United States Department of Agriculture

Forest Service
Pacific Northwest Region

ENVIRONMENTAL ASSESSMENT

COBBLER TIMBER SALE AND FUELS REDUCTION PROJECT

January 2009

Umatilla National Forest
Walla Walla Ranger District

Wallowa and Union Counties, Oregon

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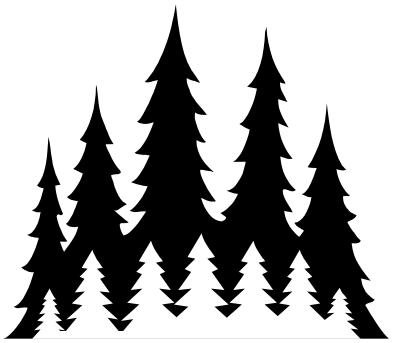
PURPOSE AND NEED



Chapter 1

Purpose and Need

INTRODUCTION

The Forest Service has prepared this Environmental Assessment (EA) for the proposed timber sale and fuels reduction project within the Cobbler project planning area.

This EA addresses: 1) the proposed action and two additional alternatives, including no action; 2) issues associated with the proposal; and 3) direct, indirect, and cumulative environmental effects that would result from implementation of the proposed action or any of the alternatives.

DOCUMENT ORGANIZATION

This EA has been prepared in compliance with the National Forest Management Act (NMFA), the National Environmental Policy Act (NEPA), other relevant Federal and State laws and regulation, and Umatilla National Forest Land and Resource Management Plan (Forest Plan).

Format for this EA follows the Council on Environmental Quality (CEQ) recommended format (40 CFR 1502.10). Chapters contain the following information:

Chapter 1 – Purpose and Need: Includes a brief description of the area, background of the project planning area, purpose of and need for action, the agency's proposal for achieving the purpose and need, and a listing of what decisions are to be made.

Chapter 2 – **Alternatives**: Describes in more detail the agency's proposed action as well as alternative methods of achieving the purpose and need, and management requirements and project design features. It includes information on how the public was informed, and a description of "key" and other issues relevant to the proposed action that will be tracked in subsequent chapters.

Chapter 3 - Affected Environment and Environmental Consequences: Describes the affected environment, current condition of resources involved, and environmental effects of implementing the proposed action and other alternatives. This chapter is organized by resource.

Chapter 4 – **List of Preparers and Public Involvement:** Contains a list of those who helped prepare this document, and a list of individuals, organizations, and agencies receiving this document.

Appendices: Provides more detailed information and maps used to support the analysis presented in the EA.

LOCATION AND AREA

Cobbler project planning area is approximately 34,000 acres in size and is located on Walla Walla Ranger District in Wallowa County and a small portion in Union County, Oregon within portions of T. 4N., R. 40E., sections 1, 2, 3, 4, 10, 11, 12, 14, and 15; T.5 N., R.40 E., sections 1, 12, 13, 14, 23, 24, 25, 26, 34, 27, 33, 34, 35, and 36; T. 4N., R. 41E., sections 5, 6, 7, and 18; T. 5N., R. 41E., sections 1 to 34; T. 5N., R. 42E., sections 4, 5, 6, and 7; T. 6N., R. 41E., sections 25, 26, 27, 33, 34, 35, and 36; and T. 6N., R. 42E., sections 29, 30, 31, 32, 33, and 34. It is in the Lower Grande Ronde subbasin, within the Grande Ronde River and Wenaha Watersheds.

Cobbler project planning area is bounded by the Wenaha-Tucannon Wilderness to the north and west and the Grande Ronde River to the southeast, and is almost entirely within Wallowa County. Elevations range from 3,600-4,500 feet, except for the Grande Ronde River canyon which plunges down to 2,000 feet. The area is known for its many beautiful vistas overlooking the Wenaha River canyon as well as Alder Creek, Elbow Creek, and Grande Ronde River. Grande Ronde River has been designated as a Wild and Scenic River by the Omnibus Oregon Wild and Scenic Rivers Act of 1988, and the segment bordering the project planning area has been designated as wild. The town of Elgin, Oregon is approximately 20 miles to the southwest. Troy and Eden Bench Wildland Urban Interface[1] (WUI) areas are approximately 5 miles east of the project planning area, and are identified in the Wallowa County Community Wildfire Protection Plan (CWPP). A portion (approximately 7,700 acres) of the Grande Ronde inventoried roadless area (IRA) is within the project planning area.

A vicinity map is located at the end of this chapter. All other maps are located in Appendix A of this document.

BACKGROUND

The project planning area has been altered from historical conditions due to fire suppression and past forest management practices. A majority of current forest stands originated as a result of fire disturbances occurring over one hundred years ago, and they have not experienced fire since then. There have been repeated insect defoliation episodes followed by salvage harvest. Lodgepole pine stands have been harvested, and the remaining mature stands in the project planning area are at the age to be highly susceptible to mountain pine beetle, which is currently experiencing an increasing population. Late seral tree species have become dominant after long periods without disturbance and generally are more susceptible to disturbance-caused mortality than early seral species. Forest stands have become overstocked and are above recommended stocking levels that would maintain stand growth and vigor. Timber stands of seral tree species such as western larch and ponderosa pine are infilling with grand fir.

Findings from the historical range of variability analysis for Eastside Screens show that old forest structure is within historical range for moist forest biophysical group, but outside of historical range for dry forest biophysical group in old forest single stratum (OFSS) structural stage.

[1] Wildland urban interface (WUI) – A WUI is the area where structures and other human development meet or intermingle with wildland vegetative fuels. It surrounds a community at risk, including a community's infrastructure or water source and may extend beyond 1.5 miles of a community depending on topographic features used as an effective firebreak or containing Condition Class 3 land posing a threat to the community.

Fire regime condition classes, which describe deviation from natural fire regimes in terms of fire return intervals and vegetative change from historical composition and density, have been modified in the project planning area due mainly to past harvest history and fire suppression. Approximately 40 percent of the project planning area has changed from a historical fire regime (Class 1) to a moderately altered fire regime (Class 2) and 10 percent of the area has changed to a significantly altered fire regime (Class 3). Fuels that would have historically been consumed during periodic wildfires have increased, and in many areas surface and aerial (within the canopy) fuel loadings are above historical levels. Today, fires in the dry and moist forests would have moderate to severe effects characterized by high fire severity and intensity on landscapes that historically displayed low to moderate severity. Without treatment, the Cobbler project planning area would continue to transition toward condition fire regime Classes 2 and 3, where the risk of losing ecosystem components would be moderate to high. Surface fuel loads would continue to build and tree density and canopy layering would also increase. Abundant small trees would serve as ladders that carry fire from the forest floor to the tree canopy, increasing the likelihood of high severity, stand-replacement fires. Fire ignitions today would not function as a natural disturbance process within their historical range of variability pertaining to fire size, frequency, intensity, severity, or landscape patterns. Fuel loads in Grande Ronde Canyon have been increasing primarily due to the lack of fire in that area. Fire behavior fuel models that describe how a fire would burn (flame length and rate of spread) through a particular wildland fuel type have also changed in the project planning area. They have changed from historical fire behavior fuel models of fast moving but low intensity surface fire, to fuel models representing fast moving, high intensity crown-replacement fire.

In the project planning area there are 23 sites (approximately 115 acres) of hardwood stands (aspen, mountain mahogany, and black cottonwood) that need management in order to be protected and have stand vigor restored. One of the sites needing protection is located in the Elk Flats Meadow area (approximately 70 acres) which is currently allocated in Umatilla Forest Plan to management area D2 – Research Natural Area (RNA) as a proposed candidate for RNA status to represent an aspen forest. Evaluations by the Blue Mountain's Forest Ecologist, after completion of the Forest Plan (1990), indicated that formal RNA designation is not appropriate for Elk Flats Meadow because of the small size of the parcel, and because the aspen clones are ecotonal (i.e. transitional between forest and meadow) rather than true aspen forest.

Within the project planning area there are a series of dry meadows surrounded by dense forest dominated by grand fir. Photo history and field visits indicate there used to be a transition zone made up of low density ponderosa pine, western larch, and Douglas-fir between the meadows and interior stands. Past fire suppression has resulted in young, small diameter trees encroaching on these meadows where there used to be only grass.

PURPOSE AND NEED FOR ACTION

In reviewing background information of the project planning area, the purpose of and need for action in Cobbler Timber Sale and Fuels Reduction Project is to improve health, vigor, and resilience to fire, insects, and disease in upland forests that are outside their historical pre-fire suppression conditions for species composition (including hardwood species), structural diversity, stocking densities, and fuel loads. Additionally, there is a need to provide sawlogs and wood fiber products for utilization by regional and local industry.

In summary, Walla Walla Ranger District has determined that based upon current fuel and vegetative trends that are outside of their historical range of variability in Cobbler project planning area, and contrasting the existing condition with the desired future condition identified in the Forest Plan there is a need to:

- Reduce stand densities in upland forest to recommended stocking levels to increase resiliency of stands to disturbance from insects, disease, or uncharacteristic wildland fire intensity.
- Reduce competition from late seral ingrowth in stands currently dominated by early seral species and/or large trees in order to retain these more resilient trees.
- Move forest stand structural conditions toward the historical range of variability
- Modify the intensity and resulting fire behavior along the rim of the Grande Ronde and along Forest Road (FR) 62 for safe and effective fire suppression actions.
- Return fire to Grande Ronde River canyon to maintain the character of a frequent fire regime, particularly in grasslands and brush.
- Reduce ladder fuels to lower the risk of fire spread into the upper canopy.
- Reduce ground fuel that would contribute to uncharacteristic wildfire intensity and resource damage.
- Reduce risk of personal injury by removing danger trees along trailheads and haul routes used for project activities.
- Protect and enhance vegetative conditions of hardwoods by maintaining and or increasing vigor of existing stands.
- Influence stocking levels, growth, health, and vigor of plantations by implementing non-commercial thinning.
- Amend the Forest Plan to allocate Elk Flats Meadow from management area D2-Research Natural Area to management area A9-Special Interest Area in order to allow for vegetation management, including cutting and leaving of trees, to maintain or enhance existing aspen, which have declined precipitously, and encourage aspen and other hardwood regeneration in the project planning area. Also in the same area as Elk Flats Meadow, a reallocation of small quantity of acres of management area E2-Timber and Big Game would be changed to A9, and a few acres of D2 would be changed to E2 to effectively maintain aspen stands in these areas.

The purpose and need for this project is responsive to and consistent with the following Forest Plan goals (FP pages 4-1 to 4-3):

- To provide land and resource management that achieves a more healthy and productive forest and assists in supplying lands, resources, uses, and values which meet local, regional, and national social and economic needs.
- To provide for production and sustained yield of wood fiber and insofar as possible meet projected production levels consistent with various resource objectives, standards and guidelines, and cost efficiency.
- To protect forest and range resources and values from unacceptable losses due to destructive forest pests through the practice of integrated pest management.
- To provide and execute a fire protection and fire use program that is cost-efficient and responsive to land and resource management goals and objectives.

PROPOSED ACTION

Through a combination of database queries and field review numerous areas were identified for potential stand management and fuel treatments. Aerial photos were used to identify timber stands needing treatment to support fire suppression along the rim of the canyon. Field reviews occurred in late summer and fall of 2007. A majority of stands proposed for treatment were visited by District resource specialists. Where time did not allow a field visit, stand exam data was used in addition to more recent aerial photo interpretation. Stand exam data from the early to mid 1990s was used to characterize stands, and was adjusted based on field observations. Approximately 8,000 acres within the Grande Ronde River canyon were identified for a reduction in fuel densities to allow for the reintroduction of prescribed fire on a historical occurrence level

In response to the purpose and need identified above, Walla Walla Ranger District proposes vegetation and fuels management treatments to improve health and vigor of the upland forest, and treatments to reduce the risk of potential wildland fires of uncharacteristic intensity through reduction of hazardous and ladder fuels in Cobbler project planning area.

The majority of proposed harvest would be done using a commercial thinning prescription. Shelterwood or seed-tree harvest prescriptions would occur in harvest units where thinning would not restore growth and vigor. Non-commercial thinning would also occur in some areas.

Fuels treatments would be used to reduce existing uncharacteristic fuel loads of dead and live natural fuels, reduce fuels loads generated from harvest activities, prepare sites for regeneration, and or maintain desired fuel conditions. Design objectives of these treatments are to break-up fuel continuity on the landscape, so that if a wildfire did occur it could be contained to a small size and be of low intensity to allow for safe and effective fire suppression efforts.

Commercial thinning and fuels treatments would take place in calendar year 2009 and could continue over a period of approximately five years. Restoration activities such as protection and enhancement of hardwoods and dry meadows within the project planning area would occur as funding allows, most likely over a ten year period. A portion of landscape prescribed fire activities could begin as early as fall of 2009 if conditions allow, and remaining acres would likely be burned over a period of approximately ten years.

The number of acres proposed for commercial harvest has changed since the project was originally scoped in early 2008. They have been adjusted to reflect on-the-ground updated information. Temporary road construction of approximately 0.20 miles has also been included.

Following are brief descriptions of activities proposed for implementation, along with associated activities that would occur concurrently. A more detailed description of proposed actions can be found in Chapter 2 of this document.

- ***Timber Harvest –*** Commercially harvest approximately 2,500 acres. In some treatment units timber harvest would include the removal of sawlogs and small diameter trees in the 3-9 inch diameter at breast height (DBH) range which would be used as a woody biomass [2] product. In some treatment units only biomass products would be removed with incidental removal of sawlogs. Commercial

[2] **Woody Biomass:** Trees and woody plants, including limbs, tops, needles, leaves, and other woody parts, grown in a forest, woodland, or rangeland environment, that are the by-products of forest management.

thinning is the primary silviculture prescription with some shelterwood and seed-tree prescriptions used in decadent stands where thinning would not restore growth or vigor. Harvest objectives would vary by stand condition and fuel management objectives. Treatments would tend to favor early seral tree species such as ponderosa pine and western larch. Harvest methods would include conventional ground based[3] (approximately 380 acres) logging, using a harvester/forwarder[4] (approximately 1,830 acres), and skyline[5] logging (approximately 230 acres).

- ***Fuels Treatments –*** Activity fuels and existing natural fuels would be treated in harvest units. Treatments would include mechanical mastication, grapple piling, hand piling, jackpot burning, and yarding with tops attached depending on slash loads and the amount of fire sensitive species remaining after harvest. Mastication would be used to treat both activity fuels and remaining ladder fuels when small diameter understory is removed for woody biomass products (3-9 inch DBH) and a high density of understory trees still remains. Hand piling would be used in portions of units where visual quality is a concern, mainly along Forest Road (FR) 62.

  Some trees greater than 9 inches DBH would need to be removed to allow machinery to operate in units where the objective is to remove the less than 9 inch DBH material. As long as it is economically feasible, material in the 3-9 inch DBH size would be removed as a woody biomass product. If it is not economically feasible for removal, fuel treatments in these units would rely on mastication, grapple piling, and burning.

- ***Road Management –*** To accomplish implementation of proposed activities approximately 50 miles of open system roads, about 40 miles of closed[6] system roads, and 1.5 miles of seasonally[7] open roads would be used as haul routes. Of the open system roads approximately 14 miles are outside of the project planning area and represent haul routes to county roads. Closed system roads used for project activities would not be opened to the public. All system roads would remain the same after project implementation; open roads would remain opened, closed roads would continue to be closed, and seasonally open roads would continue with that designation. Approximately 0.25 miles of new road construction would occur to access an activity unit and be used for future access for vegetation and fuels treatments. This new construction would become a closed system road after project use.

[3] **Conventional ground based logging system**: This is tractor or skidder yarding on trails spaced approximately 100 feet apart. Skidding equipment would be required to remain on the trails and logs dragged to the landings with one end suspended. Mechanical felling equipment would be used to fall and bunch logs near the trail and be allowed a single pass between skid trails to reduce compaction concerns.

[4] **Harvester/forwarder logging system**: This is a ground based system using a mechanical feller to cut and manufacture logs, placing them adjacent to the forwarder routes. Limbs are left on the forwarder route to aid in soil protection. The forwarder would pick up logs, place them in bunks and carry them to a landing for decking. This is a total log suspension logging system. Forwarder route spacing would be based on the reach of the felling equipment, 40 to 50 feet.

[5] **Skyline logging system:** In a skyline system, logs are yarded up the hill by a system of cables, and logs are either partially or fully suspended to reduce soil disturbance. Skyline yarding landings are slightly smaller than conventional ground-based systems.

[6] **Closed Road:** These roads are not available for motorized vehicle travel for everyday access and are gated or closed by barricades. These roads can be opened for access for resource management activities or fire suppression. Snowmobile use is allowed except where specifically prohibited.

[7] **Seasonally Open Roads:** These roads are available for public motorized vehicle use only during specified seasons.

Approximately 0.20 miles of temporary road construction would occur and would be decommissioned after project activity use. Normal routine road maintenance would occur.

- ***Danger Tree Removal*** – Danger trees would be felled and removed along all haul routes used for timber sale activity and around trailheads. If considered economically feasible, these trees would be sold as part of a timber sale. Danger trees within Riparian Habitat Conservation Areas (RHCAs) would not be removed; they would be cut and left to provide additional coarse woody debris.

- ***Landscape Prescribed Fire* (*Grande Ronde canyon)* –** Landscape prescribed fire would occur across approximately 8,000 acres within Grand Ronde River canyon, which includes Bear Creek and Alder Creek canyons. No timber harvest or mechanical fuel treatments would occur in these canyons. This treatment would reintroduce fire to a fire-dependent ecosystem blackening about 60 percent of the area to lessen the impact of a future uncharacteristic wildfire and improve forage quality for big game. In the majority of the project area, fire intensities would be kept low by keeping fire out of the overstory and burning mainly surface fuels. Individual tree and group torching would likely occur in areas where there is sufficient ladder fuels and in timber stands with high occurrences of mistletoe. Upon completion the area would be a mosaic of unburned, lightly burned, moderately burned, and intensely burned patches. This activity would occur in almost all of the acres (7,700) of the Grande Ronde inventoried roadless area (IRA) that are within the project planning area.

- ***Hardwood Restoration –*** Twenty-three hardwood sites (aspen, black cottonwood, and mountain mahogany) totaling about 115 acres are proposed for treatment that includes release from conifers and fencing of these sites. Reduction of conifer competition in some aspen stands would be achieved by girdling trees or cutting and leaving the trees on site. Most of these stands have only mature or over-mature hardwood trees with little or no regeneration, or regeneration that is being severely browsed. Fencing would occur at these 23 hardwood sites, as funding allows. These sites include several aspen stands at Elk Flats Meadow, as well as 10 additional aspen stands scattered throughout the Cobbler project planning area, 11 cottonwood stands, and 1 mountain mahogany stand. Poles for buck and pole fencing would be cut in the Bear Flat and Long Meadows areas adjacent to Forest Service roads. Two hardwood stands (approximately 0.3 acres) proposed for treatment by girdling of conifers are located in the Grande Ronde IRA.

    - Fencing material used for hardwood restoration would be collected from four lodgepole pine sites, totaling about 550 acres, in areas located along open roads within Cobbler project planning area. These same areas would also be used as personal-use post and pole permit areas.

