposals for major Federal actions significantly affecting the quality of the human environment must include detailed statements of the environmental effects and alternatives to proposals (42 USC 4332(C)).

The Preservation of American Antiquities Act (1906), and the National Historic Preservation Act (1966), and the American Indian Religious Freedom Act (1978)

To insure that the existing cultural resources and known tribal interests will be protected during implementation of this project, federal agencies must consider cultural resources as part of all licensing, permitting, and funding decisions. As part of that process, the Forest Service must consult with the Washington State Department of Archaeology and Historic Preservation (DAHP) to assure that cultural resources are identified and to obtain the formal opinion of the DAHP on each site's significance and the impact of its action upon the site.

The Endangered Species Act of 1973

One of the purposes of the Endangered Species Act is “to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved…” (16 USC 1531(b)). Effects of actions proposed in this project upon threatened, endangered and sensitive plant and animal species must be consistent with Forest Service Manual 2640. Consultation with the US Fish and Wildlife Service concerning threatened and endangered species must be complete by the time the Decision Notice/Finding of No Significant Impacts is signed for this project (16 USC 1536(a)(1)).

The Clean Air Act as amended 1990

The primary objective of this Act is to establish Federal standards for various pollutants from both stationary and mobile sources and to provide for the regulation of polluting emissions via state implementation plants. Some amendments are designed to prevent significant deterioration in certain areas where air quality exceeds national standards, and to provide for improved air quality in areas which do not meet Federal standards ("non-attainment" areas). Federal facilities are required to comply with air quality standards to the same extent as nongovernmental entities (42 U.S.C. 7418). Effects of actions proposed in this project must be consistent with the Clean Air Act and state monitoring.

The Clean Water Act, as amended 2002

The Clean Water Act requires consultation with the Corps of Engineers (404 permits) for major wetland modifications. Effects of actions proposed in this project must be consistent with the Clean Water Act and state monitoring. The project must be consistent with the Memorandum of Agreement with the State Department of Ecology that was signed in December 2000.

1.4 Purpose and Need

The South Deep Management Project is proposed to meet three specific purposes and needs. Alternatives are required to meet these identified purposes and needs in order to be considered in detail in the environmental assessment. Any alternative that failed to meet these purposes and needs was deemed to be outside the scope of the analysis.

Hazardous Fuels

Purpose: Break up the existing fuel continuity on National Forest System lands to reduce the risks of stand replacement and uncharacteristically large wildfires.

Need: There is a need to reduce hazardous fuels[7] (ground fuels, ladder fuels, and forest crown continuity), for the purpose of reducing the risk of large, stand-replacing fires. The effect of reducing the risk of large, stand-replacing fires would be to: 1) decrease the probability that a future wildland fire would develop into, or be sustained as a stand replacing or crown fire[8];

2) increase the ability to provide for public and firefighter health and safety during a wildland fire;

and 3) increase the effectiveness and efficiency of protecting property within the WUI[9] (Wildland/Urban Interface)[10].

Discussion: Wildfires are becoming increasingly expensive, dangerous to firefighters, and threatening to wildlife habitat, beneficial uses of water, and adjoining private land and property. During the past 75 years, fire suppression[11] has resulted in increased ground and ladder fuel conditions, and increased tree-crown continuity in portions of the South Deep project area. As forest fuels have increased over time, the potential for high intensity crown fires has also increased. This includes biophysical environments[12] that can support low-severity surface fires. Therefore, there is a need to start the process of reversing this dangerous and expensive trend by reducing hazard-fuels. Over the long-term, hazard fuels reduction will offset and eventually reduce escalating fire suppression costs and create a more "fire safe" forest environment.

The health, resilience and productivity of fire-adapted ecosystems rely on periodic burning at ecologically appropriate frequencies. Today, many of the most serious wildfire threats and forest health issues occur in these fire-adapted ecosystems. Reducing forest fuels in these fire dependant ecosystems can make them more resilient to wildfires.

The consequence of deferral is high: allowing fire-adapted forests to develop additional ladder and crown fuels greatly increases crown fire risk (initiation and spread). The cost of fuel reduction and maintenance burning can be substantial; yet without fuel reduction treatments, fire

[7] 10-Year Comprehensive Strategy Implementation Plan, (Secretaries of Agriculture and Interior, Western Governor's Association, National Association of State Forester's, National Association of Counties, and Intertribal Timber Council, 2002).