- ***Meadow Restoration –*** An estimated 275 acres of dry meadows would be treated to reduce conifer encroachment. Trees less than or equal to 6 inches DBH would be cut by hand followed by a prescribed underburn through the grass. This activity could occur over multiple years and may require a temporary electric fence around meadows to keep cattle out and to ensure that enough grass is retained to carry the prescribed fire.

- ***Non-commercial Thinning*** – This activity would cut excess trees that are less than 6 inches DBH on approximately 1,900 acres. Some units may have special conditions where trees up to 9 inches DBH would be cut. Either manual or mechanical methods would be use. In non-commercial thinning units adjacent to fuel reduction units, where mechanical mastication methods would be used, slash from manual thinning may be treated mechanically, if needed. In other units no additional slash treatments would be needed when thinning by hand. In all non-commercial units material would be pulled back from road ditches and fence lines by hand.

- ***Forest Plan Amendment*** – In order to manage aspen stands in the project planning area the Forest Plan would be amended to change acres in management area allocations of D2- Research Natural Area, E2- Timber and Big Game, and A9-Special Interest Area. Elk Flats Meadow (D2), which is currently a proposes candidate for designation as a Research Natural Area (RNA), would be reallocated to management area A9 - Special Interest Area in order to allow vegetation management, including cutting of trees, to maintain or enhance existing aspen and encourage aspen regeneration. In summary, approximately 70 acres of management area D2 (Elk Flats Meadow) would become management area A9; approximately 30 acres of management area E2 would become management area A9, and approximately 10 acres of management area D2 would become management area E2. This amendment would remain in effect until the current Forest Plan is revised. Additional details regarding this amendment are in Chapter 2.

TIERING AND INCORPORATING BY REFERENCE

In order to eliminate repetition and focus on site-specific analysis, this EA is tiered to the following documents as permitted by 40 CFR 1502.20.

- The ***Umatilla National Forest Land and Resource Management Plan (Forest Plan)*** **FEIS** and Record of Decision (ROD) dated June 11, 1990 and all subsequent NEPA analysis for amendments, and the accompanying ***Land and Resource Management Plan(LRMP)*** **as amended (Forest Plan).** The Forest Plan guides all natural resource management activities and establishes management standards and guidelines for the Umatilla National Forest. It describes resource management practices, levels of resource production and management, and the availability and suitability of lands for resource management.

- This EA is tiered to a broader scale analysis (**the Pacific Northwest Region Final Environmental Impact Statement for the Invasive Plant Program, 2005, hereby referred to as the R6 2005 FEIS**). The R6 2005 FEIS culminated in a Record of Decision (R6 2005 ROD) that amended the Umatilla National Forest Plan by adding management direction relative to invasive plants. This project is intended to comply with the new management direction.

This EA also incorporates by reference the following documents:

- The **Biological Opinion for the *Implementation of Interim Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California (PACFISH***) from National Marine Fisheries Service dated January 23, 1995. PACFISH itself does not propose any ground-disturbing actions, but sets in place certain riparian management goals and management direction with the intent of arresting the degradation and beginning the restoration of riparian and stream habitats.

- The **Biological Opinion on the *Land and Resource Management Plans for the Boise, Challis, Nez Perce, Payette, Sawtooth, Umatilla and Wallowa-Whitman National Forests*** from National Marine Fisheries Service, dated March 1, 1995. National Marine Fisheries has identified a set of goals, objectives, and guidelines that will apply to watershed and site-specific consultations until Land and Resource Management Plans are amended. Conformance with the provisions of this Opinion, in combination with implementation of PACFISH, should provide reasonable certainty that site-specific actions will not result in jeopardy to listed salmon or adverse modification of critical habitat.

- The **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*)** from National Marine Fisheries Service, dated August 14, 1998. This BO addresses the effects of continued implementation of LRMPs as amended by PACFISH standards and guidelines where listed distinct population segments of bull trout occur in Idaho, Montana, Oregon, and Washington.

- The **Biological Opinion - *Land and Resource Management Plans for National Forests and Bureau of Land and Management Resource Areas in the Upper Columbia River Basin and Snake River Basin Evolutionarily Significant Units*** by National Marine Fisheries Service dated June 22, 1998. This BO addresses the effects of continued implementation of the 18 LRMPs as amended by PACFISH standards and guidelines on Snake River salmon and steelhead.

- USDA Forest Service, Region 6, 2000, "***Memorandum of Agreement*** between the USDA Forest Service Region 6 and the Washington State Department of Ecology for Meeting Responsibilities under Federal and State Water Quality Laws."

- Annual ***Forest Plan Monitoring and Evaluation Reports*** from 1991 to 2004. The main focus of the Umatilla's monitoring strategy is to ensure consistency in implementing the Forest Plan.

- ***Environmental Assessment for the Management of Noxious Weeds***, Umatilla National Forest, May 1995. Implements a long-term integrated weed management program on 773 specific noxious weed management projects beginning in 1995.

- ***USDA Forest Service Guide to Noxious Weed Prevention Practices*** Version 1.0, July 5, 2001. A comprehensive directory of weed prevention practices for use in Forest Service planning and wildland resource management activities and operations. Identified weed prevention practices that mitigate identified risks of weed introduction and spread for a project or program.

- ***Walla Walla Ranger District Motorized Access and Travel Management Plan,*** Walla Walla Ranger District, July 1993. A comprehensive program resulting in a transportation system which provides for a broad mix of both motorized and non-motorized recreation opportunities while moving toward Forest Plan desired future conditions.

- ***Analysis of Umatilla National Forest Road System,*** dated March, 2004. Forest-scale analysis in determining the minimum road system needed to meet resource and other management objectives.

- The ***Integrated Scientific Assessment for Ecosystem Management in the Interior Columbia Basin*** released 1996. Links landscape, aquatic, terrestrial, social, and economic characterizations to described biophysical and social systems.

- ***Salmonid Project Design Criteria Compliance Worksheet – Blue Mountain Provincial Expedited Process*** July, 2004. Expedited consultation process for mid-Columbia River Steelhead and Columbia River Bull Trout.

- ***Umatilla National Forest Interim Snag Guidance Letter*** dated April, 1993, which provides direction on the number and distribution of snags to retain in harvest units.

- ***National Fire Plan*** (August 2000) developed with the intent of responding to severe wildland fires and their impacts to communities while addressing five key points: Firefighting, Rehabilitation, Hazardous Fuels Reduction, Community Assistance, and Accountability.

- ***Grande Ronde-Rondowa Ecosystem Analysis*** (Draft) dated April 2004. An unpublished ecosystem analysis of the Grande Ronde and Rondowa Basin. Walla Walla Ranger District.

- ***Wallowa and Grande Ronde Rivers Final Management Plan/EA*** dated December 1993. Established management direction for the Wild and Scenic Rivers and identified the Outstanding Remarkable Values for each river.

- ***Region 6 Protocol for Assessment and Management of Soil Quality Conditions*** dated January 2002. Established consistency in soil assessment methods on the Umatilla National Forest and other Blue Mountain forests, and ensures compliance with Forest Plan and NEPA condition assessment needs.

Management Direction

Analysis and documentation has been done according to direction contained in the ***National Forest Management Act*** (NFMA), the ***National Environmental Policy Act*** (NEPA), the ***Council on Environmental Quality Regulations*** (CEQ), the ***Clean Water Act*** (CWA), ***Clean Air Act*** (CAA), ***National Historic Preservation Act*** (NHPA) and the ***Endangered Species Act*** (ESA).

PROJECT RECORD

This EA hereby incorporates by reference the project file (40 CFR 1502.21). The project file contains resource specialist reports and other technical documentation used to support the analysis and conclusions in this EA. Specialists reports are included for the following: soil, water quality, fish, vegetation, historical range of variability (HRV), noxious weeds, visuals, fuels, air quality, recreation, visuals, transportation system (roads), heritage, economics, terrestrial wildlife species and habitats, management indicator species, migratory birds, biological evaluations and assessments for threatened, endangered and sensitive (TE&S) aquatic, terrestrial, and plant species, and deadwood habitat (DecAID analysis). Other sources of information, documents, published studies, and books referred to in the project file and this document are also included.

Relying on specialists reports and the project file helps implement the CEQ's regulation provision that agencies should reduce NEPA paperwork (40 CFR 1500.4), that environmental documents shall be analytic rather than encyclopedic, and that EISs/EAs shall be kept concise and no longer than absolutely necessary (40 CFR 1502.2). The objective is to furnish enough site-specific information to demonstrate a reasoned consideration of the environmental effects of the alternatives and how these effects can be mitigated, without repeating detailed analysis and background information available elsewhere. Additional documentation and more detailed analyses of project area resources are located in the project file for Cobbler Timber Sale and Fuels Reduction Project at Walla Walla Ranger District, Walla Walla, Washington.

FOREST PLAN AND INTERIM DIRECTION

The Forest Plan (USDA Forest Service 1990) provides most of the management direction for Cobbler Timber Sale and Fuels Reduction Project.

The Forest Plan made land allocations using management areas (MA), each of which emphasizes a particular desired future condition (DFC). Forest Plan standards and guidelines provide direction for achieving DFCs.

Additional management direction is provided by Forest Plan amendments approved since 1990, including three amendments in particular:

- "Interim Management Direction Establishing Riparian, Ecosystem and Wildlife Standards for Timber Sales" (USDA Forest Service 1995; also known as Eastside Screens); and
- "Interim Strategies for Managing Anadromous Fish-Producing Watersheds on Federal Lands in Eastern Oregon and Washington, Idaho and Portions of California" (USDA Forest Service and USDI Bureau of Land Management 1994; also known as PACFISH).
- The Pacific Northwest Region Final Environmental Impact Statement for the Invasive Plant Program, 2005, hereby referred to as the R6 2005 FEIS. The R6 2005 FEIS culminated in a Record of Decision (R6 2005 ROD) that amended the Umatilla National Forest Plan.

The Eastside Screens (FP amendment #11; approved 6/12/1995) focuses on the potential impact of timber sales on riparian habitat, historical vegetation patterns, and wildlife fragmentation and connectivity (USDA Forest Service 1995).

PACFISH (FP amendment #10; approved 2/24/1995) establishes management direction designed to arrest and reverse declines in anadromous fish habitat (USDA Forest Service and USDI Bureau of Land Management 1994).

The R6 2005 FEIS (approved 10/11/2005) amended the Forest Plan by adding management direction relative to invasive plants.

No activities would occur in Wenaha-Tucannon Wilderness. There are no undeveloped areas within the project planning area.

Landscape prescribed fire and hardwood restoration would occur in the Grande Ronde IRA. Only landscape prescribed fire would occur in the designated Wild and Scenic management area.

The Forest Plan designates management areas as the way to characterize the landscape for the type and intensity of management activities that may occur on Umatilla National Forest. Management areas within the project planning area are shown in Table 1-1. A map showing management areas within the project planning area is located in Appendix A

Table 1-1 Management Areas – Existing and After Proposed Forest Plan Amendment

Forest Plan Management Areas	Existing Acres	After Proposed Forest Plan Amendment Acres
A4 - Viewshed 2	90	90
A7 - Wild and Scenic Rivers (Grande Ronde)	1,000	1,000
A8 - Scenic Area	6,300	6,300
A9 - Special Interest Area	200	300
C1 - Dedicated Old Growth	600	600
C4 - Wildlife Habitat	6,000	6,000
C5 - Riparian and Wildlife	800	800
D2 - Research Natural Area (Elk Flat Aspen)	80	0
E2 - Timber and Big Game	18,500	18,480
Total	33,570	33,570

Following are brief descriptions of goals, standards, and guidelines associated with each Forest Plan management area allocation located within Cobbler project planning area. Detailed descriptions for each area can be found in the Forest Plan (FP pages 4-94 to 4-186).

- **A4 – Viewshed 2 –** *Goal: Manage the area seen from a travel route, use area, or water body, where forest visitors have a major concern for the scenic qualities as a natural appearing to slightly altered landscape.*

  Timber will be managed on a scheduled basis. All timber management practices and intensities shall be permitted consistent with achieving the primary visual quality goals.

  Low intensity prescribed fire is acceptable.

- **A7 - Wild and Scenic Rivers** - *Goal: Manage classified Wild and Scenic River Segments to appropriate standards as Wild, Scenic, or Recreational River areas, as defined by the Wild and Scenic Rivers Act, Public Law 90-542, October 2, 1968 (U.S. Laws, Statues, etc. 1968), and expanded by the Omnibus Oregon Wild and Scenic Rivers Act of 1988 (Public Laws 100-557) and as amended by Forest Plan Amendment 7 Wallowa & Grande Ronde Rivers Final Management Plan Environmental Assessment pages 61-66 for segment b, Wild section of the Grande Ronde in Oregon.*

  In the wild sections, timber will be managed on a non-scheduled basis to meet Wild and Scenic River goals. Cutting of trees is only permitted where needed to meet primitive recreation, environmental, or other Wild and Scenic River objectives.

  Prescribed burning is permitted. Low intensity prescribed fires, producing minimal scorch and rapid recovery, are the most desirable.

- **A8 – Scenic Area** – *Goal: Protect or enhance the unique natural characteristics of landscaped noted for their scenic beauty.*

  Timber will be managed on a nonscheduled basis. Trees will only be cut to meet or enhance scenic area objectives.

  Prescribed fire may be used as a tool to manage ecosystems

- **A9 – Special Interest Area –** *Goal: Manage, preserve, and interpret areas of significant cultural, historical, geological, botanical, or other special characteristics for educational, scientific, and public enjoyment purposes.*

  Timber harvest will not be scheduled or programmed. Tree cutting and vegetation management may be permitted in order to maintain or enhance the special features of the interest area, to provide for public safety (in areas of concentrated use), to construct or maintain improvements, or in a catastrophic situation. When tree cutting is employed systems will be designed to protect the resource and meet SIA goals. Firewood cutting will not be allowed.

  Fuels treatments should emphasize maintenance of the natural character of the area.

- **C1 – Dedicated Old Growth** – *Goal: Provide and protect sufficient suitable habitat for wildlife species dependent upon mature and/or overmature forest stands, and promote a diversity of vegetative conditions for such species.*

  Timber management and harvest activities will not be scheduled or permitted.

  Natural fuel treatments are permitted to maintain of enhance old growth habitat characteristics or reduce the potential for a high number of and/or severely burned acres.

- **C4 - Wildlife Habitat;** *Goal: Manage Forest Lands to provide high levels of potential habitat effectiveness for big game and other wildlife species with emphases on size and distribution of habitat components (forage and cover areas for elk, snags and dead and down materials for all cavity users) unique wildlife habitats and key use areas will be retained or protected.*

  Timber will be managed on a scheduled basis. All timber management and practices and intensities consistent with achieving the primary wildlife habitat management goals will be permitted.

  All types of prescribed fire may be used to accomplish management objectives.

- **C5 – Riparian (Fish and Wildlife)** – *Goal: Maintain or enhance water quality, and produce a high level of potential habitat capability for all species of fish and wildlife within the designated riparian habitat areas while providing for a high level of habitat effectiveness for big game.*

  Timber will be managed on a scheduled basis.

  Prescribed fire may be used consistent with riparian objectives.

- **D2 – Natural Research Area –** *Goal: Preserve naturally occurring physical and biological units where natural conditions and processes are maintained, insofar as possible for the purposes of: 1) comparison with those lands influenced by man; 2) provision of educational and research areas for ecological and environmental studies; and 3) preservation of gene pools for typical and rare and endangered plants and animals.*

  Timber management use and practices are excluded. Cutting and removal of vegetation is prohibited, except as part of an approved scientific investigation.

  If authorized in a management plan, low intensity unplanned fire or prescribed burns may be used as a tool to mimic a natural fire.

- **E2 - Timber and Big Game;** *Goal: "Manage Forest Lands to emphasize production of wood fiber (timber), encourage forage production, and maintain a moderate level of big game and other wildlife habitat."*

  Timber will be managed on a scheduled basis. All timber management practices and intensities will be permitted.

  Prescribed fire may be used to accomplish a variety of timber and forage production objectives. Care will be used when using prescribed fire due to high resource values and risk of escaped fire.

Commercial harvest would occur in management areas A9 (approximately 15 acres in the Big Hole Viewpoint Area to enhance special features), C4, C5, and E2. The only activity that would occur in management area A7-Wild and Scenic Rivers is landscape prescribed fire.

The majority of acres in the portion of the Grande Ronde IRA (approximately 7,700 acres) within the project planning area are in management areas A7 (1,000 acres) and A8 (6,000 acres) with remaining acres in management areas, C1 (120 acres), C4 (355 acres), C5 (5 acres), and E2 (210 acres). Activities proposed in the Grande Ronde IRA include landscape prescribed fire (A7 and A8) and hardwood restoration (A8). These activities comply with Forest Plan management area associated goals, standards, and guidelines for the IRA.

TREATY RIGHTS

The Forest Service, through the Secretary of Agriculture, is vested with statutory authority and responsibility for managing resources of the National Forests. No sharing of administrative or management decision-making power is held with any other entity. However, commensurate with the authority and responsibility to manage is the obligation to consult, cooperate, and coordinate with Indian Tribes in developing and planning management decisions regarding resources on National Forest system land that may affect tribal rights.

Locally, Cobbler project planning area lies within the area ceded to the United States government by the Nez Perce Indians, and partially within the area ceded to the Unites States by the Confederated Tribes of the Umatilla Indians (CTUIR) as a result of the Treaties of 1855.

Elements of respective Indian cultures, such as tribal welfare, land, and resources were entrusted to the United States government as a result of the treaties. Trust responsibilities resulting from the treaties dictate, in part, that the United States government facilitate the execution of treaty rights and traditional cultural practices of the CTUIR and Nez Perce Indians by working with them on a government to government basis in a manner that attempts a reasonable accommodation of their needs, without compromising the legal positions of the respective tribes or the federal government.

Specific treaty rights applicable to that land base managed by the Umatilla National Forest area generally articulated in Article I of the CTUIR Treaty of 1855 and Article III of the 1855 Nez Perce Treaty, include:

"The exclusive right of taking fish in all the streams where running through or bordering said reservation is further secured to said Indians; as also the right of taking fish at all usual and accustomed places in common with citizens of the Territory; and of erecting temporary buildings for curing, together with the privilege of hunting, gathering roots and berries, and pasturing their horses and cattle upon open and unclaimed land."

Although the 1855 Treaties do not specifically mandate the federal government to manage habitats, there is an implied assumption that an adequate reserve of water be available for executing treaty related hunting and fishing activities.

General concerns received from the tribes on previous projects reflect the following:

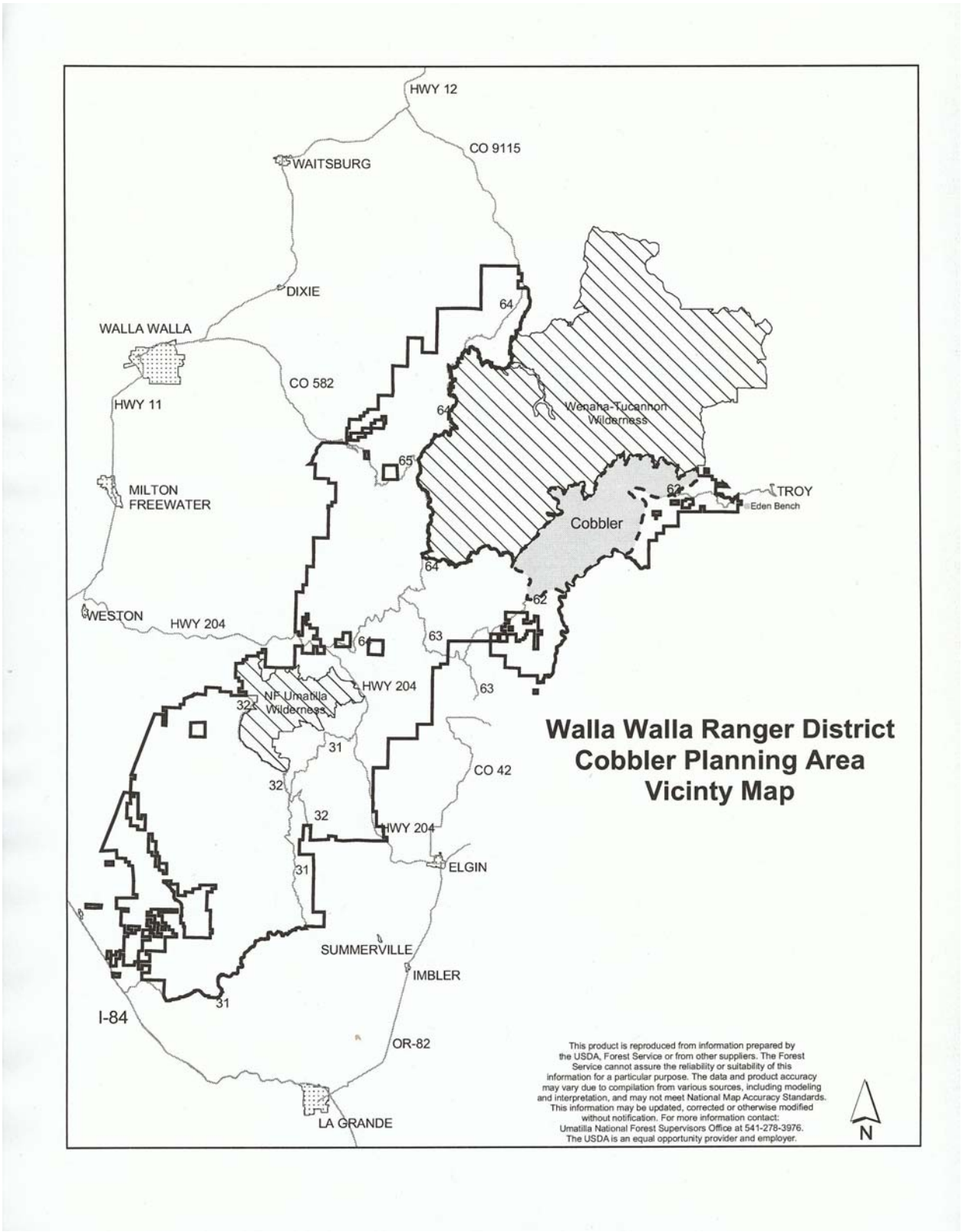
- Potential effects to archeological and traditional properties
- Potential effects to water quality
- Potential effects to fish habitat, including salmonid species federally listed as threatened or endangered under ESA.
- Potential effects to economic recovery

Because tribal trust activities often occur in common with the public, Umatilla National Forest will strive to manage tribal ceded land to enable the execution of tribal rights, as far as practicable, while still providing goods and services to all people.

DECISIONS TO BE MADE

This EA documents the results of environmental analysis conducted for the proposed action and its alternatives. If a Forest Plan amendment is documented in a decision, the Forest Supervisor of the Umatilla National Forest will be the responsible official. If an amendment is not documented in a decision, the District Ranger will be the responsible official. Decisions to be made include:

1. Whether a Forest Plan amendment should occur at this time?
2. Whether harvest and prescribed landscape fire along with associated activities should occur, and if so, how much and where?
3. Whether other vegetation management activities (hardwood restoration, meadow restoration, and non-commercial thinning) and their associated activities should occur and when should they occur?
4. What monitoring or mitigation measures should be taken or needed?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Cobbler
TROY
Eden Bench
WESTON
HWY 204
NF Umatilla
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ELGIN
SUMMERVILLE
IMBLER
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OR-82
LA GRANDE
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Walla Walla Ranger District
Cobbler Planning Area
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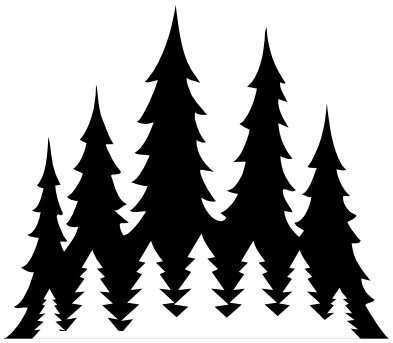
CHAPTER 2

ALTERNATIVES



Chapter 2

Alternatives

INTRODUCTION

Chapter 2 contains descriptions of public involvement and resource issues analyzed for environmental effects. This chapter describes and shows a comparison of three alternatives selected to be developed in detail, including the proposed action and no action alternative. The interdisciplinary (ID) team developed these alternatives to be within the framework of the Forest Plan and applicable federal and state laws. The alternatives developed in detail were designed to address or resolve issues identified through public involvement and cause and effect analysis. Maps showing alternatives considered in detail are located in Appendix A. Also described in this chapter are alternatives considered but not analyzed in detail, and the chapter ends with a comparative synopsis of alternatives that is based on environmental consequences as disclosed in Chapter 3.

ISSUES and PUBLIC INVOLVEMENT

The Forest Service encourages public involvement in the identification of issues and development of alternatives through a process called scoping. Public involvement for this project began when a description of the project was listed in the Winter 2008 quarterly edition of the Umatilla National Forest's Schedule of Proposed Actions (SOPA). On February 22, 2008, letters describing the project were sent on to representatives of the Confederated Tribes of the Umatilla Indian Reservation (CTUIR) and Nez Perce Tribe and to approximately 115 interested organizations, individuals, and other agencies that have indicated an interest in this type of project. The public was invited to comment on this proposed action and any potential conflicts posed by the proposed action.

Four comment letters were received in response to our scoping. Two of the letters received represented timber industry concerns (American Forest Resource Council, and Boise Building) and two represented concerns from environmental organizations (Oregon Wild, and Sierra Club and Hells Canyon Preservation Council). All comments were reviewed by the responsible official and ID team. These comments were then used to identify issues, alternatives to the proposed action, and to determine the extent of environmental analysis necessary for making an informed decision.

In addition to issues identified through public response, the ID team considered potential issues not identified by the public. This was done by first identifying all the activities connected to accomplishing the proposed action. Then the team identified potential cause/effect relationships associated with each type of action that could result in resource conflicts, relying in part on public comments from previous, similar projects. The ID team considered these potential conflicts or issues, together with those identified during scoping, to determine whether it required development of an alternative to the proposed action, needed mitigation measures, or whether it was beyond the scope of this project.

The ID team recommended, and the responsible official approved, the resource issues discussed below for analysis of environmental effects for each alternative analyzed in detail.

- **Elk Habitat –** Comments from the public after scoping expressed concerns about restoring big game habitat and not decreasing any existing habitat. The majority of proposed commercial thinning would occur in Forest Plan management area allocations C4-Wildlife Habitat, and E2-Timber Big Game. Proposed harvest could decrease the density of canopy cover converting satisfactory[1] cover to marginal[2] cover and it could reduce the effectiveness of security areas when screening vegetation is removed. In C4, the Forest Plan requires a minimum of 15 percent of the area is to be managed as satisfactory cover (20 percent is desirable), and in E2 a minimum of 10 percent of the area is to be managed as satisfactory cover. For this project no cover reducing activities were proposed for management area C4, because satisfactory big game cover is currently meeting the Forest Plan standard of 15 percent.

  Differences in alternatives would be displayed by:
  - Acres and percent of satisfactory cover
  - Acres of total cover (marginal plus satisfactory) reduced
  - Acres of hiding cover reduced through non-commercial thinning
  - Relative change of forage (quality and quantity)
  - Miles of closed roads used

- **Old Forest Habitat –**Past timber harvest, other management actions, and insect/disease epidemics have reduced the amount and connectedness of old forest stands. Proposed harvest and fuels treatments (including prescribed burning) would have the potential to affect this habitat type in the project planning area.

  Differences in alternatives would be displayed by:
  - Acres of old forest multi-story (OFMS) changed to old forest single story (OFSS)
  - Acres of thinning within old forest connective corridors
  - Large tree habitat removed (>21 inches DBH trees and snags)

- **Soil Resources** – Soil disturbance would occur with implementation of proposed activities that require ground based equipment, especially where mechanical fuels treatment follows mechanical thinning. Ground based activities could affect soil productivity by compacting soils and possibly cause erosion.

  Differences in alternatives would be displayed by:
  - Total acres of detrimental soil condition (DSC) after activities

- **Hydrology/Water Quality –** Implementation of proposed activities has the potential to affect hydrologic function, water quality, and water yield. These effects could occur due to changes in road systems and ground disturbance associated with harvest, road construction, road use, prescribed burning, and reductions in live tree cover associated with harvest and prescribed fire use.

[1] **Satisfactory cover** – A stand of coniferous trees 40 or more feet tall with an average canopy closure equal to or more than 70 percent. Umatilla Forest Plan defines it as cover used by animals to ameliorate the effect of weather.

[2] **Marginal cover** – A stand of coniferous trees 10 or more feet tall with an average canopy closure equal to or more than 40 percent but less than 70 percent and generally capable of obscuring at least 90 percent of a standing elk from the view of humans at a distance of 200 feet.

Differences in alternatives would be displayed by:

- Hydrologic Function and Condition
  - road density
  - miles of road in RHCAs
- Water Quality
  - water temperature
  - sediment
- Water Yield
  - Equivalent Treatment Acre[3] (ETA) Model, - percent by subwatershed

◆ **Threatened, Endangered and Sensitive (TES)/Management Indicator Species (MIS) Fish Habitat -** Habitat quantity and/or quality for some or all of the three listed fish species and two sensitive fish species in the Grande Ronde and Wenaha Watersheds may be directly or indirectly affected by changes in habitat characteristics. Proposed and related activities have the potential to affect fish habitat through increased sediment delivery, alterations to stream shade, or large wood inputs, and/or through use of petroleum products in or near Riparian Habitat Conservation Areas (RHCAs).

Differences in alternatives would be displayed by:

- pool frequency
- water chemistry
  - temperature
  - sediment
  - chemicals/contamination
- large woody debris
- stream channel conditions
  - bank stability
  - lower bank angle
  - substrate
- change in peak or base flows
- increase in drainage network
- road density and location

► **Vegetation -**The project planning area has been altered from historical conditions due to fire suppression and other past forest management practices. These factors have caused forest stands in the project planning area to be outside of their historical range of variability (HRV) in the following ways: species composition, including the occurrence of hardwoods; forest stand structure, especially stands with single layers and those dominated by large trees; forest stand density; and the amount and maturity of shrubby vegetation. Currently, remaining mature lodgepole pine stands are at the age where they are highly susceptible to bark beetle mortality.

Differences in alternatives would be displayed by:

- Improvement of species composition:
  - Late seral ingrowth reduced in stands currently dominated by early seral species (acres)
  - Diseased and damaged mixed conifer stands regenerated to young trees of primarily early seral species (acres).
  - Hardwood species fenced and/or released from encroaching conifers (acres)
  - Creation of Special Interest area at Elk Flats Meadow to treat existing aspen (acres)

[3] Equivalent Treatment Acres (ETA) model is equivalent to the Equivalent Clearcut Acre (ECA) model and calculates percent disturbance with the same inputs and with the same formulas.

- Improvement of forest stand structures:
  - Stands changed from outside structural class HRV to within HRV (acres)
  - Late seral ingrowth reduced in stands currently dominated by trees ≥ 21inches DBH (acres)
- Improvement of forest stand densities:
  - Stands in which the proportion of early seral species is increased and stand density is reduced from overstocked to recommended levels (acres)
- Provision of wood products:
  - High-risk lodgepole pine stands harvested (acres)

► **Fuels - Fire Return Intervals and Crown Fire Potential –** Concerns have been expressed by the public during scoping on how fuel management should occur and at what levels. Cobbler project planning area is outside historical fire return intervals and could experience higher levels of risk to loss from uncharacteristic wildfire intensity. It is currently experiencing Condition Class[4] changes that are resulting in moving the area further away from historical ranges. Some opponents believe that fuel reduction should proceed cautiously while moving toward ecosystem sustainability. They also believe that fuel objectives can be met by allowing natural fire regimes to operate, or by leaving significant areas untreated when fuel reduction projects are planned.

Differences in alternatives would be displayed by:

- Acres treated within fire regimes of high departure from historical fire return intervals (condition Class 3)
- Acres treated within fire regimes of moderate departure from historical fire return intervals (condition Class 2)
- Acres treated with extreme, very high, and high crown fire potential

◆ **Air Quality** – Fuel treatment activities and prescribed fire could temporarily decrease air quality in communities down wind of the project area and could temporarily place smoke in mandatory Class I areas.

Differences in alternatives would be displayed by:

- Expected total particulate emissions ($PM_{2.5}$)
- Duration and timing of emissions
- Communities potentially affected
- Mandatory Class I areas potentially affected

◆ **Invasive Plant Species and Threatened, Endangered and Sensitive (TES) Plant Species –** Timber harvest and related activities disturb soil and have the potential to affect TES plants and habitat. Disturbed soil provides an ideal opportunity for weed seed to germinate. Vehicles, people, and animals transport noxious weed seed that could become established.

Differences in alternatives would be displayed by:

- Acres of invasive plant species by District treatment priority, that have been previously mapped within harvest units and along haul routes, and potential risk from ground disturbance from proposed activities.
- Biological determination of effects to TES Plant Species

[4] Fire Regime Condition Class describes the deviation from natural fire regimes in terms of fire return interval and vegetative changes from historical composition and density (Hann and Bunnell, 2001).

- **Wildlife Habitat - Threatened, Endangered and Sensitive (TES) Terrestrial Species, Management Indicator Species (MIS), Landbirds, and Dead wood –** Proposed project activities (timber harvest, fuels treatments, landscape prescribed fire, etc.)could affect several habitat types in the project planning area. The Forest Plan has selected management indicator species to represent animals associated with major habitat types. Habitat requirement of these indicator species are presumed to represent those of a larger group of wildlife species.

  Differences in alternatives would be displayed by:
  - **TES**
    - Suitable Canada lynx habitat affected (acres)
    - White-headed woodpecker habitat affected (acres)
  - **Management Indicator Species**
    - American marten habitat affected (acres)
    - Pileated woodpecker nesting habitat affected (acres)
    - Northern three-toed woodpecker habitat affected (acres)
    - All primary excavators – snag density affected

- **Transportation System –**During project activity, approximately 50 miles of open system roads, 1.5 miles of seasonally opened roads, about 40 miles of gated closed system roads would be opened, and approximately 0.25 miles of new system road would be constructed and would become a closed system road after project activity. Approximately 0.2 miles of temporary road would be constructed and decommissioned after project use. Concerns were expressed by the public of using closed system roads, because roads create a major impact on wildlife and are a major cause of erosion. Another commenter expressed a preference for temporary roads as opposed to new road construction.

  Differences in alternatives would be displayed by:
  - Miles of new road construction and temporary road construction
  - Changes to District Motorized Access and Travel Management (ATM) plan

- **Range –** There is approximately 23,500 acres of the Eden C&H Allotment and 125 acres of the North End C&H Allotment with the project planning area. Project activities such as timber harvest, activity fuels treatments, and landscape prescribed fire have the potential to affect pasture rotations, transitory forage, or compromise the integrity of range improvements necessary for management of rangeland resources.

  Differences in alternatives would be displayed by:
  - Changes to permittee access
  - Livestock distribution

- **Visuals/Scenery–** Activities that include timber harvest and prescribed fire may change the visual characteristics and scenery of the area. Four Forest Plan management areas in the project planning area (A4, A7, A8, and A9) have visual quality objectives of preservation, retention, partial retention and modification.

  Differences in alternatives would be displayed by:
  - Consistency with Forest Plan standards and guidelines – Visual Quality Objectives (VQO)

- **Wild and Scenic Area – Grande Ronde –** Cobbler project planning area is located in the Oregon portion of the Grande Ronde Wild and Scenic River. The Wild and Scenic River corridor is a quarter mile wide and is designated as management area A7 – Wild and Scenic River in the Forest Plan. The upper slopes of the canyon are designated as management area A8 – Scenic Area. The Grand Ronde IRA is also located within this portion of the project planning area. Landscape prescribed fire is the only activity proposed within the Wild and Scenic River corridor. All actions must follow guidelines established by the *Wallowa and Grande Ronde Rivers Final Management Plan/EA* (December 1993).

  Differences in alternatives would be displayed by:
  - Effects to outstanding and remarkable Wild and Scenic River values
  - Consistency with *Wallowa and Grande Ronde Rivers Final Management Plan/EA*

- **Recreation** –A wide variety of recreational activities occur in the project planning area including, mushroom gathering, big game hunting and camping mostly associated with hunting, and snowmobiling. Proposed project activities such as timber felling, yarding, hauling road use restrictions, fuel treatments, and danger tree removal could affect public safety, recreation use especially hunter camps, and access to forest roads.

  Differences in alternatives would be displayed by:
  - Increase or decrease in recreational access and use
  - Effects to dispersed hunter camps

- **Inventoried Roadless Areas (IRAs) -** The Grande Ronde IRA is within the project planning area (approximately 7,700 acres). Proposed activities for this area include prescribed fire, and girdling of trees and fencing for hardwood restoration.

  Differences in alternatives would be displayed by:
  - Landscape character and scenic integrity affected
  - Primitive experience affected
  - Habitat for threatened and endangered species affected

- **Economics –** The economic returns from commercially harvested wood and woody biomass products would affect local and regional economies. Economic benefits and the financial efficiency to be derived from the proposed harvest will be evaluated. Feedback from scoping encouraged considering mechanical thinning first, when economically possible, before the use of fire alone or combined with mechanical treatment.

  Differences in alternatives would be displayed by:
  - Alternative efficiency – present net value (PNV)
  - Benefits to regional economy – number of jobs
  - Sale viability – value above base rates

Issues Recommended for Alternative Development

Most of the issues carried through the analysis can be resolved through project design, mitigation, or the required no action alternative. However, two issues stood out as needing an alternative to the proposed action in order to be resolved (40 CFR 1500.4 (g), FSH 1910.15, 12.3). The following issues are considered key[5] issues (or significant issues) and were used in developing an action alternative to the proposed action:

- Elk Habitat
- Old Forest Habitat

Other Public Comments of Concern Received During Scoping

Other comments received during scoping included comments and discussion about the way the Forest Service proposed to do analysis. The process used in this document for analysis is consistent with regulations and direction given in Forest Service manuals and the code of federal regulations.

- One comment letter requested that we present in the EA what the carbon footprint will be, and how much CO_2 will be released over the next ten years due to this proposal?