[8] A **crown fire** is a fire that is sustained in the tree canopy. It requires a canopy that has enough density to provide a continuous load of fuel above the ground. Trees that are crowded together with interlocking branches are particularly susceptible to crown fire. A crown fire exhibits long flame lengths and showers of embers that contribute to spot fires ahead of the main fire. Crown fires are beyond the ability of firefighters to effectively suppress. Attack with aerial retardants are generally not recommended due to their limited success. Retardant cannot penetrate heavy tree canopy, so the fire continues underneath the canopy as a surface fire until the canopy ignites and takes off again.

[9] **WUI** (Wildland-Urban Interface) includes those areas of resident human populations at imminent risk from wildfire, and human developments having special significance. These areas may include critical communications sites, municipal watersheds, high voltage transmission lines, observatories, church camps, scout camps, research facilities, and other structures that if destroyed by fire would result in hardship to communities. These areas encompass not only the sites themselves, but also the continuous slopes and fuels that lead directly to the sites, regardless of the distance involved.

[10] Cohesive Strategy Priority. (USDA Forest Service, 2000) Salwasser, Hal; Bosworth, Dale N.; Lowe, John E.; 1995.

[11] The term **fire suppression** refers to the act of putting out forest fires.

[12] **Biophysical environments** are made up of grouped plant associations based on similarity of disturbance regime characteristics. For example, landscape settings with low severity fire regimes (e.g., ponderosa pine or Douglas-fir plant associations) are distinguished from those with high severity fire regimes (e.g., subalpine fir plant associations). Biophysical environments are described by temperature and moisture regime and characteristic **late-seral** vegetation (e.g., "Warm, Dry, Douglas-fir Shrub" biophysical environment).

Seral refers to the stages that plant communities go through during succession. Developmental stages have characteristic structure and plant species composition. **Early seral** refers to plants that are present soon after disturbance or at the beginning of a new successional process (such as seedling or sapling growth stages in a forest); **mid seral** in a forest would refer to pole or medium sawtimber growth stages; **late or old seral** refers to plants present during a later stage of plant community succession (such as mature and old forest stages).

suppression costs, public resource losses, private property losses, and environmental damages are expected to be significantly greater over time.

Objective:

1. Reduce fuels hazard within the wildland/urban interface.
    - *Measurements*: Reduced tons of surface fuels in proposed treatment areas and total acres treated in wildland urban interface areas.

Forest Health

Purpose: Improve landscape forest health on National Forest System lands through active management.

Need: There is a need to remove diseased trees, reduce stand density, and modify tree-species composition for the purpose of improving forest health[13]. This would have the effect of 1) improving tree growth, 2) reducing tree and stand susceptibility to damaging insects and diseases, and 3) improving the distribution of forest stand structures[14] across the landscape.

Discussion: The 1988 *Land and Resource Management Plan, Colville National Forest* (Torrence 1988), as amended (Forest Plan) directs that the Forest Service promote tree growth, have reduced insect and disease levels, and have stand densities that will sustain wood fiber production (Forest Plan pages 4-2, 4-18, 4-64, 4-65). For Forest Plan Management Areas[15] 3A, 5, 6, 7, and 8, the Forest Plan directs that insect and disease outbreaks be prevented or suppressed when Management Area values are threatened (Forest Plan pages 4-79, 4-93, 4-94, 4-100, 4-101, 4-104, 4-108).

Currently, the South Deep project area has many acres of timber that are crowded and highly susceptible to a variety of pathogens. These include bark beetles, defoliating insects, dwarf mistletoes, and root diseases. As a result of these and other forest pathogens, significant tree mortality across the South Deep project area is occurring in the short-term, and without stand improvements, there is a high probability of it continuing and perhaps increasing in the long-term. Stand treatments are needed to reduce susceptibility to continuing insect and disease-caused mortality over the longer-term.

Many areas within the South Deep project area that were severely burned in 1929 have regenerated into dense, stagnant stands of lodgepole pine, western larch, Douglas-fir, and western red cedar. Almost 7,900 acres of the project area are vegetated with these kinds of stands. Regeneration and thinning treatments in these stands would remove this stagnant vegetation and allow more structurally diverse stands to eventually develop on these sites.

Objectives:

1. Have all stands in Forest Plan Management Areas 5 and 7 growing well, with low insect and disease susceptibility. Have stands in other Forest Plan Management Areas in a condition that will meet management objectives.
    - *Measurements*: Acres treated to improve forest health.

[13] A **Healthy Forest** is defined as the condition in which the forest (trees, stands, and forested landscape) meets the desired conditions described in the Forest Plan.

[14] A **Structural Stage** is a stage in development of a vegetation community. Examples of structural stages include stand initiation, stem exclusion, understory re-initiation, multi-stratum without large trees, multi-stratum with large trees, and single-stratum with large trees.