  Forest Service Response: Management actions proposed for the Cobbler project are designed to improve forest health and reduce the risk of uncharacteristic high-intensity wildfires and insect and disease mortality. Management action designed to maintain or restore forests to healthy productive conditions are critical to maintain carbon stocks and sequestration rates. The comparing of CO_2 emissions between gas and diesel powered engines and contrasting it with a wildfire of unknown scale with particulate emissions make this type of analysis too speculative and questionable. Such an analysis would provide the decision little to no value. There are just too many variables associated with carbon emissions that could include connected components of the local economy (haul, manufacturing, and marketing) as well as the portion of indirect economic benefits that support the timber industry. There is also the benefit realized from stand management actions that would increase carbon sequestration by increasing or maintaining growth rates that would also be considered in balancing carbon emissions. Modeling carbon emissions for the project would not be simple and would require assumptions that science may not be able to support. The information is not available for the various pieces of machinery as well as what assumptions could be made about indirect associated actions and manufacturing. Any attempt to place this project in the context of global warming would have to focus on portions related to carbon fixing and storage. The scale of this action will likely be immeasurable when considered at a global scale. There are things that can be disclosed that would help to demonstrate whether the action has a positive or negative affect on global warming but impossible to place its contribution in the context of cumulative effects because knowing all the sources globally is beyond available science and would be too speculative to be meaningful. Any discussion can only focus on the factors that this project can directly control.

[5] Key issues are defines as "resources or other values that drive the development of an alternative, may be adversely affected by the proposed action, or unresolved conflicts regarding alternative uses of available resources" {NEPA sec. 102(2) (E)}.

- A question was asked as to why the project was not analyzed using the Healthy Forest Restoration Act (HFRA).

  Forest Service Response*:* There are several factors in determining whether a project meets the definition of "authorized" or "covered" by the HFRA. The town of Troy and the Promise, Eden and Bartlett Bench areas are listed as Priority Wildland Urban Interface (WUI) areas within the Wallowa County Community Wildfire Protection Plan (CWPP). The Cobbler project planning area is approximately 5 miles to the west of these communities. The Wallowa County CWPP defines strategies and identifies projects that should occur within these WUI areas, but it does not address areas that lie outside of WUI boundaries. Although possible, it is unlikely that fuels treatments that occur within the Cobbler project planning area would affect a fast moving wildfire burning in the direction of these priority areas.

RANGE OF ALTERNATIVES

Alternatives for this project were designed to express a range of possible actions. The IDT developed the range of alternatives, project design features, and mitigation measures presented in this chapter based on the purpose and need for action described in Chapter 1 of this document.

An adequate range of alternatives is one that fully meets the purpose and need and addresses major issues. An alternative to the proposed action must; (1) address one or more major issues; and (2) meets the purpose and need identified for the project. An action alternative that does not meet both criteria may be eliminated from detailed study.

Other influences considered when developing alternatives included: Forest Plan goals and objectives, Forest Plan standards and guidelines, consultation requirements under the Endangered Species Act, and other federal and state laws and regulations.

Implementation of management activities, described in all action alternatives, is dependent upon funding being available to accomplish them. The USDA Forest Service budget is congressionally mandated by line item. The Forest Service does not have the option to change budget allocations. The line item mandate process requires personnel to "charge as worked" and "work as funded."

Based on public input, the IDT recommended and the responsible official approved two action alternatives in addition to a no action alternative.

ALTERNATIVES CONSIDERED IN DETAIL

Alternative A – No Action

Purpose and Design:

- No new management activities are proposed to occur.
- Current biological and physical processes would be allowed to continue along their present path and serve as a baseline to compare effects.

Description:
With implementation of this alternative, all activities identified in the proposed action would not be approved to occur in Cobbler project planning area. Commercial thinning and fuel treatments for activity and natural fuels would not be authorized. There would be no road construction or removal of danger trees. Landscape prescribed fire, hardwood and meadow restoration, and non-commercial thinning would not occur. There would be no amendment to the Forest Plan to allow for management to maintain and or enhance existing aspen stands in Elk Flats Meadow and adjacent areas.

Previously approved ongoing activities such as domestic cattle grazing, fire protection, firewood cutting, recreation, and road maintenance would continue. This alternative would allow timber stands, identified at this time as needing treatment, to progress through natural successional processes at their own rate. Fuels would not be treated to reduce the risk of uncharacteristic wildfire intensity to allow for a safer environment for fire-fighting personnel during fire suppression.

Alternative B

Purpose and Design:
Alternative B is the proposed action. This is the same alternative used for scoping except that acreages have been adjusted to reflect additional field reviews and updated information and the inclusion of 0.20 miles of temporary road construction. Alternative B uses a combination of treatments to increase ecosystem sustainability in the project planning area and meet the identified purpose and need for action stated in Chapter 1 of this document, while providing sawlogs and wood fiber products for utilization by local and regional industry.

This alternative is designed to:

- Move upland forests toward historical range of variability for species composition, structural diversity, and stocking densities.
- Reduce fuel loads (both ground and ladder fuels), restore historical fuel patterns and fire regimes, and modify the intensity and resulting fire behavior to allow for safer fire suppression efforts
- Reduce risk of personal injury by removing danger trees along trailheads and haul routes used for timber sale activity.
- Protect and enhance vegetative conditions of hardwoods by increasing vigor of existing stands.
- Influence stocking levels, growth, health, and vigor of plantations by implementing non-commercial thinning.
- Amend the Forest Plan to reallocate management area designations in and around Elk Flats Meadow area to maintain and or enhance existing aspen, which have declined, and encourage aspen and other hardwood regeneration in this area.

Description:

TIMBER HARVEST AND FUELS TREATMENTS
Commercially harvest approximately 2,500 acres. In some treatment units timber harvest would include the removal of sawlogs and small diameter trees in the 3-9 inch DBH range, which would be used as a woody biomass product. In some treatment units only woody biomass products would be removed. Harvest objectives would vary by stand condition and fire management objectives. Some stands would be thinned to maintain tree growth and vigor and in other stands to reduce stand density to a level that would not support a crown fire (stands near the rim of the Grande Ronde canyon) and other stands would be

thinned to reduce small ladder fuels so that torching would not cause the fire to move into tree crowns. Treatments would tend to favor leaving early seral tree species such as ponderosa pine and western larch. Commercial thinning is the primary stand prescription to be used. Shelterwood and seed-tree prescriptions would be used in decadent stands where thinning would not restore growth or vigor, and in lodgepole pine stands where the current age of the lodgepole stand is highly susceptible to attack by mountain pine beetle.

Silviculture Prescriptions

A full range of silvicultural methods was considered to respond to the purpose and need. Methods selected were intermediate harvest, even-aged harvest, and a small amount (60 acres) of fuels treatment without material removal. If there would be significant benefits to the health of the remaining stand and in areas where machinery would need to move through a unit, trees larger than 21 inches DBH were considered for removal only from moist forest stands, where stands are within their historical range of variability (HRV). Danger trees 21 inches and greater in either moist or dry forest stands would be felled for safety concerns.

Commercial Thinning (HITH) – 1,890 acres: An intermediate cutting prescription that usually increases crown base height (CBH) (vertical distance to the live crown), reduces crown bulk density (CBD) (density of fuels in the canopy) and stimulates growth and development of residual stands. Trees of 9 inch plus DBH would be removed. Excess small material would be treated by removal, mastication, or burning. This prescription leaves a fully stocked stand. Trees ≥ 21 inches DBH would not be cut unless necessary for safety (danger trees) or to move machinery through the units.

> Commercial thinning in Big Hole Viewpoint - A9 Management Area – 15 acres:
> The stand that incorporates the Big Hole Viewpoint, management area A9-Special Interest Area, would be commercially thinned followed by mechanical fuels treatment. Approximately 15 acres are classified as A9 in the 40 acre stand (Unit 44). The objective of the thinning in the A9 area would be to remove smaller trees from around the large trees, making the stand more visually appealing and highlighting the large tree boles. Excess small material would be treated by removal, mastication, or burning. Danger trees would be removed. Silvicultural and fuel treatment prescriptions would be designed for a retention visual quality objective.

Commercial Thinning with Non-commercial thinning (HITH/NCT) – 230 acres: Small material cutting for ladder fuel reduction, with incidental cutting of trees > 9 inches DBH, which together would increase CBH and reduce CBD. Trees from 3 inches to 9 inches DBH would be cut, leaving the larger trees. The stand would remain fully stocked. Occasional trees > 9 inches DBH would be cut to allow movement of machinery through the stand. Trees ≥ 21 inches DBH would not be cut unless necessary for safety (danger trees) or to move machinery through the units. Trees cut would be harvested where economically feasible, except on approximately 60 acres that are too steep for harvest equipment.

Commercial Thinning with Seed-Tree Cut (HITH/HSST) – 100 acres: Intermediate harvest mixed with even-aged regeneration harvest. This prescription would be used in mature stands of lodgepole pine with a component of western larch. Areas that are mostly lodgepole pine would be seed-tree cut patches. In these patches most of the trees would be harvested, leaving 6 to 12 residual mature trees per acre left. Trees ≥ 21 inches DBH infected with dwarf mistletoe, and danger trees would be cut. Areas that have more healthy larch trees would be the commercial thinning patches. In these patches, the density of trees would be reduced to a prescribed recommended basal area per acre. Excess small material would be treated by removal, mastication, or burning. The resulting stand would be patchy with some areas remaining fully stocked and some areas becoming created openings. The openings would be reforested by natural regeneration or by planting.

Shelterwood Seed Cut with Commercial Thinning (HSSW/HITH) – 30 acres: Even-aged regeneration harvest mixed with intermediate harvest. Prescribed in a stand where most of the acres contain overstocked healthy mature trees, but some of the acres contain predominantly diseased and/or damaged trees. In areas that are mostly in poor condition, the Shelterwood Seed Cut patches, most of the trees would be harvested, leaving 12 to 20 residual mature trees per acre. Trees ≥ 21 inches DBH infected with dwarf mistletoe, and danger trees, would be cut. The openings would be reforested by planting. In areas that have mostly healthy trees, commercial thinning patches, the density of trees would be reduced to a prescribed basal area per acre. Trees ≥ 21 inches DBH would not be cut unless necessary for safety or to move machinery through the units. Excess small material would be treated by removal, mastication, or burning.

Shelterwood or Seed-Tree Cut (HSSW/HSST) – 250 acres: Even-aged regeneration harvest with residual trees. Most trees in the stand would be harvested. The stand would become a created opening. Depending on the number of appropriate leave trees found in the area, there would be 12 to 20 mature residual trees (shelterwood) or 6 to 12 mature residual trees (seed-trees) left. Trees ≥ 21 inches DBH that are danger trees or are infected with dwarf mistletoe would be cut. Excess small material would be treated by removal, mastication, or burning. Openings would be reforested by planting.

Forest Stand Types Proposed for Harvest and Fuels Treatment

Commercial Thinning (HITH) - intermediate harvest

In moderately to densely stocked stands of mixed species composition which have overstory trees primarily in the 9 inch to 20.9 inch DBH classes, the objectives would be to maintain the mixed species composition, rather than allow it to progress further to dominance by late seral species, and to bring the stand densities within suggested stocking levels. It is unlikely that these stands would withstand low intensity fire in the foreseeable future because they have a significant stand component of late seral species which are not old enough to have developed thick bark.

In moderately to densely stocked stands dominated by early seral species, western larch and ponderosa pine, the objectives would be to maintain western larch and ponderosa pine as a dominant stand component, to bring the stand densities within suggested stocking levels for the purpose of maintaining or increasing resistance to environmental stresses, and to prepare the stands to withstand low intensity fire in the future.

In moderately to densely stocked stands of mixed species composition which have overstory trees frequently in the 21 inch to 48 inch DBH and greater size classes, the objectives would be to maintain the overstory trees. This would be accomplished by reducing stocking levels in the seedling through lower tree size classes (less than 1 inch DBH through 20.9 inches DBH) in order to reduce surface and ladder fuels and bring the stand densities within suggested stocking levels for the plant associations. These stands have old trees in a mix of early and late seral species in the overstory, and should be better able to withstand low intensity fire after treatment. Thinning would also help maintain the mixed species composition, rather than allow it to progress further to dominance by late seral species (there are areas of dense late seral seedlings in the understory of these stands). These large-tree dominated stands are relatively common on the local landscape, but, according to information from ICBEMP, over the entire Columbia River Basin they are much rarer than they were before European settlement. “The areal extent of old-forest multi-story structures declined substantially in areas where long fire-return intervals typically would have maintained them. The areal extent of old-forest single-story structures declined substantially within areas where short fire-return intervals typically would have maintained them (Quigley et al. 1996).

Non-Commercial Thinning (NCT) - intermediate harvest and fuels treatment
In densely stocked young stands, some of which are plantations, the objectives are to enhance growth and vigor and reduce excess fuel loads. The majority of trees in these stands are below 9 inches DBH. The term non-commercial refers to these small size classes which would not produce boards from saw timber, although the material from the stands may be sold as biomass material.

Shelterwood and seed cuts (HSSW/HSST) - even-aged harvest
This stand regeneration method is prescribed for stands primarily stocked with suppressed, damaged, and diseased trees with low stocking of healthy trees. Enough trees are expected to remain after harvest to provide some protection from sun and wind to the new seedlings that would be planted or seeded in naturally.

Seed-tree cuts (HSST) - even-aged harvest
This stand regeneration method is prescribed for stands with very few healthy trees. Enough trees are expected to remain after harvest to provide some seed, but not to provide substantial protection to the new stand.

Reforestation

The units proposed for regeneration harvest can be reforested within 5 years. Units where lodgepole pine is the major species would be prescribed for natural regeneration (165 acres). Units that are not dominated by lodgepole pine would be planted (175 acres). The following table shows planting recommendations by seedling density and species composition.

Table 2-1 Planting Recommendations for Cobbler Project Planning Area.

Plant Associations	Seedling Density[1]		Species Composition of Planting Mix (Percent)[2]							
	TPA	Spacing	PP	WL	LP	DF	WP	GF	ES	**SF**
Grand fir/twinflower, grand fir/queencup beadlily	222	14 feet	20	40	NR	25	15	NR	NR	NR

[1] Seedling density recommendations are expressed as both a trees per acre (TPA) figure and its corresponding square-spacing value, in feet. Actual planting amounts might be slightly higher than these values to compensate for expected seedling mortality.
[2] Species composition of planting mix recommendations are based on Powell (2002), and consultation with Bill Collar, reforestation specialist, Walla Walla Ranger District. Column heading codes are: PP: ponderosa pine; WL: western larch; LP: lodgepole pine; DF: Douglas-fir; WP: western white pine; GF: grand fir; ES: Engelmann spruce; SF: subalpine fir. NR = Natural Regeneration, showing tree species expected to establish without planting, were not included in the planting mix but they could be used if seed sources for the recommended species are in short supply.

Natural regeneration in lodgepole pine stands

The probability of obtaining natural regeneration in the lodgepole pine stands harvested in Cobbler project planning area would depend on the spatial distribution of seed trees and whether cone (seed) crops are actually produced while seedbeds are receptive. Lodgepole pine has a low percentage of closed cones (serotiny) in the Blue Mountains, and it is a prolific seed producer and good seed crops occur frequently. Both western larch, where available and not infected with dwarf mistletoe, and lodgepole pine seed trees will be left on the harvest units.

Overstory western larch that is infected with dwarf mistletoe can infect young trees in the understory and is prescribed for removal in regeneration harvest units, where compatible with other resources.

Diseased Large Tree Removal

The number of acres from which diseased trees $\geq$ 21 inches DBH could be harvested is 350 (only in moist forest) in Alternative B. This is approximately 1 percent of the total planning area and less than 2 percent of the 25,400 acres of the planning area where timber harvest is scheduled.

Methods of Harvest

Harvest methods would include conventional ground based (approximately 380 acres) and using a harvester/forwarder (approximately 1,830 acres). Conventional ground based harvesting utilizes a tractor or skidder that would operate on designated trails with selected spacing criteria, and equipment would be required to remain on these designated trails. A harvester/forwarder utilizes two or more pieces of equipment. The trees are felled by either a track based feller/buncher or a processor. Hand felling is also an option with this system. Trees are then processed in the unit with branches and tops (slash) placed on the trail. Yarding of logs is accomplished with a forwarder. A forwarder is a wheeled piece of equipment that transports logs fully suspend from the ground. Since trees are processed in the unit very little landing area is needed. Where available, most of the equipment operates on a slash mat. Operating on a slash mat, along with smaller landings, results in less soil disturbance than conventional ground based systems.

Skyline logging (approximately 230 acres) would occur in areas where topography is suited for this type of logging. In a skyline system, logs would be felled by hand and are yarded up the hill by a system of cables, and logs are either partially or fully suspended to reduce soil disturbance. Skyline yarding landings are slightly smaller than conventional ground-based systems. Whole tree yarding would occur in skyline units.

The following table is a summary of treatment activity and method of harvest for Alternative B:

Table 2-2 Alternative B-Summary of Treatment Activity and Harvest Method

Treatment	Method of Harvest	Approximate Acres
Commercial Thinning - (HITH)	Harvester/Forwarder	1,660
Commercial Thinning - (HITH)	Skyline	230
Commercial Thinning with Non-Commercial Thinning - (HITH/NCT)	Harvester/Forwarder	170

Treatment	Method of Harvest	Approximate Acres
Commercial Thinning with Non-Commercial Thinning - (HITH/NCT)	No yarding	60
Shelterwood or Seed-Tree Cut (HSSW/HSST)	Ground based tractor	250
Commercial Thinning with Seed-Tree Cut (HITH/HSST)	Ground based tractor	100
Shelterwood Seed Cut with Commercial Thinning (HSSW/HITH)	Ground based tractor	30
Total		**2,500**

Activity and Existing Natural Fuels Treatments

Fuel treatments are proposed to reduce activity generated (slash) and/or existing natural fuels. When a timber stand's understory and surface fuel composition creates a risk to fire moving into the crown, understory thinning is proposed. Thinning would be done using timber harvest, hand and/or mechanical treatments of small diameter material. Most proposed units would remove small sawlog material through commercial thinning. There is a portion of units where the objective is to remove the less than 9 inch DBH material; however, in order for the forwarder/processor to move through the stand, some removal of trees greater than 9 inches DBH would also be required. If it is economically feasible, material from 3 to 9 inches DBH in size would be removed as a woody biomass product, except in two units (13 and 26) totaling 60 acres which are too steep for harvest equipment. If it is not economically feasible, fuel treatments would rely on mastication, grapple piling, and burning. In units proposed for commercial harvest, slash treatments would include mastication, grapple piling, and prescribed fire, depending on slash loads and the amount of fire sensitive species remaining after harvest. Yarding with tops attached is also proposed for units with a silvicultural prescription of shelterwood/seed-tree, to prevent excessive slash fuel loading remaining in stands. Soils would be protected by reducing the amount of times equipment passes over the ground by using existing skid trails or allowing a single pass of the machinery along a route. Mastication would be used to treat both activity fuels and ladder fuels when small diameter understory is removed as woody biomass (3–9 inch DBH material) and there still remains a high density of understory. Hand piling would be used as a fuel reduction method in portions of units where visual quality is a concern, mainly along FR 62 (approximately 10 acres).

The following table is a detailed summary of proposed fuel treatments by acres.