[15] A **Forest Plan Management Area** is a unit of land allocated to emphasize a particular resource, based on the capability of the area.

Local Economy

Purpose: Provide wood fiber for local mills and the American public.

Need: There is a need to produce sawlogs and other wood products for the purpose of helping sustain local sawmills and communities.

Discussion: The Forest Service has a multiple-resource mission that includes provision for a sustainable supply of wood from the National Forests. The Organic Administration Act of June 4, 1897 states that one of the purposes of the National Forests is "to furnish a continuous supply of timber for the use and necessities of the citizens of the United States." The Multiple-Use Sustained Yield Act of 1960 reinforced the Organic Act by stating: "It is the policy of the Congress that the National Forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes."

The Forest Plan directs that wood products be provided (Forest Plan page 4-2, 4-63, 4-65, and Forest Plan Record of Decision page 4). Forest Plan Management Areas 5 and 7 have a management goal of providing wood products (Forest Plan pages 4-93 and 4-101), and Management Areas 3A, 6, and 8 permit scheduled timber harvest (Forest Plan pages 4-78, 4-99, and 4-107). Over 60% of the National Forest System lands in the project area are designated for production of timber products while protecting basic resources. An additional 35% of these lands are in management areas where timber harvest is permitted while providing protection for big game habitat and/or meeting the need for natural appearing landscapes. The Forest Plan Record of Decision recognized the importance of providing wood products to local economies (Forest Plan page 3-1, and Forest Plan ROD page 17).

Objectives:

1. Sawtimber and other forest products are available to local markets.
    - *Measurements*: Estimated board feet of sawtimber offered for sale, economic return, and jobs provided.

1.5 Decision Framework

Given the purpose and need, the Responsible Official (the Colville National Forest Supervisor) will review all alternatives and the environmental consequences in order to make the following decisions concerning the South Deep Management Project:

- Whether or not to implement vegetation management in the form of timber harvest, and associated post-sale site-preparation, planting, and slash disposal;
- Whether or not to implement vegetation management in the form of pre-commercial thinning;
- Whether or not to implement vegetation management in the form of prescribed fire;
- Whether or not to reconstruct selected existing roads;
- Whether or not to construct new roads;
- Whether or not to close selected existing roads;
- Which mitigation measures will be applied;
- Where to implement any approved activities; and
- When to implement any approved activities.

1.6 Proposed Action

On January 2, 2002, the Three Rivers Ranger District of the Colville National Forest published a proposal in the Federal Register to implement a variety of management activities on National Forest System land within the South Fork of the Deep Creek Watershed. Below are the proposed activities that were intended to broadly meet the purpose and need for the project.

- Managing approximately 6,000 acres of timbered stands via stand improvement thinning, commercial thinning treatments, stand regeneration, salvage, and associated post-harvest site preparation and tree planting. This included constructing 15 miles of new specified roads.
- Reducing standing and downed forest hazard fuels through use of prescribed fire and mechanical means.
- Promoting wildlife habitat for selected species, and protecting wildlife habitat for all threatened, endangered, and sensitive species.
- Research studies concerning soil compaction, erosion, silviculture, harvesting systems, and use of a computerized landscape management system were included in the project design.

Public comment, not only for this project but for numerous other projects from the Colville National Forest to the National level, indicates that new road construction and clearcutting are highly controversial practices. In response to these comments, the proposed action was dropped during the environmental analysis process and new action alternatives were proposed with less new road construction and reduced regeneration harvest treatments. This is discussed further in section 2.3 Other Alternatives Considered and Eliminated from Detailed Study.

1.7 Public Involvement

The initial effort of the public involvement process came about prior to the proposed action being developed. The agency held several “Collaborative Learning” meetings hosted by Washington State University. A field session in the South Deep Project Area was held on October 3, 1998, and a follow-up meeting was held in Colville on April 25, 1999. The Collaborative Learning sessions resulted in six comment responses from the public and more than twice that number from interested Forest Service employees who attended the sessions in an effort to listen to what interests and concerns the public held for the South Fork of Deep Creek watershed.

The interdisciplinary team that had been formed during the writing of the watershed analysis was reconvened in the late summer of 2001 to begin the process of developing a proposed action that could be brought before the public as part of the formal scoping process. The task was completed in the late fall of 2001.

The Notice of Intent was published in the Federal Register on January 2, 2002. The Notice of Intent asked for public comment from January 2, 2002 until February 1, 2002, on the Forest Service proposed action for the South Deep Project Area. A notice of the scoping period was placed in the newspaper of record, the Colville Statesman Examiner on January 2, 2002. Scoping letters were sent to individuals and organizations on the master mailing list of the public interested in management activities on the Three Rivers Ranger District. Additional letters were sent out to landowners within the South Fork of Deep Creek watershed who owned property within ½ mile of National Forest System land in the Project Area.

This effort resulted in 22 letters, faxes and electronic messages from interested members of the public, and 5 from organizations concerned with resource management in the project area (Appendix A). Most of the comment sheets and letters addressed multiple issues. There were 143

individual comments. Many comments voiced were the same, so this list was further distilled into a list of 45 different comments in 12 general categories. Not all comments make issues, however. Additionally, many of the comments could be lumped into more general comment groups (example: comments about effects to snags, comments about effects to downed wood, and comments about effects to terrestrial wildlife habitat can be lumped into the general concern about wildlife habitat). Responses were varied, but generally fell into two positions, almost equal in number: those who favored active management within the watershed, and those who opposed active management, or selected proposed activities.

On October 5 and 6, 2005, the Interdisciplinary Team hosted field trips into the project area to update interested members of the public on the progress of the planning process and discussed the purpose and need for management of timber stands within the South Deep Creek Watershed. Members of the Interdisciplinary Team also met three times with representatives of the Northeast Forestry Coalition in November and December 2005 to solicit comments from members of their organization.

In December 2005, it was decided to develop action alternatives E and G and prepare an Environmental Assessment rather than an Environmental Impact Statement. A public update letter was sent to the project mailing list on January 19, 2006, informing them of these changes. A Cancellation Notice, rescinding the Notice of Intent, was published in the Federal Register on March 16, 2006.

Using the comments from the public (from the Collaborative Learning sessions, those received during the scoping period, on field trips, and from Coalition members), other agencies, and internal scoping, the interdisciplinary team developed a list of issues to address.

Other Agency Involvement

The Forest Service consulted the following individuals, Federal, state and local agencies, tribes and non-Forest Service persons during the development of this environmental assessment:

Federal, State, and Local Agencies

The following agencies and individuals were sent letters inviting comment and/or participation in the South Deep Project:

- United States Department of the Interior, Fish and Wildlife Service
- United States Department of the Interior, Bureau of Land Management, Spokane District
- United States Environmental Protection Agency, Seattle Office
- United States Air Force, Survival School
- Washington Department of Fish and Wildlife
- Washington Department of Ecology
- Washington Department of Natural Resources
- Washington State University Cooperative Extension
- Stevens County Board of Commissioners
- Stevens County Lands Advisory Committee
- Ferry County Board of Commissioners
- Ferry County Natural Resource Board
- State and Federal elected officials

The U.S. Department of Interior Fish and Wildlife Service replied on March 27, 2000 with a letter expressing concerns about endangered species, water quality, and fish and wildlife.

The Three Rivers district is consulting with the U.S. Department of Interior Bureau of Land Management and Environmental Protection Agency.

Ferry County Board of Commissioners submitted a comment letter on January 23, 2002 and the Ferry County Natural Resource Board submitted comments on January 28, 2001.

State Representative Bob Sump submitted a comment letter on January 24, 2002.

Tribes

Letters inviting consultation were sent to the Confederated Tribes of the Colville Reservation, the Spokane Tribe of Indians, and the Kalispel Indian Tribe. No reply was received from any of the tribes.

Others

In November 2005, the NEW Coalition (Northeast Washington Forestry Coalition) was invited to consult on the South Deep Management Project to explore the possibility of resolving issues or concern held by various parties interested in the project. Although the Coalition ultimately decided not to formally consult on the project, Coalition members provided valuable input on issues that their members would like to see addressed. Members representing the NEW Coalition attended meetings with Interdisciplinary Team members on November 17, 2005, December 12, 2005, and February 3, 2006. The following individuals attended these meetings:

- Lloyd McGee, Vaagen Brothers Lumber Co. (NEW Coalition executive director)
- David Heflick, Conservation Northwest
- Tanya Ellersick, The Lands Council

1.8 Issues

The interdisciplinary team separated the issues raised during public scoping into two groups: key issues (discussed in section 1.8.1) and other concerns (discussed in section 1.8.2). Key issues were addressed through the development of alternatives. Other concerns were addressed through mitigation measures, were already decided by law, regulation, Forest Plan or other direction, or were judged not relevant to the project.

1.8.1 Key Issues

The key issues identified through the scoping process are listed below. Each issue is described based on the comments received from the public and knowledge that the interdisciplinary team has gained in many years of dealing with management of specific resources on the Three Rivers Ranger District. For the most part, concerns brought forth during public scoping were the same as those previously identified internally.