Table 2-3 Alternative B-Summary of Activity and Natural Fuel Treatments

Activity	Approximate Acres
Material Removal* and mastication - 3-9 inch DBH material	400
Material Removal* and prescribed fire -3-9 inch DBH material	100
Mastication or grapple pile	1,320
Mastication or grapple pile and/or prescribed fire	410
Burn piles on landings	230
Hand pile burning in units	40
Total	**2,500**
* If economically feasible	

Understory Thinning (hazardous fuel reduction): Normally, one of the below referenced treatments would occur in a specific unit depending upon the market conditions for the sale of woody biomass products at the time of implementation. The preferred option would be commercial material removal over mastication. In some stands, trees less than 3 inches DBH are abundant and are too small to be removed commercially, therefore, would be thinned using mastication. In dry forest stands where underburning would follow removal of 3-9 inch DBH material, it may be necessary to masticate the less than 3 inch material prior to burning so that it does not function as "ladders" for flames to climb into overstory canopies. The objective of understory thinning is raise the canopy base height so that a fire burning through surface fuel does not transition into overstory tree crowns.

- Removal of 3–9 inch DBH Material: This treatment would thin understory to reduce ladder fuels, decrease stand density, and provide woody biomass products for local industry. Treatment could occur simultaneously with overstory harvest in units where both are proposed. In units were conventional ground based logging systems would occur, a separate entry may be necessary to remove this smaller material. Fire resistant species (ponderosa pine, western larch, and Douglas fir) would be favored as leave trees where they occur. Small trees with low hanging branches (increased canopy base height) would be removed to deter the initiation of a crown fire within the treated stand. Increased spacing of trees (reduced canopy bulk density) would result in bringing a crown fire that was initiated outside the stand back to the ground. Tree bole spacing is anticipated to range from 16-20 feet. Tree density within this size class range from 50-80 trees/acre.

- Mastication of <1–7 inches DBH Material : This treatment would be comparable to the understory thinning described above with the exception that material would be masticated as opposed to being removed for a commercial product. Objectives of desired bole spacing and density are the same as described for understory thinning. Excess dead and down woody material (less than 12 inches large end diameter) along with excess snags (less than 9 inches DBH) would also be masticated. A commercial entry to remove trees may be needed in some stands in order to allow enough space to operate equipment.

Tractor Yarding Top Attached: Tops would be left attached to the last log and yarded to the landing and piled after being severed from the attached log. This material may be utilized for woody biomass products or burned in the pile. Landing piles would generally be large in size, but no larger than 1/10 of an acre.

Skyline Units: Harvested trees in skyline units would be whole tree yarded. Non-merchantable tops and branches would remain attached until the tree reaches the landing. Once at the landing, trees would be limbed and topped. Limbs and tops would be piled at the landing and eventually burned.

Piling – Grapple: This is a machine treatment that lifts fuel up and lays it in a pile. Both naturally occurring woody debris and activity generated fuels would be piled. Chain saws may be used to compact material in the pile and throughout the unit to cut logs in lengths that are more easily piled. Pile size would vary. This method could be used in place of mastication when surface fuels are not continuous and fire intolerant trees need protection.

Piling – Hand: Hand Piling would occur in areas where aesthetic values are important, or where resource values require a low impact treatment method. Chain saws may be used to compact material in the pile. Pile size would vary.

Pile Burning: Piles could be created either mechanically (in the unit or at landings) or by hand piling. Burning would occur when the threat of fire spreading from the pile location would be low. A portion of the piles may be covered to aid in burning the piles under moist conditions. Piles would be lit by hand

using drip torches. Pile specifications would ensure that pile burning would have minimal damage to residual trees in the stand. Large landings piles that could create a considerable area of bare soil would be replanted to native grasses.

Jackpot burning: This treatment utilizes spot ignitions to remove heavier fuel concentrations. This burning would be conducted by hand or with the use of ATV mounted ignition devices. This method would be used in stands dominated by fire resistant species.

Underburning: Low intensity prescribed fire would be applied to a broad area using hand ignition devices. This method would be used to favor early seral, fire resistant species composition and structure while reducing surface and ladder fuels. Under burning would be used to reduce activity and natural fuels in harvest units or other areas having a need to treat natural fuels. The following activities are associated with this treatment method:

- Mop-up: Mop-up would occur only when: fire creep would cause unacceptable mortality to leave trees within the unit, fire spread threatens unit boundaries, or smoke management issues arise.
- RHCAs: There would be no ignitions within RHCAs, but fire would be allowed to creep into these areas. Fire severity in forested RHCAs would be kept within the non-lethal[6] severity for 90 percent or more of the affected area; and no more than 5 percent of the affected area would be in a lethal[7] fire severity.
- Drafting: Ponds and streams would provide fall and spring water sources for fire mop-up/control needs. Draft locations would be the pond at the junction of FRs 6200 and 6212, Bear Creek at Bear Creek Campground, the pond at FR 6200-380 spur, and the pond on FR 6222.

Road Management

To accomplish implementation of proposed activities, approximately 50 miles of open system roads, about 40 miles of gated closed system roads, and 1.5 miles of seasonally open roads would be used as haul routes. Of the open road miles, approximately 14 miles are outside of the project planning area and represent haul routes to county roads. Closed roads used for project activities would not be opened to the general public. All system roads would remain the same after project implementation (open roads would remain opened, closed roads would continue to be closed and seasonally open roads would continue with that designation).

Approximately 0.25 miles of new construction would occur to access a project activity unit (42) and be available for future management access. It would become a closed system road after project use. This new construction is located in the District's Motorized Access Travel Management Plan's *Huntit Springs Strategy Area* that is closed yearlong to motorized travel. This new construction would serve as a link to an existing road system in the area. The original section of road that connected this road system was eliminated by the survey and posting of the Wenaha-Tucannon Wilderness boundary. The new road would be constructed with a self-maintaining design that is outsloped, with rolling drain dips and surfacing as needed. This area of construction has a very slight side slope, so cuts and fill slopes would be minimal in size. Approximately 0.20 miles of temporary road construction would occur off FR 6214 to access two harvest units (#88 and 89), and would be decommissioned after timber sale use. This temporary road would be built on a ridge where a user-developed jeep trail already exists. It would not require cut and fill construction. If the road remains over winter, waterbars would be installed to prevent

[6] **Non-lethal severity** is defined as more than 90 percent of the canopy cover or 70 percent of the basal area survives the burn.
[7] **Lethal (Stand replacement) severity** is less than 10 percent of the canopy cover or less than 20 percent of the basal area of the overstory vegetation remains after the fire.

erosion. Upon completion of timber sale activities the road would be subsoiled, berms would be pulled into the roadbed. It would be revegetated with native seed, and mulching with existing slash would occur. The road entrance would be camouflaged to discourage use. A complete listing of roads used for the project is located in Appendix C.

Road Maintenance: Road maintenance is needed to protect water quality and aquatic resources, to meet access needs, and to provide safe and efficient road operations. Road maintenance consists of a variety of activity components including surface rock replacement, spot surfacing, roadside brushing, erosion control, logging out, road surface blading, ditch cleanout, slide removal, dust abatement, culvert cleaning or replacement, danger tree removal, and other items that contribute to the preservation of the existing road and its safe use. Approximately 11 miles of roadbed reconditioning and surface rock replacement would occur on FR 6200, reconditioning and adding drainage structures on FRs 6200163, 6222, and 6219050. Some spot surfacing and replacing aggregate on FR 6214, and creating a truck turnaround beyond the FR6214060 junction would occur. On FR 6222 near Squaw Creek an undersized culvert would be removed and an adequate ditch would be constructed to a new drain dip location that would transport water that is currently accumulating at the site. Another drain dip would be constructed to handle the flow from a seep and wet bank just east of Squaw Creek crossing.

Material Sources: Three existing rock sources would be used and there would not be a need for any further expansion.
Water Sources: Three water sources would be used (ponds located at FR 6200390 and Bear Creek at FRs 6200, and 6214036).

The following table shows a summary of transportation activities that would occur.

Table 2-4 Alternative B-Summary of Transportation Activities

Activity	Amount
Maintenance:	
Standard Maintenance	90 miles
Surface rock replacement	11 miles
Heavy brushing	65 miles
New Road Construction (would become a closed system road)	0.25 miles
Temporary Road Construction (decommissioned subsequent to use)	0.20 miles
Gated closed system roads to be opened for project access and then reclosed	40 miles
Rock Sources	3
Water Sources	3

DANGER TREE REMOVAL

Danger trees would be felled and removed along all haul routes used for timber sale activity and around trailheads. Trees with an imminent failure potential and those deemed likely to fail within a 5-10 year period would be felled along open system roads. Only danger trees with an imminent failure potential would be felled on closed system roads. If considered economically feasible, these trees would be sold as part of a timber sale. Danger trees within Riparian Habitat Conservation Areas (RHCAs) would be felled and left to provide additional coarse woody debris.

A danger tree is defined as any standing tree that presents hazard to people due to conditions such as, but not limited to, deterioration or physical damage to the root system, trunk, stem, or limbs and the direction or lean of the tree (FSH 6709.11, Glossary). Along roadways, danger trees would be evaluated in accordance with the *Field Guide for Danger Tree Identification and Response*, Pacific Northwest Region, 2005. Danger trees around trailheads would be evaluated in the context of *Long Range Planning for Developed Sites in the Pacific Northwest: The Context of Hazard Tree Management, Pacific Northwest*

Region, 1992. A tree's potential failure zone is the area that could be reached by any part of a failed tree. This is generally one and one-half tree lengths, but can vary depending on slope, tree height, lean, individual tree characteristics, and other factors.

LANDSCAPE PRESCRIBED FIRE (GRANDE RONDE RIVER, BEAR CREEK AND ALDER CREEK CANYONS)

Landscape prescribed fire would occur across approximately 8,000 acres within the Bear Creek, Alder Creek and Grande Ronde canyons, including approximately 7,700 acres of the Grande Ronde inventoried roadless area (IRA). This treatment would reintroduce fire to a fire-dependent ecosystem blackening about 60 percent of the area to lessen the impact of a future uncharacteristic wildfire and improve forage quality for big game. Fire intensities would be kept low, by keeping fire out of overstory stands, and burning mainly surface fuels throughout the majority of the project area. Individual tree and group torching would likely occur in areas where there are sufficient ladder fuels and in timber stands with high occurrences of mistletoe. Average flame lengths in the project area would be approximately 1-3 feet. Because this is such a large prescribed fire area and much of the perimeter is not bounded by roads or other fire breaks, fire will be allowed to creep outside the perimeter within the identified contingency area. This contingency area is defined by FR 6200000 on the west side and FR 6222000 on the north side. If fire behavior were to become more active in the contingency area, including making runs, spotting, torching, crowning, or have sustained flame lengths over 4 feet immediate suppression actions would occur.

Upon completion of treatment this area would be a mosaic of unburned, lightly burned, moderately burned, and intensely burned patches. Of those acres blackened by fire, approximately 10 percent would be burned at a high intensity, 40 percent at moderate intensity and 50 percent at low intensity. High, moderate, and low intensities are defined as follows:

- High intensity-individual and group tree torching, 10-20 foot flame lengths, high heat output: standing trees are killed; majority of fuel in all size classes is consumed: 1-20 acre patches

- Moderate intensity-individual tree torching, 5-10 foot flame lengths, moderate heat output, 80 percent of fire tolerant species survive, fire intolerant species are killed through second order fire effects, majority of understory trees are killed, one hour (0-¼ inch), ten hour (¼ – 1 inch) and hundred hour (1-3 inch) fuels are totally consumed, thousand hour (3-9 inch) fuels are reduced by 50 percent: 5-50 acre patches

- Low intensity-fire burning in surface fuels and understory, 1-5 foot flame lengths, low heat output, small groups of regeneration are killed, one, ten and hundred hour fuels are reduced by 50 percent, thousand hour fuels are not consumed: 10-100 acre patches

Firelines: Construction of handlines and machine lines will not be necessary within the canyons. Handlines may be used on the outer edges of the prescribed fire perimeter to stop fire spread. The area would be burned in stages, breaking up the larger 8,000 acre unit into 2-6 smaller prescribed fire units. Blacklining methods would be used to define areas to be burned and to hold fire along drainage breaks during implementation of each of the smaller prescribed fire areas. Blacklining operations along the breaks of Bear and Alder canyons would be implemented through hand ignition methods.

Ignitions: Aerial ignition would be used in large prescribed fire units in the canyons. All interior areas of the Bear and Alder Creek canyons would be aerially ignited. Aerial ignition involves utilizing a helicopter to drop polystyrene spheres (similar to ping pong balls) onto receptive fuel beds within the project perimeter. These spheres are injected with chemicals that cause them to ignite shortly after hitting the ground. Fuel for hand ignitions would be mixed prior to arrival at the prescribed fire area.

Helicopter Service Areas: Large, open, flat ridges in close proximity to the Bear and Alder Creek canyons would be used for landing and fueling the helicopter for aerial ignition. One such location would be the large, open area off FR 6200340 or FR 6200345. Another possible location would be near the junction of FR 6222000 and FR 6222027. Fuel for helicopter operations would only be onsite during ignition, and would not be stored at these locations long-term.

Use of ATVs: ATVs may be used during blacklining or aerial ignition operations and would be used primarily on open and closed Forest roads and open ridgetops in the prescribed fire area.

Mop-up, riparian ignition and protection, and water drafting would be the same as described for activity fuel treatments above.

HARDWOOD RESTORATION

Release from conifers and construction of protective fencing would occur on 23 hardwood sites (aspen, black cottonwood, and mountain mahogany), encompassing approximately 115 acres. This includes one site that contains several aspen stands at Elk Flats Meadow, 10 additional aspen stands scattered within the Cobbler project planning area, as well as 11 cottonwood stands, and 1 mountain mahogany stand. Most of these stands have only mature or over-mature hardwood trees with little or no regeneration, or regeneration that is being severely browsed. Some competing conifers would be cut and left on site. The down wood would become barriers to grazing animals. Limbs may be piled and burned. Other conifer trees would be girdled to increase water and sunlight to aspen while allowing conifers to die out slowly. Fencing would occur as funding allows.

Access to sites outside of RHCAs would be either by truck or ATV. For sites within RHCAs, only ATVs would be used to deliver supplies. Where conifers are felled within meadows or RHCAs, slash may be hand piled and burned. No travel by ATV would occur within meadows except when they are dry, and travel would be limited to three or fewer passes. In the Grande Ronde IRA there would be no vehicle travel (including ATVs), competing conifers would be girdled, and fencing would occur as funding becomes available.

Post And Poles

Poles for buck and pole fencing for hardwood protection would be cut from four areas in the Bear Flat and Long Meadows areas adjacent to Forest Service roads, totaling about 550 acres. Material would be cut no more than 300 feet from the road and vehicles would be allowed to leave the road to pick up the poles. The access route to the poles would not be cleared and evidence of off-road travel would be controlled. In most cases poles would be carried to the vehicle. Fence material collection and construction would begin in the spring, after soils have dried out and before fire season begins in mid-summer or after fire season has ended in the fall. Poles would be collected using chainsaws, trucks, ATVs, and trailers. Work areas and collection sites would utilize old landings and would be restored to their previous condition after work is completed. These same post and pole areas would also be used for personal use permit areas.

MEADOW RESTORATION

A series of dry meadows along FR 62, an estimated 275 acres, would be burned to rejuvenate meadow vegetation and reduce conifer encroachment. Young trees are growing and becoming established in areas that were maintained as grass before fire suppression. Trees less than or equal to 6 inches DBH would be cut by hand followed by prescribed fire. The ignition would be by hand or ATVs would be used when the site is dry. This activity would occur over multiple years and may require a temporary electric fence around the meadows to keep cattle out, so enough grass is retained to carry the fire. Some of these meadows are in close proximity to old forest stands that are proposed for thinning. Some fire would

likely creep into the forest stands, but the design and timing of burning would limit the amount of tree mortality while reducing fuel in these stands. Burning in meadows would be coordinated with the range grazing program.

NON-COMMERCIAL THINNING

This activity would cut trees measuring less than 6 inches DBH that are excess to full stocking, on approximately 1,900 acres (outside of proposed harvest and fuels treatment units). Trees up to 9 inches DBH also may be cut in some units because of special circumstances such as insects and disease. The primary objective in all non-commercial thinning units is for enhancement of growth and vigor. Undesired trees and fuels would be mechanically masticated or slashed by hand and scattered. In non-commercial thinning units adjacent to fuel reduction units where mechanical mastication methods would be used, slash would be treated so that the resulting height of surface fuels is no greater than 1-foot in depth. In other units, slash may be treated so that the remaining height of surface fuels is no greater than 2 feet in depth, with the total acres within the project area thinned with a 2-foot slash depth not to exceed 250 acres in one year. Logs greater than 12 inches in diameter on the large end would be left untreated.

Leave tree spacing would range from 15 feet x 15 feet or 194 trees per acre (TPA) for Engelmann spruce and grand fir on moist plant associations to 20 feet x 20 feet (108 TPA) for ponderosa pine and lodgepole pine in dry plant associations. Tree selection would allow the spacing to vary by 50 percent giving the stand a more natural look and would allow the selection of best trees. RHCAs would not be thinned. Leave tree selection would be done to retain a diversity of tree species on the unit; however, healthy early seral species such as larch, ponderosa pine, and Douglas fir would be favored. Residual trees would be protected from scarring.

FOREST PLAN AMENDMENT[8]:

This alternative would require the Forest Supervisor to amend the Umatilla National Forest Land and Resource Management Plan to change acres in management area allocations in D2- Research Natural Area, E2- Timber and Big Game, and A9-Special Interest Area to allow for restoration of existing aspen stands.

Elk Flats Meadow (70 acres) which is currently designated as management area D2 as a proposed research natural area candidate would be allocated to management area A9- Special Interest Area, in order to allow vegetation management, including cutting and leaving of trees, to maintain and or enhance existing aspen and encourage aspen regeneration. In the same vicinity, an adjacent portion of management area E2 (30 acres) which is primarily comprised of meadows would be changed to A9, and a small area of D2 (10 acres) that does not contain hardwood stands or have any special interest features would be changed to management area E2.

Elk Flats Meadow is currently not compatible with the current Forest Plan management area designation of D2 – Research Natural Area. Evaluations by the Blue Mountain's Forest Ecologist after completion of the Forest Plan indicated that formal RNA designation is not appropriate for Elk Flats Meadow, because of the small size of the parcel and because the aspen clones are ecotonal (i.e. transitional between forest and meadow) rather than true aspen forest. Designation of Elk Flats Meadow to management area A9-Special Interest Area would allow for restoration treatments of existing aspen stands. Cutting and removal of vegetation in D2 is prohibited, except as part of an approved scientific investigation.

[8] *This amendment is being proposed under the 2008 Forest Service planning regulations (36 CFR 219) which allow plan amendments to be made using the procedures from the 1982 planning regulations during the three-year transition period (36 CFR 219.14(b)(2).*

Changes to the Forest Plan would be made on page 4-175 under the "Description" heading which now reads "*Eight areas have been identified and are managed as research natural areas. Three (Pataha, Rainbow Creek, and Wenaha Breaks*[9]*) have been established by the Chief's order. The other five candidate areas are Elk Flats Meadows, Kelly Creek Butte, Mill Creek Watershed…*"

The Forest Plan would be amended to read "*Seven areas have been identified and are managed as research natural areas. Three (Pataha ,Rainbow Creek, and Wenaha Breaks) have been established by the Chief's order. The other four candidate areas are Kelly Creek Butte, Mill Creek Watershed….*" It would also amend the Forest Plan on page 4-131, under A9-Special Interest Area, to include the addition of Elk Flats Meadow under the description of Botanical Areas. This amendment would last beyond project duration and would remain in effect until the Forest Plan is revised.