Key Issue #1: New Road Construction

Management of the transportation system on National Forests has proven to be a major issue over the past decade. In order to implement the proposed treatments a certain amount of reconstruction of existing roads and construction of new roads is proposed. The amount of new road construction proposed has a direct bearing on timber yarding systems. More roads result in more conventional, more economical yarding systems (tractor/skyline). Fewer roads constructed result in more helicopter yarding, which is more expensive than tractor or skyline systems. Road construction costs are also a factor.

Many people expressed concern that new road construction would impact wildlife habitat and movement corridors, and alter animal behavior. Some were concerned that new roads and logging would increase the potential for wildfires and noxious weed infestation. Construction of new roads might also allow cattle into areas not previously accessible. Others were concerned that new roads would increase erosion and degrade water quality and fish habitat, and that new

and existing culverts may block fish passage. Several people were concerned over the effects to the visual resource in areas where there are no existing roads. Some members of the public were particularly concerned about entry into unroaded areas that might change the character of the landscape and reduce the effective size of the unroaded area. Other responders were concerned that new road construction would negatively affect recreational experiences.

To partially address this concern, all new roads constructed for this project would be closed upon completion of harvest activities. To measure the differences in road construction and reconstruction impacts that each alternative would have, three indicators were compared:

- General effects were gauged by comparing the miles of new classified road construction.
- Effects to wildlife were gauged by comparing the miles of new classified road construction within: MA-1 (old growth); pileated woodpecker and pine marten/northern three-toed woodpecker MR areas; and MA-6 and MA-8 (scenery and winter range).
- Effects to water quality and fish habitat were measured by comparing the number of new stream crossings.

Key Issue # 2: Clearcutting and Large Forest Openings

Some members of the public expressed concerns over the use of clear-cutting in the South Deep project area. They were concerned that visual quality in the watershed would be degraded, and that clear-cutting may not improve landscape vegetative conditions. Other concerns were expressed about creating larger forest openings that may have adverse effects such as fragmenting wildlife habitat, increasing water runoff, and opening areas to off-road vehicle use (with associated resource damage).

However, many areas within the South Deep project area that were severely burned in 1929 have regenerated into dense, stagnant stands of lodgepole pine, western larch, Douglas-fir, and western red cedar. Almost 7,900 acres of the project area are vegetated with these kinds of stands. In many areas thinning is not practical, and stand regeneration is the only feasible silvicultural option to remove this stagnant vegetation and allow new, more structurally diverse stands to eventually develop on these sites.

In an effort to address the public's concerns, about 2,000 acres originally considered for regeneration harvest were deferred because the prescription would leave the residual stand too open. In addition, prescriptions were modified on other units to increase retention of reserve trees. Commercial thinning is proposed where the potential exists to maintain a residual stand. In other areas, where stand stagnation precludes other prescriptions, clearcut-with-reserves and shelterwood prescriptions are proposed.

Silvicultural prescriptions in this project include an alternative approach to traditional cutting to maintain essential structural elements (live or dead trees or clumps of trees, woody debris, etc.) after harvesting such that residual stands demonstrate greater resilience. This method, called retention, is an even-age silvicultural system that maintains habitat structural elements inside the cut area. Retained elements are either single tree (dispersed) or clumps of trees (patches or aggregates) and can include live or dead snags and woody debris needed to meet management objectives. Retention differs from traditional silvicultural systems in that the focus is on what is retained rather than cut, and regeneration is not the primary objective. On the ground, the retention system can resemble several other silvicultural systems. Forest cut areas would be irregular in shape and occur between thinned patches and areas where no treatments would occur.

Even-aged regeneration treatment methods (clearcut-with reserves, shelterwood, and sanitation harvest) designed to initiate a new stand would create openings where individual trees or groups of trees would be retained (4 to 30 trees per acre). Uneven-aged regeneration treatment methods (single tree selection cutting, group selection cutting, and irregular shelterwood)

designed to initiate new ages of trees within a stand would result in a mosaic of stand conditions. Stand thinning, release[16], and improvement[17] cutting techniques not designed to initiate regeneration at this time would leave a relatively intact canopy.

To measure the differences between the two action alternatives in addressing this issue, one indicator was compared:

- Total acres of commercial harvest with clearcut-with-reserves and shelterwood silvicultural prescriptions proposed.

1.8.2 Other Concerns

The majority of concerns expressed in scoping was identified as not being key issues and did not drive alternative development. Many of these concerns were addressed through mitigation measures. These other concerns are briefly described below, with an explanation of how they were resolved.

Effects to Adjacent Private Lands

Comments received from some landowners near the South Deep project area expressed concerns that management activities on National Forest System lands could cause increases in wind throw, insect activity, and disease problems on private land. Conversely, other landowners worried that failure to conduct management activities on National Forest System lands would result in insect and disease problems spreading to nearby private lands. Some people feared that prescribed fire on National Forest System lands could move onto private land, causing damage. Several local residents expressed alarm that management activities on National Forest System lands could disrupt natural hydrologic patterns and affect surface and ground water flows. In addition, some landowners felt that harvest operations would create noise, smoke, traffic, dust, and disruption of their normal activities. An often-voiced sentiment was for the Forest Service to strongly consider landowner rights and values during the project.

Resolution
Many of the proposed treatments (harvesting, pre-commercial thinning, and prescribed fires) are designed to protect and enhance landscapes on the Colville National Forest. The intent is that there would be either direct or associated benefits to adjacent lands if the larger body of forest surrounding these private lands can be effectively managed. The Forest Service would work with individual landowners and apply mitigation measures (section 2.4) and Best Management Practices (Appendix C) to the project treatments to protect resources on adjacent private lands.

Effects on Soil Conditions

Some members of the public were concerned that management activities may cause erosion, compaction, and loss of nutrients that reduce long-term soil productivity. Others were concerned that prescribed fire would negatively affect soil productivity.

Resolution
The effects analysis (section 4.1.1 Soil Resources) shows that proposed activities would meet the Forest Plan management goal to maintain or improve continued long-term soil productivity, and also the Forest Service Region 6 soil quality standards (*FSM 2520, R6 Supplement 2500-98-1*), which supplement the Forest Plan standards (p. 4-50). Mitigation measures (such as hand felling or winter operation) would be applied to areas with increased soil compaction (10% or more) to

[16] Release is a treatment designed to free young trees from undesirable, usually overtopping, competing vegetation.
[17] Improvement cutting is a treatment made in a stand past the sapling stage primarily to improve composition and quality by removing less desirable trees of any species.

prevent detrimental increases in soil compaction. The proposed silvicultural prescriptions would maintain adequate downed material in order to maintain long-term soil productivity.

Effects on Water Quality and Quantity

Some commenters said logging could change water discharge from logged areas. This could alter surface or groundwater flows, and result in either flooding or lowered water tables. Some concerns were expressed that harvest activities would increase erosion and sediment into streams, which could violate water quality standards as well as degrade aquatic habitats and the quality of recreational experiences.

Resolution
Effects of timber harvest activities on water quality and quantity are assessed using site-specific information about the watersheds and hydrological modeling. Hydrologic modeling is used to identify watershed conditions of potential concern and to compare alternatives. The model uses a 25% threshold of concern for created openings in a watershed. Site-specific conditions are used to assess the level of existing "risk" in the watershed, to determine whether additional activities would be of concern. These conditions include stream "resilience"—bank stability, channel type, and existing erosion—and the rate of vegetative regrowth. Based on this information for the South Deep project area, it is expected that created openings would not cause significant adverse cumulative effects and would meet water quality goals for the Forest (Forest Plan FEIS IV-17). These standards and guidelines would be applied to both action alternatives.

No timber harvest would occur within the riparian buffers mandated by the Forest Plan. Inland Native Fish Strategy Direction amended the Forest Plan in 1995, and includes standards for riparian habitat conservation areas. These riparian conservation areas have proven to be effective filters for sediment resulting from "de-vegetated" areas. Stream sedimentation from all project activities is expected to meet Clean Water Act requirements.

Effects to Riparian Areas

Concerns were raised over the potential for harvesting and new road construction to affect natural barriers, allowing increased access by cattle to riparian areas or other allotments. Other comments cited management activities as causing erosion, increased sedimentation and increased stream temperatures, reducing large woody material available to streams and generally degrading aquatic habitat. They said this would negatively affect recreational experiences and violate water quality standards.

Resolution
Inland Native Fish Strategy buffers mitigate riparian area erosion, sedimentation, temperature increases, loss of large wood, and prevent degraded aquatic habitat and recreational experiences. Erosion due to management activities such as harvesting and road construction would cause additional sedimentation. However, the amount of additional sediment was calculated and would meet Washington State Water Quality turbidity standards. Equivalent clearcut acres were also calculated as a measure of watershed stability and resilience, and show that no increased channel-forming flows from Federal lands are expected to cumulatively degrade channel conditions along the mainstem of the South Fork Deep Creek. Changes in stream channel morphology are likely to remain within the existing range of variation and would not be detectable using standard monitoring techniques (see section 4.1.2 Hydrology). Loss of riparian vegetation at new and reconstructed stream crossings would be insignificant and have no effect on water temperature (see section 4.2.6 Fisheries). Riparian areas within cattle allotments would be monitored for impacts, and mitigation measures (such as fencing) would be applied if needed.