The following table is a summary of present and proposed changes to management area allocations with this Forest Plan amendment.

Table 2-5 Management Area Changes with Forest Plan Amendment

Present Management Area Allocation	Forest Plan Amendment Reallocated to	Acres Reallocated
D2 - Research Natural Area (Elk Flats Meadow)	A9 - Special Interest Area	70
E2 - Timber and Big Game (aspen stands)	A9 - Special Interest Area	30
D2 - Research Natural Area	E2 - Timber and Big Game	10
Total		**110**

DESIGN FEATURES AND MANAGEMENT REQUIREMENTS

Umatilla National Forest uses two general types of mitigation: project design features and management requirements. Management requirements are standards that are established to protect forest resources, and are implemented during or after project implementation. Project design features are actions designed for a specific project to reduce or prevent undesirable effects from proposed activities. Project design elements can include avoiding the effect, minimizing or mitigating the effect by limiting the action, rectifying the effect, reducing the effect through maintenance, or compensating for the effect.

[9] A decision to amend the Forest Plan and a Designation Order to establish Wenaha Breaks as a designated RNA were signed July 29, 2008.

The following table lists the design features and management requirements to minimize the effects of proposed management activities. Effectiveness of implementing these measures is considered to be high for this project because they have been used successfully for projects on the Umatilla National Forest. Past Forest Plan monitoring, and annual evaluation reports have documented the effectiveness of these measures.

Table 2-6 Design Features and Management Requirements

Objective	Task	Timeline
HYDROLOGY/WATER QUALITY		
PACFISH Protection of Riparian Habitat Conservation Areas (RHCAs)	Stream and riparian protection is based on the Forest Plan as amended by PACFISH. PACFISH standards and guidelines related to timber harvest, roads, and fire apply to this project and are incorporated by reference into this document. No harvest will take place in RHCAs which are described below as they apply to this project. **Category 1** - Fish-bearing streams: RHCAs consist of the stream and the area on either side of the stream extending 300 feet slope distance from the edges of the active stream channel. **Category 2** - Perennial non-fish-bearing streams: RHCAs consist of the stream and the area on either side of the stream extending 150 feet slope distance from the edges of the active stream channel. **Category 3** - Ponds, lakes, reservoirs, and wetlands greater than 1 acre: RHCAs consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, or the extent of the seasonally saturated soil, 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 RHCAs must include: the area from the edges of the stream channel, wetland, landslide, or land-slide prone area to a distance equal to 120 feet.	Prior to and during activity
Protection of water quality (Clean Water Act)	Implement and monitor Best Management Practices (BMPs) and incorporate findings into project implementation (See Appendix D for a listing of BMPs selected for project implementation along with effectiveness rating). Ground based equipment will cross ephemeral draws and channels at sites pre-approved by the responsible Forest official, and crossings will be minimized. • Harvest systems will be designed to minimize crossing ephemeral draws. Ephemeral draws will not be crossed where equipment will cause bank breakdown. • All embedded wood will be retained. Other wood will be retained as specified in project BMPs (Appendix D) Ephemeral stream channels will not be used as forwarder trails, landing sites, or as road locations. Commercial use of National Forest roads shall be suspended when commercial contract or permit operations create a continuous discharge of sediment into live streams that result in an increase on turbidity. This may be from pumping of saturated fines creating sediment-laden water on and/or from the road surface. Visual evidence of this may be identified by the increase in turbidity in live running streams evident at points downstream from the outflows of culverts, ditchlines, or fords (Umatilla NF Road Use Rules).	Prior to, during, and post activity

Objective	Task	Timeline
Protection of water quality (Clean Water Act)	Timber sale purchaser will prepare a spill containment plan that will ensure that spilled fuel will not leave the site. Fuel will not be stored within any RHCA. Rock surfacing will be used on haul routes that cross or otherwise enter RHCAs. Culvert replacement in tributary draws will remain in the topographic draw, ditch relief culverts could be in new locations. Rocked drain dips will be constructed at side ephemeral draws. Where the proposed haul routes encounter wet areas, new drainage structures and surface rock will be installed. The proposed temporary road will have drainage installed if it remained over-winter. Upon completion of project activity the road will be subsoiled. Berms will be pulled into the roadbed, and the road will be revegetated with native seed and mulched with existing slash. The road entrance will be camouflaged to discourage use.	Prior to, during, and post activity
FISH/AQUATIC HABITAT		
Protection of fish habitat	State of Oregon in-stream work window (from July 1 to September 15) will be used to replace culverts in stream channels with perennial flows. When water drafting, sources will be monitored for reduced flows. When and if low flow (less than 5 cfs) conditions are identified, spring-fed ponds will be used as sources prior to the use of stream sources whenever feasible. When spring-fed ponds are not feasible, stream sources can be used but pumping rates must not reduce flows to less than 5 cfs. If the stream has less than 10 cfs, stream flow cannot be reduced more than 1/10th of the existing stream flow and will discontinue drafting if this amount is exceeded. During road maintenance and snow plowing side casting of materials will not occur where these materials could be directly or indirectly introduced into a stream, or where the placement of these materials could contribute to the destabilization of the slope. Slough and waste materials removed during road maintenance activities, including ditch and culvert cleaning, will be deposited in approved disposal areas outside of RHCAs. For erosion control and stabilization the disposal site will be seeded with native seed. Sediment control devices will be placed to trap sediment in specific areas where sediment could reach a stream. When masticating equipment is used to remove brush at stream crossings it will be used in such a way as to not cause ground disturbance and to prevent sediment delivery to a live stream. Brush and other standing vegetation that provides shade to streams will be maintained except where public safety is an issue. Ditches will only be maintained where the water captured by the ditch is not able to be transported to the adjacent drainage structure that carries the water across the road. Refueling, repair, and maintenance of equipment will be done at landings or on forest roads outside of RHCAs.	Prior to, during, and post activity

Objective	Task	Timeline
AIR QUALITY		
Protection of air quality (Clean Air Act)	Oregon State Smoke Management Plan regulations will be followed to protect air quality and avoid smoke intrusion into sensitive areas.	During activity
SOILS		
Protection of soil during burning	Retain as much duff as possible, while meeting fuel reduction objectives to control erosion and provide organic matter. With jackpot or underburning, soil exposure will be limited to 20 percent or less of the area on steep slopes.	During, and post activity
Erosion control on fire lines	Fireline construction will only occur where necessary. Any fireline constructed will be to minimal standard. Locations will be evaluated post-harvest. All firelines will be waterbarred and seeded at project completion, as needed.	Prior to, during and post activity
Soil protection/erosion control	All logging systems will provide at least one-end suspension. Yarding will be spaced for optimum efficiency and minimum soil disturbance. Forwarder trails will average 50 feet apart, except where converging. Conventional system trail spacing will average 100 feet. Skyline system corridors will average 150 feet apart. All trails will be approved prior to use. Use existing trail system as much as possible. Ground based equipment will operate when soil conditions are dry enough to support machinery adequately. No ground-based equipment will operate on sustained slopes greater than 35% in order to reduce the potential for soil movement. Minimize exposure of soils and keep erosion control current. Landings will be designed to minimize size and constructed to minimize adverse effects and provide for safe operations. During and upon completion of harvest activities erosion control measures will occur on forwarder trails and landings. Seed all soil exposed by operation using native seed. Waterbar and mulch as necessary to prevent erosion. Post-activity exposed mineral soil will be treated as necessary to reduce soil erosion and compaction. This may include seeding, installation of waterbars, mulching with native material, or subsoiling. Where possible and needed, skid trails will be subsoiled and/or have logging slash and large wood left. Temporary roads - install drainage if roads remain over-winter, after use subsoil, pull berms into roadbed, revegetate with native seed, mulch with existing slash, and camouflage entrance to discourage use.	Prior to and during activity

Objective	Task	Timeline
INVASIVE PLANT SPECIES		
Control and prevention of invasive plants (noxious weeds)	Noxious weed sites will be treated consistent with the 1995 Umatilla National Forest noxious weed Decision Notice and consistent with the 2005 Region 6 Invasive Plant EIS and ROD that amended the Umatilla Forest Plan in March, 2006. All gravel, fill, sand stockpiles, quarry sites, and borrow material will be inspected for the presence of invasive plants before use and transport. Use only gravel, fill, sand, and rock that are judged to be weed seed free by District or Forest weed specialist. Road blading, brushing and ditch cleaning in areas with high concentrations of invasive plants will be conducted in consultation with District or Forest-level invasive plant specialists. Invasive plant treatment and prevention practices will be incorporated as appropriate. This may include minimizing soil disturbance, but will not preclude it. Project or contract maps will show currently inventoried high priority noxious weed infestations as a means of aiding in avoidance and/or monitoring. Prior to moving onto the Forest, reasonable measures will be taken to insure that all off-road equipment is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds. In addition, prior to moving off-road equipment from a cutting unit known to be infested with invasive species to any other unit that is believed to be free of noxious weeds, reasonable measures will again be taken to make sure equipment is free of soil, seeds, vegetative matter, or other debris that could contain or hold seeds (timber sale contract provision B/BT 6.35 or equivalent provision). Use weed-free straw and mulch for all projects conducted or authorized by the Forest Service on National Forest System Lands. If state certified straw and/or mulch is not available, individual forests should require sources certified to be weed free using the North American Weed Free Forage Program standards, or a similar certification process All soils disturbed by project activities will be revegetated with certified weed free native seed. Logging system design will consider the objectives of maintaining ground cover and minimizing ground disturbance. Forest Plan standards and guidelines for ground and soil disturbance will be followed. Helicopter landings and parking areas will not be located in known areas of invasive plants.	Prior to, during, and post activity
CULTURAL RESOURCE		
Preservation and protection of archaeological sites	Cultural resource surveys have been conducted within the project area. Cultural/historic sites will be protected by avoiding them. Since some project activities will be implemented over multiple years, project leaders will contact the assistant Forest Archaeologist prior to project implementation for monitoring and avoidance purposes.	Prior to, and during activity

<table>
<tr><th>Objective</th><th>Task</th><th>Timeline</th></tr>
<tr><td colspan="3">RANGE RESOURCE</td></tr>
<tr><td>Protection of range resources</td><td>Aspen fencing will not exclude livestock from water sources.

All livestock improvements will be protected in fire plans.

Dry meadow burning will be lighted using hand methods where there is a range plot marked with metal posts. Burning of meadows will be coordinated with the range program.

Protect existing Condition and Trend transect, located in T5N, R41E, Section 8 (Stand Tag 620SP12013). This transect has permanent metal stakes located low to the ground and for safety reasons will be flagged prior to fire ignition.</td><td>Prior to, during and post activity</td></tr>
<tr><td colspan="3">WILDLIFE</td></tr>
<tr><td>Maintain dead wood habitat (timber harvest)</td><td>Snag Retention – Maintain dead wood habitat and green replacement trees at or beyond levels identified in the table below. All snags retained will be greater than 20-inch diameter at breast height, but if there are not enough snags of this size, all large snags will be left and some smaller snags will be retained to make up the difference. Tree species and soundness at the base will also be considered. The tree species most preferred are ponderosa pine, western larch, and Douglas-fir.
See following table.

Snag and down wood retention per acre by plant association group.
<table>
<tr><td></td><td>Ponderosa pine</td><td>Mixed conifer</td><td>Grand fir</td><td>Lodgepole pine</td><td>Subalpine zone</td></tr>
<tr><td>Snags > 20 in dbh (per acre)</td><td>3</td><td>3</td><td>2</td><td>2</td><td>2</td></tr>
<tr><td>Green Tree Replacements (per acre)</td><td>23</td><td>16</td><td>9</td><td>14</td><td>19</td></tr>
<tr><td>Down Wood Pieces (per acre)</td><td>3 - 6</td><td colspan="2">15 - 20</td><td colspan="2">15 - 20</td></tr>
<tr><td>Diameter at the small end</td><td>≥ 12 inches</td><td colspan="2">≥ 12 inches</td><td colspan="2">≥ 8 inches</td></tr>
<tr><td>Length per piece</td><td>> 6 feet</td><td colspan="2">> 20 feet</td><td colspan="2">≥ 8 feet</td></tr>
<tr><td>Total length per acre</td><td>> 20 feet</td><td colspan="2">> 100 feet</td><td colspan="2">≥ 120 feet</td></tr>
</table></td><td>Prior to, during, and post activity</td></tr>
<tr><td>Maintain dead wood habitat (post-harvest burning)</td><td>Slash will not be piled against large trees or snags to prevent loss from prescribed fire.</td><td>Prior to and during activity</td></tr>
<tr><td>Protection of Bat Habitat</td><td>Hollow or partially hollow, broken top snags greater than 15 inches DBH will be left to provide roost habitat for bats. Dead grand fir most commonly provides hollow tree habitat.</td><td>Prior to and during activity</td></tr>
<tr><td>Protection of unique wildlife habitat</td><td>Unique wildlife habitat such as, seeps, springs, bogs, wallows, cliffs, talus, ad caves will be protected by minimizing ground disturbance one and one half tree lengths from the area.</td><td>Prior to and during activity</td></tr>
<tr><td>Protection of Big Game Winter Range</td><td>Activities will be restricted in elk winter range from December 1 through March 30 in the following units: 4, 9-14, 26, 27, 29-35, 42, 60, 64-67, 70, 72, 86-96.</td><td>During activity</td></tr>
</table>

Objective	Task	Timeline
Protection of scab flats and meadows	Lithosol (scab flats) and meadows will not be used for landings and skid trails unless no other location is practical. If use is necessary disturbance will be kept to a minimum amount of the area, preferably at the edges.	Prior to and during activity
Meet ESA requirements	If any federally listed species are found in the project area, the appropriate resource specialist will be contacted immediately. The Contracting Officer will take appropriate action to insure species are protected. Timber sale contract provision BT6.24 will apply. Protection measure for known federally listed species will be listed in provision BT6.24.	Prior to, and during activity
Protection of Goshawk Habitat	Protect goshawk nests from disturbance if any are located during project activities. No nest sites are currently identified. Defer harvest on 30 acres of the most suitable nesting habitat around nest sites. Retain late and old structure forest in a 400-acre post-fledging area (PFA) as determined by the district biologist. Defer activities in active PFAs from April through August.	Prior to and during activity
Protection of Raptor Nests	Protect known or discovered raptor nest sites from management and human disturbances until fledging has been completed. Level of protection will vary by species and will be recommended by the District wildlife biologist (FP4-57).	Prior to, and during activity
General Protection of Wildlife Habitat	An average of one unburned slash pile or jackstraw logs per acre will be provided for denning habitat for various wildlife species. (FP 4-160) Seeps, springs, bogs, wallows, and other wet areas will be evaluated and protection measures determined by the District wildlife biologist. (FP 4-57, 4-160) If cliffs, talus or cave habitat is found, protection measures will be determined by the District wildlife biologist. (FP-57)	Prior to, during, and post activity
RECREATION		
Protection of recreational access	Ensure that roads are closed during logging and prescribed fire activities and are re-opened as soon as possible after work is completed, especially during hunting season.	Prior to and during activity
Transportation management	During project activity alternative snowmobile routes will be designated in order to avoid conflict between winter logging operations and snowmobile activity.	Prior to and during activity
Protection of dispersed camping sites	Areas around dispersed hunter camps will be retained with a Partial Retention Visual Quality Objective (VQO).	During, and post activity
PUBLIC SAFETY		
Protection of public safety during project implementation	Warning or informational signs will be placed along major travel routes during project operations (timber, fire, engineering, restoration projects, etc) to alert and inform the public. Current information will be posted on portal entry kiosks. Public access may be restricted in some areas during active haul of merchantable material for public and operational safety. If treatment activities occur around an inventoried hunter camp, identified danger trees will be felled and removed.	Prior to and during activity

Objective	Task	Timeline
HARDWOOD and MEADOW RESTORATION		
Protection of Hardwoods and Meadows	Access to sites outside of RHCAs will be either by truck or ATV, or both. For sites that are within RHCAs only ATVs will be used. No travel by ATV will occur within meadows except when they are dry, and travel will be limited to 3 or fewer passes by ATV. No travel by vehicles, including ATVs, in the Grande Ronde IRA. ATVs will cross stream channels only when they are dry and where crossing will not break down or otherwise damage stream banks Where conifers are felled within meadows or RHCAs, slash may be hand piled and burned. Storage of fuel and fueling of saws and drip torches will take place outside of RHCAs.	During activity
FUELS AND PRESCRIBED FIRE		
Protection of resources during fuels and prescribed fire treatments	In skyline units non-merchantable tops and branches will remain attached until the tree reaches the landing. At the landing trees will be limbed and topped and piled for burning (contract provision CT6.74). Hand piling of fuels in units where visual quality is a concern, particularly along Forest Road 62. Mop-up/suppression activities will be conducted for fires that cause mortality of trees at unacceptable levels within activity fuel units. <u>Fireline construction - Blackline:</u> Blacklines are pre-burned areas that are used as firelines. Often times they are associated with natural barriers or roads using to widen the defensible area. Black lining can provide a wide fireline without the disturbance that occurs with other methods. Blackline will likely be used in landscape and meadow burn units. <u>Handline:</u> Hand firelines will be used only when burn conditions indicate the need to control the creep of fire in the duff. There is the potential that fall burning will require the use of more handlines than spring burning because of lower fuel moisture and the higher risk of fire creeping into unwanted areas. Burning will occur during times (season and time of day) of relatively higher humidity to reduce the need of handline in riparian. Chainsaws will be used to cut overhanging brush and large logs. Line construction will remove the duff the layer to mineral soil no more than 18 inches wide. Any line constructed will be rehabbed and water barred. <u>Ignition:</u> The burning of piles and construction of blacklines will be done by hand ignition. No mixing or preparing of slash fuels will occur in the planning area. Slash fuel needed for hand ignitions will be mixed prior to reaching the area.	Prior to, during, and post activity
VEGETATION		
Protection from insects and disease	Treat grand fir and subalpine fir stumps with borax to reduce the risk of root disease spreading to remaining sites.	Post activity

Objective	Task	Timeline
Protection of residual trees	Protect desirable advanced regeneration and mature trees in residual stands of all harvest and fuel treatment units.	During activity
TES PLANTS		
Protection of sensitive plant species	Mapped sites of Bolander's spikerush (ELBO) will be designated as no activity zones and will be avoided during project activities. Sites in harvest units will be flagged on the ground and avoided, trees will be felled away from the sites. No mechanical equipment will be allowed, no landings will be constructed, and no piling of slash will be allowed within designated no activity zones. No off-road ground disturbing activities will be allowed. Any roadwork in these areas will be done so as not to alter the local hydrology of the area. In meadow areas the same design criteria as above applies, except that prescribed fire will be allowed.	Prior to and during activity

MONITORING FRAMEWORK

Monitoring for both implementation (whether the project was implemented as planned) and effectiveness (whether overall management objectives were met) will occur. Forest Service personnel will conduct monitoring in areas that have the highest probability of showing effects.

Identification of BMPs (Appendix D) for the proposed projects has occurred and any project which might occur in this planning area will be considered for monitoring in the Umatilla National Forest annual BMP monitoring. RHCA widths in harvest units, road maintenance work on FR 6222 near Squaw Creek, and road use and maintenance during wet weather are items that will be monitored.

Number, size, and distribution of snags and down logs within a sample of units will be field checked by Forest Service personnel.

The Forest Service contract representative or other staff will monitor during and after activities to ensure sediment and soil disturbance objectives are met. If objectives are not met, Forest Service personnel will identify and implement corrective action and document modifications to be used in future projects.

The District noxious weed coordinator or crew will conduct noxious weed species surveys prior to initiation of harvest or other ground disturbing activities within the project area.

Forest Service personnel will spot-check activities during implementation to determine whether noxious weed mitigation measures are implemented. Deviations will be corrected immediately.

Dependent on available funding and resources, the District noxious weed coordinator or crew will inventory portions of the project area determined to be at risk for weed spread due to project implementation for up to five years as needed.

After prescribed fire treatments, Forest Service personnel will field check a sample of burn units to determine whether the prescription and mitigation (i.e. mortality, mineral soil exposure, fuel load reductions, etc.) have been met. If objectives or mitigation have not been met, additional burning may be delayed or the fire prescription and procedures adapted to ensure that mitigation is achieved.

Anticipated effectiveness of each monitoring element for the Cobbler project is considered to be high.

Alternative C

Purpose and Design:

Activities in Alternative C are designed to respond to the agency's purpose and need for action by thinning overstocked stands to promote forest resiliency and reduce fuels while responding to the key issues of retaining the maximum amount of acres of elk habitat, old forest habitat, and functional connective corridors. This alternative is designed to:

- Implement project activities with minimal or no reduction or loss of elk cover or old forest habitat.
- Move upland forests toward historical range of variability for species composition, structural diversity, and stocking densities.
- Reduce fuel loads, both ground and ladder fuels, restore historic fuel patterns and fire regimes, and modify the intensity and resulting fire behavior for safer fire suppression efforts.
- Continue to work in support of economic and quality of life opportunities for local and regional economies.
- Reduce risk of personal injury by removing danger trees along trailheads and haul routes used for timber sale activity.
- Influence stocking levels, growth, health, and vigor of plantations by implementing non-commercial thinning.
- Protect and enhance vegetative conditions of hardwoods by increasing the vigor of existing stands.
- Amend the Forest Plan to reallocate management areas in and around Elk Flats Meadow area to maintain or enhance existing aspen, which have declined and encourage aspen and other hardwood regeneration in this area.

Description:

TIMBER HARVEST AND FUELS TREATMENT

Commercially harvest approximately 1,300 acres. In some treatment units timber harvest would include the removal sawlogs and small diameter trees in the 3-9 inch DBH range which would be used as a woody biomass product. In some treatment units only woody biomass products would be removed. Harvest objectives would vary by stand condition and fire management objectives. Some stands would be thinned to maintain tree growth and vigor and in other stands to reduce stand density to a level that would not support a crown fire (stands near the rim of the Grande Ronde canyon) and other stands would be thinned to reduce small ladder fuels so that torching would not cause the fire to move in tree crowns. Treatments would tend to favor early seral tree species such as ponderosa pine and western larch. Commercial thinning is the primary stand prescription to be used. Shelterwood and seed-tree prescriptions would be used in decadent stands where thinning would not restore growth or vigor.

Silviculture Prescriptions - Same as Alternative B

Reforestation - Approximately 175 acres would be planted and 120 acres would be prescribed for natural regeneration.

Natural regeneration in lodgepole pine stands –Same as Alternative B.

Diseased Large Tree Removal -The number of acres from which diseased trees ≥ 21 inches DBH could be harvested is 300 (only in moist forest) in Alternative C. This is approximately 1 percent of the total planning area and less than 2 percent of the 25,400 acres of the planning area where timber harvest is scheduled.

Methods of Harvest

Harvest methods would include conventional ground based, skyline, and using a harvester/forwarder. The following table is a summary of treatment activity and method of harvest:

Table 2-7 Alternative C-Summary of Treatment Activity and Harvest Method

Treatment	Method of Harvest	Approximate Acres
Commercial Thinning (HITH)	Harvester/Forwarder	700
Commercial Thinning (HITH)	Skyline	100
Commercial Thinning with Non-Commercial Thinning (HITH/NCT)	Harvester/Forwarder	170
Shelterwood or Seed-Tree Cut (HSSW/HSST)	Ground based tractor	250
Commercial Thinning with Seed-Tree Cut (HITH/HSST)	Ground based tractor	50
Shelterwood Seed Cut with Commercial Thinning (HSSW/HITH)	Ground based tractor	30
Total		**1,300**

Activity and Existing Natural Fuels Treatments

The following table is a summary of proposed fuel treatments for Alternative C.

Table 2-8 Alternative C-Summary of Activity Fuel Treatments And Approximate Acres Treated.

Activity	Approximate Acres
Material Removal* and mastication - 3-9 inch DBH material	230
Material Removal* and prescribed fire– 3-9 inch DBH material	60
Mastication or grapple pile	620
Mastication or grapple pile and/or prescribed fire	250
Burn piles on landings	100
Hand pile burning in units	40
Total	**1,300**
* If economically feasible	

All other activities associated with activity and existing natural fuel treatments would be the same as identified for Alternative B.

Road Management

To accomplish implementation of proposed activities approximately 50 miles of open system roads, approximately 30 miles of closed system roads, and 1.5 miles of seasonally open roads would be used as haul routes. Of the open road miles, approximately 14 miles are outside of the project planning area and represent haul routes to county roads. All system roads would remain the same after project implementation (open roads would remain opened, closed roads would continue to be closed and seasonally open roads would continue with that designation). Closed roads used for project activities would not be opened to the public. New system road construction of approximately 0.25 miles is the same as described for Alternative B. No temporary road construction or road decommissioning would occur. See Appendix C for a complete listing of roads used in each alternative.

Road maintenance, material and water sources are the same as Alternative B. Following is a summary table of transportation activities for Alternative C.

Table 2-9 Summary of Transportation Activities- Alternative C

Activity	Amount
Maintenance:	
Standard Maintenance	80 miles
Surface rock replacement	11 miles
Heavy brushing	65 miles
New Road Construction (would become a closed system road)	0.25 miles
Gated closed system roads to be opened for project access and then reclosed	30 miles
Rock Sources	3
Water Sources	3

DANGER TREE REMOVAL **–** Same as Alternative B, except for fewer miles of haul routes.

LANDSCAPE PRESCRIBED FIRE (GRANDE RONDE CANYON) -This activity and all connected actions are the same as identified for Alternative B.

HARDWOOD RESTORATION **-** This activity and all connected actions are the same as identified for Alternative B.

MEADOW RESTORATION **-** This activity and all connected actions are the same as identified for Alternative B.

NON-COMMERCIAL THINNING **-** This activity and all connected actions are the same as identified for Alternative B.

FOREST PLAN AMENDMENT **-** Same as identified for Alternative B.

DESIGN FEATURES AND MANAGEMENT REQUIREMENTS **–** Same as identified for Alternative B.

MONITORING FRAMEWORK - Same as identified for Alternative B.

SALE AREA IMPROVEMENTS

Sale area improvements (SAI) include activities which follow timber harvest and are intended to improve resources within the project area. They are generally funded with Knutson-Vandenberg (KV) funds, which are generated from the sale of timber.

KV/SAI projects associated with implementation of Alternatives B or C are analyzed for environmental effects in Chapter 3 of this document. They are listed below.

- Reforestation – Plant areas (associated with harvest) where there is insufficient seed source to insure reforestation by natural means.
- Site preparation – Slash and burn to provide long-term fire resistance of reforestation sites.
- Noxious weeds – Monitor and treat noxious weeds associated with haul routes and harvest units.
- Non-commercial thinning (1,900 acres identified)
- Hardwood restoration – Fence hardwood stands and cut and girdle competing conifers.
- Temporary fencing of range allotment pastures – Fencing cattle out of dry meadows for one season for burning purposes and monitoring.
- Native seeding – Seed native grasses and forbs in areas disturbed by activities.

KV/SAI projects not associated with the proposed action are listed below. They are eligible for KV funding, if funds are available. (if Alternative A – No Action is selected for implementation, there would be no KV funding, and implementation of these projects would be dependent on future appropriated funding). Environmental analysis for these projects would be completed in separate NEPA documentation and decisions. They are listed below:

- Reforestation – Plant disturbed areas (not associated with harvest) where adequate natural regeneration is not expected.
- Fuels treatments – Mechanically treat and or burn areas of high fuel concentrations to provide for long-term fire resistance in additional areas.
- Noxious weeds – Monitor and treat noxious weeds outside of activity areas but within the project planning area.
- Non-commercial thinning (in addition to units identified).
- Hardwood restoration – Fence hardwoods and cut or girdle competing conifers in additional areas within the project planning area.
- Range improvements – Improve fences and water sources.
- Native seeding – Seed native grasses and forbs in other disturbed areas.
- Roads – Install guardrails and or gates on closed roads in the area to improve closure effectiveness.
- Upgrade decommissioning of FR 6222428 – decompact, pull fill, and install drainage for perennial spring. This road is below Cobbler units 9 and 10, but is not planned for use because the slope is too steep. Road is currently identified as decommissioned.

ALTERNATIVES CONSIDERED, BUT ELIMINATED FROM DETAILED STUDY

The following alternatives were considered and eliminated from detailed study by the Responsible Official for reasons identified below:

1. **Harvesting trees ≥ 21 inches DBH**
   One respondent suggested that based on current densities and fuel loads the goals of the project could not be met without the ability to cut larger trees and that a Forest Plan amendment to log trees greater than 21 inches DBH would be needed to improve conditions. Based on the information below this alternative was considered but not analyzed in detail.

   Harvesting trees over 21 inches DBH would not be necessary to bring stands to stocking densities suggested in the Umatilla National Forest stocking guidelines. Trees over 21 inches DBH are retained to meet late old structure as described in Eastside Screens. Removing trees over 21 inches DBH would not meet the purpose and need of this project to move the seral and structural conditions of forest stands toward their HRV through increasing the amount of old forest single strata in the dry upland forest in the short and long-term. Additionally, fuel loads and crown density are determining factors of fire risk, not specific diameter limits.

   A Forest Plan amendment is not needed to cut trees 21 inches and greater in stands in the moist upland forest potential vegetation group (PVG) because old forest stand structures are within or above their historical range of variability (HRV). Trees 21 inches and greater that are moderately to severely infected with dwarf mistletoe are proposed for cutting in stands with regeneration prescriptions, to reduce the transmission of the disease to the future stand. Trees 21 inches DBH and greater are not proposed for cutting in stands with thinning prescriptions because disease transmission is less of a problem and the retention of a diversity of size classes is desirable.

   A Forest Plan amendment would be needed if cutting trees 21 inches DBH and greater in stands in the dry upland forest PVG were proposed because old forest stand structures are below HRV in one of the classes, old forest single stratum (OFSS). No trees in this PVG are proposed for commercial harvest.

2. **Variable density thinning**
   A general recommendation from one respondent stated that they supported variable density thinning. This means that thinning should be done in a way that creates 0.25 to 0.50 acre gaps, dense patches, lightly thinned, moderately thinned, and heavily thinned patches in every stand. Variable density thinning would not produce the desired stand structure or species composition for the project area. Dry upland forest historically had large open-park like stands primarily of ponderosa pine and Douglas-fir with grand fir to a much lesser extent. Small patches or openings did occur throughout the landscape but not at the scale that the project area covers. Variable density thinning would reduce overall density in a stand, but would not alter overall species composition or structural stages. Therefore, variable density thinning across the entire project area would not fully meet the components of the purpose and need. Based on this information this alternative was considered but not analyzed in detail.

3. **Harvesting all at-risk lodgepole pine stands**
   Interdisciplinary team members considered an alternative that would harvest all lodgepole pine stands rated with a high potential for mortality from mountain pine beetle. There are approximately 1,370 acres of lodgepole pine stands with high potential for mortality from mountain pine beetle in the Cobbler project planning area. Mountain pine beetle is currently active at low levels and appears to be increasing in the area (Spiegel and Schmitt 2008), harvesting the high risk stands in this project would assure that the wood would be harvested while it is sound. If the stands die from beetle attack and the dead trees are not harvested right away, some of the value of the wood could be lost.

   This alternative was not developed because there has already been harvesting, mostly clearcutting, of approximately half of the lodgepole pine stands in the headwaters of Bear Creek (known as Bear Flat), where high risk stands are concentrated. The regeneration in these old units is still in the small diameter (3 to 6 inch DBH) stages. The remaining mature stands, even if they experience high mortality, are valuable for woodpeckers and other wildlife. Based on this information this alternative was considered but not analyzed in detail.

4. **Use non-commercial thinning of small diameter trees rather than commercial harvest**
   This type of treatment would not work in many areas needing thinning to bring stand stocking closer to historical levels, when most stands had fewer trees per acre, a greater percentage of early seral species, larger average stand diameter, and less multistoried structure. The excess stocking in these stands includes trees over 9 inches DBH, which adds up to approximately 25 percent to 30 percent above the recommended stocking levels. The heavy stocking in these stands makes them more susceptible to environmental stresses and thus less resistant to insects and diseases. Heavy stocking would also cause wildfire behavior to become severe in an area where historical disturbance maintained vegetation that would have experienced mixed and low intensity wildfires. It would be harder to protect large diameter trees from mortality when a wildfire occurs. The proposed removal of commercial trees in the intermediate crown layer would increase the height-to-crown ratio by removing ladder fuels. Based on this information this alternative was considered but not analyzed in detail

COMPARISON OF ALTERNATIVES

The following tables compare all alternatives considered in detail by activity, purpose and need, and issues analyzed for environmental effects.

Table 2-10 Comparison of Activity by Alternative

Activity	Alternative A	Alternative B	Alternative C
Commercial Harvest			
Commercial thinning (HITH)	0 acres	1,890 acres	800 acres
Commercial thinning with seed-tree cut (HITH/HSST)	0 acres	100 acres	50 acres
Commercial thinning with non-commercial thinning (HITH/NCT)	0 acres	230 acres	170 acres
Shelterwood seed cut with commercial thinning (HSSW/HITH)	0 acres	30 acres	30 acres
Shelterwood or seed-tree cut (HSSW/HSST)	0 acres	250 acres	250 acres
Total	**0 acres**	**2,500 acres**	**1,300 acres**
Estimated volume of timber removed (hundred cubic feet (ccf))	0 ccf	14,140 ccf	7,600 ccf
Reforestation			
Planting	0 acres	175 acres	175 acres
Natural Regeneration	0 acres	165 acres	120 acres
Total	**0 acres**	**340 acres**	**295 acres**
Harvest Methods			
Conventional ground based (tractor)	0 acres	380 acres	330 acres
Harvester/forwarder	0 acres	1,830 acres	870 acres
Skyline	0 acres	230 acres	100 acres
No Yarding	0 acres	60 acres	0 acres
Total	**0 acres**	**2,500 acres**	**1,300 acres**
Activity and Natural Fuels Treatments in Harvest Units			
Material removal* and mastication - 3-9 inch DBH material	0 acres	400 acres	230 acres
Material removal* and prescribed fire - 3-9 inch DBH material	0 acres	100 acres	60 acres
Mastication or grapple pile	0 acres	1,320 acres	610 acres
Mastication or grapple pile and/or prescribed fire, t	0 acres	410 acres	250 acres
Burn piles at landings	0 acres	230 acres	100 acres
Hand pile burning in units	0 acres	40 acres	40 acres
Total	**0 acres**	**2,500 acres**	**1,300 acres**
Roads – Used for project activities			
**Open system roads	0 miles	50 miles	50 miles
Gated closed system roads used and then reclosed	0 miles	40 miles	30 miles
Seasonally open roads	0 miles	1.5 miles	1.5 miles

Activity	Alternative A	Alternative B	Alternative C
New road construction (will become a closed road)	0 miles	0.25 miles	0.25 miles
Temporary road construction (decommissioned after use)	0 miles	0.2 miles	0 miles
Total	**0 miles**	**92 miles**	**82 miles**
Landscape prescribed fire	0 acres	8,000 acres	8,000 acres
Hardwood restoration	0 acres	115 acres	115 acres
Meadow restoration	0 acres	275 acres	275 acres
Non-commercial thinning	0 acres	1,900 acres	1,900 acres
Danger tree removal along haul routes and around trailheads	No	Yes	Yes
Forest Plan amendment	No	Yes	Yes
*If economically feasible **Of the open roads 14 miles are outside of the project planning area and represent haul routes to county roads.			

The following table shows a comparative synopsis by alternative to purpose and need statements made in Chapter 1. In this table the number of acres in some categories overlap and are not to be considered additive. This is the result of more than one action occurring on the same acre.

Table 2-11 Comparison Response to Purpose and Need by Alternative

Purpose and Need	Unit of Measure	Alternative A	Alternative B	Alternative C
Stands in which the proportion of early seral species is increased and stand density is reduced from overstocked to recommended stocking levels	acres	0	4,040	2,900
Late seral ingrowth reduced in stands currently dominated by early seral species	acres	0	1,430	1,220
Stands changed from outside structural class HRV to within HRV	acres	0	530	255
Diseased and damaged mixed conifer stands regenerated to young trees of primarily early seral species	acres	0	255	255
Late seral ingrowth reduced in stands currently dominated by trees >21inches DBH	acres	0	485	0
High risk lodgepole pine stands harvested	acres	0	125	70

Purpose and Need	Unit of Measure	Alternative A	Alternative B	Alternative C
Modify the intensity and resulting fire behavior along the rim of the Grande Ronde and along Forest Road 62 for safe and effective suppression actions.	acres	0	10,450	9,250
Return fire to the Grande Ronde canyon to maintain the character of frequent fire regime, particularly in grasslands and brush.	acres	0	8,000	8,000
Reduction of ladder fuels to reduce the risk of fire spread into the upper canopy.	acres	0	8,500	8,300
Reduction of ground fuels that would contribute to wildfire intensity and resource damage.	acres	0	10,200	9,150
Reduce risk of personal injury by removing danger trees along trailheads and haul routes used for project activities.	no/yes	no	yes	yes
Hardwood stands fenced and/or released from encroaching conifers	acres	0	115	115
Influence stocking levels, growth, health and vigor of plantations by implementing non-commercial thinning.	acres	0	1,900	1,900
Amend Forest Plan to allocate Elk Flats Meadow from management area D2-Research Natural Area to management area A9-Special Interest Area, and small portions of management area E2 to A9, and D2 to E2 in order to allow for vegetation management of aspen and other hardwood regeneration.	no/yes	no	yes	yes

Table 2-12 compares the effects to key issues and other issues identified for environmental analysis by alternative.