Effects to Old Forested Stands (Old Growth)

Members of the public expressed concern that proposed management activities would negatively affect old growth stands, and particularly one stand near the Polly Cabin.

Resolution
There are very few stands that qualify as old growth within the project area due to past forest fires and past management practices. No stands of trees meeting North Idaho Zone Old Growth standards would be entered for harvest treatment in the South Deep project area. A stand of concern near Polly Cabin would not be entered for any resource treatment activity. All live green trees greater than 21.0 inches in diameter would be retained, as per the amended Forest Plan. Some prescribed fire may be used in old growth stands to enhance the old growth resource and to help protect these stands from future wildfire damage (see Section 4.2.1 Forested Vegetation for more information).

Only one structural stage six stand (portions of commercial harvest unit NBE) would be treated to thin the understory and move it toward structural stage seven. This stand is on a dry site and structural stage seven is more appropriate for this site. This stand does not meet the North Idaho Zone Old Growth standards (see Section 4.2.1 Forested Vegetation).

Effects on Forest Health

For some, timber harvest was not an acceptable method of treatment, and others disliked use of prescribed fire as well. They said logging could increase insect and disease problems, and reduce downed wood, which could impair long-term nutrient cycling. Other concerns were that the reduction of vegetative cover would dry out soils, which would favor drier plant communities and impact tree regeneration. By contrast, other commenters said the forest was under-managed and needed thinning.

Resolution
The project area includes large areas of even-aged stands where stand resilience is compromised by the sheer number of trees. The objective of silvicultural prescriptions for these stands is to reduce the competition for site resources, thus increasing the resistance of the remaining trees to insects and disease. These effects are disclosed in section 4.2.1 Forested Vegetation. In the case of insect outbreaks, additional measures would be applied, such as burning slash and removing logs from the units in the same season that they were cut, to reduce the potential for buildup of insects in slash and debris. These measures are listed in section 2.4.4 Forested Vegetation.

Several factors, such as exposed mineral soil and woody debris, are needed to create suitable microsites for seedling establishment. Silvicultural prescriptions, fuel reduction actions, and post harvest treatments are designed to leave suitable conditions for the re-establishment of desired tree species (see section 4.2.1 Forested Vegetation). The proposed timber harvest and prescribed fire treatments are not expected to be detrimental to long-term site productivity (see section 4.1.1 Soil Resources). A minimum of 10-20 tons per acre of larger woody debris and some fine debris would be retained for nutrient cycling and long-term soil productivity (see section 2.4.1 Soils).

Effects from Existing Roads and OHV Trails

Besides new road construction, several comments were received regarding maintenance and closure of existing roads and OHV (off-highway vehicle) use.

Road maintenance: Some people thought that existing culverts were too small and needed to be replaced. In addition, existing culverts impact fish migration patterns and new culverts would increase this impact.

Resolution
Roads used for the project have been evaluated and culverts have been identified that would be replaced as part of the proposed road reconstruction. The potential effects of these culvert replacements are discussed in section 4.2.6 Fisheries. Three culverts in the project area have been identified as having fish passage concerns. An existing culvert on Rocky Creek is proposed for replacement as a separate action under this decision; its replacement would not be part of the timber sale contract. A second culvert on road 7018140 would be removed after completion of the sale as part of closing the road. A third culvert on the mainstem of Meadow Creek is not on a road that would be used for the sale, and no action is planned on it at this time.

Road closures: Some members of the public were in support of road closures, and were concerned about off-road vehicle use affecting rare flora, soils, and wildlife habitat. Others said that existing and past road closures have been ineffective, and favored full obliteration of roads. Some commenters said road closures would deny recreationists many opportunities, and that closed roads and trails used by OHV recreationists only require minimal maintenance and these routes should be kept open.

Resolution
These concerns were considered in the proposed actions. One long section of road is proposed for reconstruction, both for timber harvest and to maintain access to the Rogers Mountain Trail and trailhead. Six miles of roads are proposed for closure; the majority of these are currently closed with vegetation and not passable, and the others are not known to be used for recreation. The effects of these actions are disclosed in Section 4.3.3 Recreation.

Use of motor vehicles off of established roads and trails has been identified as a critical issue for national forests and grasslands. To address the issue, a new national rule defining regulations for use of motor vehicles in national forests and grasslands has been developed. The objective of the rule is to protect resources, provide for safety, and to minimize conflicts among multiple users, while maintaining legitimate uses of motor vehicles. Individual national forests are now required to designate which roads and trails are open to motor vehicle use. Other areas will be, by definition, closed to motor vehicle use.

Designation of a connected motor vehicle route system, which requires environmental analysis, is underway on the Colville National Forest. Resolving issues tied to designating motor vehicle routes and cross-country travel in the South Deep project area is deferred to the Forest-wide analysis and is outside the scope of this environmental assessment.

Effects on Noxious Weed Spread

Concerns were expressed about an increase in noxious weeds due to management activities in the South Deep project area. The major question was how habitats for plants and animals would be affected. The projected effects of noxious weeds upon plant and animal habitat were addressed in the wildlife, range, and Threatened, Endangered, and Sensitive Species plant reports. New roads and areas cleared during timber harvest treatments pose the greatest risk for increases in noxious weed populations.

Resolution
The Forest Service would mitigate the spread of noxious weeds by meeting the *Noxious Weed Prevention Guidelines,* a 1999 Colville National Forest policy, and *Preventing and Management Invasive Plants*, a 2005 Forest Plan amendment, which are incorporated into both action alternatives. A Noxious Weed Management Prescription was developed specifically for the South Deep project area, based on the Colville National Forest Noxious Weed Treatment Environmental Assessment and forest guidelines. The prescription identified a combination of management practices and mitigations that favor early treatment and preventative measures such as grass seeding of exposed soil, herbicides on noxious weeds prior to project implementation, and washing of off-road logging and road-construction equipment before entry to the project area. Monitoring and follow-up treatments were also listed. These measures would minimize noxious

weed spread due to project activities. The need for treatment would vary according to the acres of soil disturbance predicted for each alternative.

Effects to Wildlife Habitat

The public posed numerous questions, both general and specific, concerning effects to wildlife from the proposed actions. Questions concerning habitat for lynx, pine marten, and other species requiring seclusion were most numerous. Some members of the public were concerned about project activities affecting the numbers of snags and large trees and amount of downed wood, or changing wildlife migration patterns. Some said specifically that the large tree component in the project area needed to be increased. Concerns were also raised regarding the effects of entering Pine Marten Management Requirement (MR) areas upon species associated with older forests. A general comment was received concerning diversity of wildlife habitats and animals.

Resolution
The effects of the project on wildlife habitats are disclosed in section 4.2.4 Threatened, Endangered, and Sensitive Species and 4.2.5 Wildlife Management Indicator Species. The action alternatives would have no adverse effects on lynx, pine marten or other species associated with older forests, and would not be likely to adversely affect other sensitive species (see section 2.6, Table 2-6 for a summary). No commercial harvest is proposed in MA-1 areas, pileated woodpecker MRs, or "A" blocks of pine marten MRs. New road construction and precommercial thinning would have minor effects on some MR areas, but would not prevent the attainment of Forest Plan objectives. Additionally, improvement in habitats for some species would be achieved over the long term. See also the discussion under Effects to Old Forested Stands, above.

The Forest Service would meet all known policies, rules, standards and guidelines, regulations, and laws during the design phase of the South Deep Management Project, and would apply and monitor all required mitigation and Best Management Practices during implementation. These include standards to maintain snags and downed wood.

Effects on Seclusion and Solitude Areas

Some comments were received concerning the effects of management activities within areas lacking classified roads. Two points of concern were potential negative effects upon wildlife seclusion and the human need for solitude.

Resolution
There are no inventoried roadless areas in the South Deep project area. For the most part, the project area and surrounding watershed are moderately roaded and almost no core area habitat exists. Some roads in the watershed have been closed with barriers or have grown closed, which increases the amount of potential seclusion habitat.

Section 4.2.5 Wildlife Management Indicator Species addresses the effects that the action alternatives may have upon wildlife seclusion habitat and the affected animals. The action alternatives would meet Forest Plan and U. S. Fish and Wildlife standards for threatened and endangered species requiring seclusion (see section 4.2.4 Threatened, Endangered and Sensitive Species). Human solitude is provided in the MA-1 area and several thousand-acre areas that are not proposed for treatment.

Effects on High Voltage Powerlines

A Bonneville Power Authority representative expressed concern about powerline flashover[18], which can occur when timber harvest, road construction, and/or prescribed burning are conducted in close proximity to powerlines. The resulting dust, smoke, or humidity, or combinations thereof, can cause a flashover.

The Forest Service would consult with the Bonneville Powerline Authority's engineers and design mitigation measures on a site-specific basis to prevent flashover.

[18] A powerline flashover is a fault, where high-voltage electricity jumps from a conductor to earth or to another conductor. It is basically a small bolt of lightning, and produces a similar noise and a bright blue light. Flashover can cause great disturbances in the power system, as well as damage to lines.