Table 2-12 Comparison of Effects to Key Issues and Other Resource Issues by Alternative

Resource	Unit of Measure	Alternative A	Alternative B	Alternative C
ELK HABITAT (Key Issue)				
Satisfactory cover provided (management area E2)	percent	12	10	12
Satisfactory cover reduced (management area E2)	acres	0	400	0
Net reduction of total cover (marginal and satisfactory)	acres	0	335	335
Hiding cover reduced through non-commercial thinning (cumulative acres)	acres	0	2,125	1,940
Closed system roads opened for project activity use and then reclosed	miles	0	40	30
Forage quality and quantity		no change	equally improved (landscape burning, aspen and mountain mahogany enhancement)	
OLD FOREST HABITAT (Key Issue)				
Old forest multi-story (OFMS) changed to old forest single story (OFSS)	acres	0	485	0
Thinning within old forest connective corridors	acres	0	300	200
Large tree habitat removed (trees >21 inches DBH)	number of trees	0	incidental	slightly less than Alternative B
SOIL				
Total acres of detrimental soil condition (DSC) in project planning area	acres	73 (acres in Alt B) 39 (acres in Alt C) (existing condition)	214 (post activity)	116 (post activity)
HYDROLOGY/WATER QUALITY				
Hydrologic Function and Condition: • road density increase	mi./sq. mile	0	increase of less than 0.01 mi./sq. mi. (negligible)	
• Change in miles of road in RHCAs	miles	0	0	
Water Quality: • water temperature • sediment	degrees increase/decrease	no measurable effect no change	no measurable effect no detectable increase (negligible)	

Resource	Unit of Measure	Alternative A	Alternative B	Alternative C
Water Yield: Equivalent Treatment Acres (ETA) – percent by watershed	percent	below detectable effect	below detectable effect	
FISH HABITAT – TE&S AND MIS				
Pool frequency	increase/decrease	no change	no change	
Water chemistry • temperature • sediment • chemical/contaminants	degrees increase/decrease increase/decrease	see Hydrology section see Hydrology section no change	see Hydrology section see Hydrology section No quantifiable increase	
Large woody debris	increase/decrease	no change	No decrease	
Stream channel conditions • bank stability • lower bank angle • substrate	increase/decrease	no change	no detectable change	
Change in peak or base flows	increase/decrease	no change	no detectable increase	
Increase in drainage network	increase	no change	no increase	
Road density and location	miles/square mile	no change	increase of less than 0.01 miles/square mile	
VEGETATION				
Improvement of Species Composition				
Late seral ingrowth reduced in stands currently dominated by early seral species	acres	0	1,430	1,220
Diseased and damaged stands regenerated to young trees of primarily early seral species.	acres	0	255	255
Hardwoods fenced and/or released from encroaching conifers	acres	0	115	115
Forest Plan amendment - Creation of Special Interest Area (A9) at Elk Flats Meadow to allow restoration of aspen.	acres	0	100	100
Improvement of Forest Stand Structures				
Stands changed from outside structural class HRV to within HRV	acres	0	530	255
Late seral ingrowth reduced in stands currently dominated by trees >21 inches DBH	acres	0	485	0

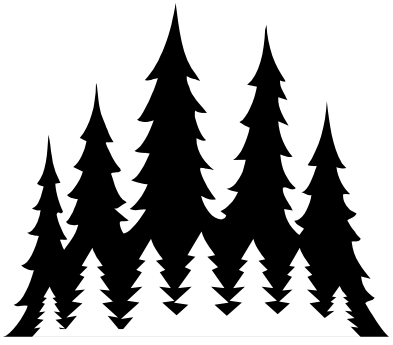
Resource	Unit of Measure	Alternative A	Alternative B	Alternative C
Improvement of Forest Stand Densities				
Stands in which the proportion of early seral species is increased and stand density is reduced from overstocked to recommended stocking levels	acres	0	4,040	2,900
Provision of Wood Products				
High at- risk lodgepole pine stands harvested	acres	0	125	70
FUELS – FIRE RETURN INTERVALS AND CROWN FIRE POTENTIAL				
Fire regimes of high departure from historical fire return intervals treated: • Conditions Class 3 • Condition Class 2	 acres acres	 0 0	 750 5,225	 665 5,130
Stands with crown fire potential treated: • extreme • very high • high	 acres acres acres	 0 0 0	 170 770 540	 130 710 270
AIR QUALITY				
Expected total particulate emissions ($PM_{2.5}$) per 100 acres from natural and activity fuel burning (jackpot and pile burning)	tons	0	23	23
Duration and timing of emissions	days	None	Persisting in air for no more than five days	
Communities potentially affected	areas	None	Troy and Eden Bench areas	
Mandatory Class 1 areas potentially affected	airsheds	None	None	
INVASIVE PLANT SPECIES AND TE&S PLANT SPECIES				
Invasive species by treatment priority (high, medium and low) mapped within harvest units (acres) and along haul routes (miles).	acres miles	0 0	200 90	100 70
Amount of ground disturbance anticipated from proposed activities.	acres haul route miles	0 0	2,500 90	1,300 80

Resource	Unit of Measure	Alternative A	Alternative B	Alternative C
Threatened and Endangered Plants Sensitive Plants	Biological Evaluation Determinations	No Effect No Impact	No Effect No Impact	No Effect No Impact
WILDLIFE - TE&S Terrestrial Species, Management Indicator Species (MIS), Landbirds and Dead Wood				
TE&S Wildlife Species				
Suitable lynx habitat (reduced)	acres	0	240	85
White-headed woodpecker habitat (increased)	acres	0	100	0
Management Indicator Species				
American marten habitat (reduced)	acres	0	25	0
Pileated woodpecker nesting habitat (reduced)	acres	0	260	0
Northern tree-toed woodpecker habitat (reduced)	acres	0	200	150
All primary excavators – areas of potential snag density reduced (includes all harvest)	acres	0	2,500	1,300
RANGE				
Changes to permittee access	increase/decrease	no change	no change	no change
Livestock distributions	increase/decrease	no change	no change	no change
VISUALS/SCENERY				
Forest Plan Visual quality objective (VQO)	meets/does not meet FP VQO	no change	meets FP VQO	meets FP VQO
WILD AND SCENIC RIVER				
Effects to outstanding and remarkable values (wildlife, fisheries, recreation and scenic values)	change/no change	no change	no change to wildlife, fisheries, recreation and scenic values	no change to wildlife, fisheries, recreation and scenic values
Consistency with *Wallowa and Grande Ronde Rivers Final Management Plan – EA*	meets/does not meet	meets	meets	meets

Resource	Unit of Measure	Alternative A	Alternative B	Alternative C
RECREATION				
Recreational access and use	increase/decrease	no change	short-term temporary disruptions during project activity	
Dispersed hunter campsite use	increase/decrease	no change	short-term displacement (one hunting season)	
ECONOMICS				
Present net value	dollars	0	($407,200)	($232,550)
Benefit to local and regional economy - local employment (jobs)	jobs	0	67	36
Sale Viability - value of wood fiber per hundred cubic feet(ccf) above base rates	dollars	0	$48.00	$46.00
INVENTORIED ROADLESS AREAS (IRAs)				
Landscape character and scenic integrity	change/no change	no change	short-term visual effect	short-term visual effect
Primitive experience	change/no change	no change	no change	no change
Habitat for T & E species	change/no change	no change	slight risk of additional sedimentation (aquatic species)	slight risk of additional sedimentation (aquatic species)
TRANSPORTATION SYSTEM - ROADS				
New road const – miles	miles	0	0.25	0.25
Temporary road construction - miles	miles	0	0.20	0
Changes to District Motorized Access Travel Management Plan	yes/no	no	no	no

CHAPTER 3

AFFECTED ENVIRONMENT
AND
ENVIRONMENTAL CONSEQUENCES



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Chapter 3

Affected Environment and Environmental Consequences

INTRODUCTION

This chapter describes past, present, and reasonably foreseeable actions, affected environment of area resources, and environmental consequences that would affect those resources based on implementation of alternatives analyzed in detail, as described in Chapter 2.

Effects are shown as being direct (occurring at the same time and plane as the triggering action), indirect (separate in time and space from the action that caused them), or cumulative (incremental effect of the project when added to effects from other past, present, and reasonably foreseeable actions). Each resource specialist considered and included activities relevant to the individual resource in the cumulative effects analysis. Direct, indirect, and cumulative effects are described in terms of increases, decreases, intensity, duration, and timing. The discussion of these effects also provides a comparison of the trade-offs associated with each alternative. The scale of analysis may be different for each resource. This chapter ends with a discussion of compliance with environmental laws, and executive orders.

PAST, PRESENT, AND REASONABLY FORESEEABLE ACTIONS

The temporal and spatial scale of analysis is variable depending on the resource concern being evaluated, particularly when considering the effects of past, present, and reasonably foreseeable actions. During the interdisciplinary process the team followed guidance presented in CEQ's letter dated June 24, 2005. Using this guidance the following summary of past, present, and reasonably foreseeable actions within and adjacent to Cobbler Timber Sale and Fuels Reduction Project planning area was developed. These projects were considered where relevant, when addressing the cumulative effects for various resources. The effects are disclosed in this chapter.

SUMMARY OF PAST ACTIONS:

Past actions include timber harvest and prescribed fire along the canyon of the Grande Ronde River. The residual effects of these activities are displayed on the landscape and contribute to the description of the current condition (affected environment). Past actions are maintained as a layer in the District's GIS database and they are used to calculate Equivalent Treatment Acres for watershed conditions, elk habitat effectiveness index (HEI), and cover values for big game, historical range of variability (HRV), and soil conditions. Following are brief summaries of past actions that occurred in the project planning area:

- **Timber Harvest by decade**:

Table 3-1 Timber Harvest by Decade in Cobbler Project Planning Area (34,000 acres)

Years	Acres	Silviculture Prescriptions
1960-1969	140	Stand or Patch Clearcut – Leaves a created opening over the whole stand or in patches larger than group selection
	3,200	Partial removal – (Not defined)
	750	Commercial Thinning – Leaves a fully stocked stand.
1970-1979	370	Stand or Patch Clearcut – Leaves a created opening over the whole stand or in patches larger than group selection
	1,750	Shelterwood or Seed-tree cut – Leaves a created opening
	2,350	Mortality Salvage or Sanitation – Should leave a fully stocked stand, can vary from a few trees removed to a clearcut
	6,700	Commercial Thinning – Leaves a fully stocked stand
1980-1989	1,00	Stand or Patch Clearcut – Leaves a created opening over the whole stand or in patches larger than group selection
	1,700	Shelterwood or Seed-tree cut – Leaves a created opening
	1,150	Mortality Salvage or Sanitation – Should leave a fully stocked stand, can vary from a few trees removed to a clearcut
	170	Commercial Thinning – Leaves a fully stocked stand
	200	Partial removal – (Not defined)
	3,500	Overstory Removal – Removes overstory from established regeneration
1990-1999	900	Stand or Patch Clearcut – Leaves a created opening over the whole stand or in patches larger than group selection
	1,200	Shelterwood or Seed-tree cut – Leaves a created opening
	1,400	Mortality Salvage or Sanitation – Should leave a fully stocked stand, can vary from a few trees removed to a clearcut
	100	Partial removal – (Not defined)
	1,200	Overstory Removal – Removes overstory from established regeneration
	800	Uneven-aged management - individual tree or group selection – Leaves an uneven-aged stand either over the whole unit or by groups.
2000-2004	200	Shelterwood or Seed-tree cut – Leaves a created opening
	70	Mortality Salvage or Sanitation – Should leave a fully stocked stand, can vary from a few trees removed to a clearcut
	50	Commercial Thinning – Leaves a fully stocked stand
	100	Uneven-aged management - individual tree or group selection – Leaves an uneven-aged stand either over the whole unit or by groups.

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Table 3-2 Past Harvested Acres in Riparian Habitat Conservation Areas in Cobbler Project Planning Area Subwatersheds

Subwatershed	Decade			
	1968-77 acres	1978-87 acres	1988-97[1] acres	1998-2007[1] acres
Grande Ronde River – Clear Creek. (170601060102)	115	64	26	
Elbow Creek (170601060103)	335	80	200	14
Grande Ronde River – Bear Creek. (170601060104)	219	95	122	23
Wenaha River-Rock Creek[2] (170601060305)	5			
Wenaha River-Cross Canyon Creek[2] (170601060308)	1	73	54	6
Lower Wenaha River (170601060312)		40	82	51

[1]RHCA acreages for harvest post 1995 are most likely artifacts of GIS mapping, as every precaution was taken during on-the-ground layout of harvest units to mark harvest unit boundaries outside of RHCAs Prior to the PACFISH Decision Notice, timber was commonly harvested from streamside areas.

- **Recent Timber Harvest** (adjacent to Cobbler) - Lower Sheep Timber Sale and Fire Reintroduction Project – Harvest on approximately 1,800 acres using a variety of silvicultural prescriptions, the majority of acres were commercially thinned. Fuels treatments occurred on approximately 4,600 acres.

- **Planting -**Approximately 9,400 acres of forest land have been planted following timber harvest. Of those, 1,500 acres were planted twice, and 100 acres were planted three times in order to meet Forest Plan standards for stocking levels.

- **Non-Commercial Thinning -** Between 1989 and 2007, approximately 5,000 acres of forest land has been non-commercially thinned.

- **Hardwood Fencing -** Four hardwood stands (approximately 6 acres) have been fenced to protect them from browsing.

- **Invasive Plant Treatments** - Approximately 2,000 acres have been treated, including 1,650 acres of herbicide treatment, 300 acres of hand pulling, and 50 acres of biological agent release.

- **Insecticide Application -** Insecticides were sprayed over areas of heavy insect populations during Douglas-fir tussock moth outbreaks in 1947, when approximately 10,000 acres in the area were sprayed with DDT, and again in 1974, when DDT was sprayed to minimize tussock moth defoliation-related damage. In addition, most of the area was sprayed with DDT in 1952 to reduce western spruce budworm populations. A portion of the 1980s budworm outbreak in the area was treated with a bacterial insecticide called B.t. (*Bacillus thuringiensis*) in 1988.

- **Wildfire -** Historical large fire information dating back to pre-1900s includes only two large fires, both in the southern-most portion of the project planning area. One of these fires occurred prior to 1900 and the other in 1910 at 3,701 and 379 acres, respectively, for a total of 12 percent of the project planning area. From the 1970's to 2006, approximately 90 wildland fires occurred burning only about 40 acres.

- **Grazing – Eden Allotment -** Grazing has occurred at various levels beginning in 1919 when 19 permittees had permits to graze 550 cow/calf pairs. Season of use was annually from April 16th to October 31st. Originally the allotment was approximately 15,000 acres. Range improvements include 8 miles of fence, 46 stock ponds, 10 water developments, and 1 corral.

- **Roads -** Approximately 75 miles have been decommissioned in Cobbler project planning area in the past 12 years.

SUMMARY OF PRESENT ACTIONS:

- **Recreation –** Ongoing use of dispersed camping, hunting, sightseeing that occurs year-round. Public firewood gathering and snowmobile use will continue to occur.

- **Grazing – Eden C&H Allotment -**Currently two permittees graze 339 cow/calf pairs on an annual basis, 239 pair graze from June 1 to October 20, and 100 pair graze from July 16 to October 20. The allotment area totals approximately 41,200 acres, of which 23,200 acres are within the project planning area.

- **Invasive Plant Treatments –** Approximately 200 acres per year of invasive plant treatment (herbicide, hand pulling and biological agent release) is currently being done. Where appropriate, treated areas are seeded with local sources of native grasses and forbs after treatment.

SUMMARY OF REASONABLY FORESEEABLE ACTIONS:

- **Non-Commercial Thinning** – Approximately 600 acres, in 25 previously harvested units, are proposed for non-commercial thinning.

- **Invasive Plant Treatments –** Approximately 2,000 acres of invasive plants treatment is expected to be implemented in the foreseeable future. (2008-2013). Where appropriate, treated areas will be seeded with local sources of native grasses and forbs after treatment.

SOILS

SCALE OF ANALYSIS

The scale of analysis for soils is primarily in areas proposed for action, typically referred to as activity area, where ground disturbing operations would occur. Characterization data (e.g. ecological settings) refers to the entire project planning area (approximately 34,000 acres).

Forest Plan - Standards and Guidelines (p. 4-80) - A minimum of 80 percent of an activity area is to be maintained in a condition of acceptable productivity potential. Acceptable productivity potential is defined as a less than 20 percent increase in bulk density in volcanic-ash derived soils and a less than 15 percent increase in bulk density in other forest soils (a measure of soil compaction); soil displacement of less than 50 percent of the topsoil or humus enriched A1 and/or AC horizons from an area of 100 square feet or more which is at least 5 feet in width; molding of soil in vehicle tracks and rutting of less than a 6 inch depth; or soils that are not burned severely due to prescribed fire. Further detail, clarification, and policy guidance is provided in Forest Service Manual (FSM) 2520.3, R6 Supplement 50, 6/87. This supplement has been updated in R6 Supplement 2500-98-1. Soil conditions exceeding these levels (thresholds) of acceptable productivity potential are considered in a detrimental soil condition (DSC).

Indicators for comparison purposes between alternatives are:

- Acres added to detrimental disturbance for DSC – post activity

AFFECTED ENVIRONMENT

Ecological Settings

The project planning area is situated in the north-central part of the Blue Mountains ecological region. It is dominantly within the Columbia River Basalts Plateau- Lacustrine Influence subsection (M332Gm) characterized by layered basalt flows with differential layers between those flows of lacustrine (water-lain) fines and old soils and weather, fractured rock. This subsection has considerable maritime climate influence, which increases precipitation in the winter months.

The area is dominated by long, steep canyons separated by relatively level plateaus, with the Grande Ronde Canyon on the eastern edge a dominant feature. The entire area has received some loess and volcanic ash air-borne deposits, which have been redistributed in most areas. The deeper ash and loess soils are in the footslope and drainageways with substantial amounts remaining on the more stable upland plateaus.

Key items for attention in this area:

- Stability- the basalt formations in this area are generally quite stable however the lacustrine interbeds (Lacustrine Interlay) have an increased potential for instability with major disturbances such as large, severe wildfires or earthquake activity and are associated with long-term, geologic-scale land movements typified by the Sinks area adjacent to this area. Vegetative treatments have shown no inclination to induce any mass movement or landslides, for example clearcuts from earlier decades have induced no land movement.

- Springs- springs are common in the upper canyon sideslopes where interbeds (between the basalt rock flows) of buried soils and fractured rock layers accumulate subsurface water and allow lateral movement of that water to the surface.

Umatilla National Forest Soil Resource Inventory (SRI) provides soil inventory information, and in conjunction with field observations, forms the basis for area descriptions and existing condition assessments and interpretations fro proposed actions. Many of the mapping units are complex units of two or more soils or soil types). Soil taxonomic descriptions are not listed in this document, but may be found in the SRI (Umatilla National Forest Soil Resource Inventory 1977).

Surface soil textures are primarily silt loam, and gravelly silt loam with volcanic ash dominating on the deep, footslope positions and more stable uplands. The shallower soils on the level plateaus and steeper shoulder and upper sideslope areas developed in the basalt and andesite rock but are mixed with volcanic ash. They have gravelly loam and silt loam textures with some areas of silty clay loam in the more developed residual soils.

Loess subsoils also occur in parts of the area in similar relocation pattern as the volcanic ash, usually at depth below the volcanic ash or mixed into surface horizons of residual soils formed in basalt and andesite. These wind-blown deposits have favorable water-holding capacity, though not quite as good as ash soils, and favorable nutrient content when weathered. These soil properties, in concert with the marine-influenced climate, provide for the good growing conditions in the deep to moderately deep soils plateaus and lower sideslopes and drainageways.

In some units, subsoil layers contain an increased clay content causing a reduction in drainage capacity and somewhat poorly or poorly drained soils. These areas often stay wet well into the summer and require careful equipment use to avoid rutting or puddling when wet. These areas typically are supporting stands of alder in dense patches and are fairly easy to locate.

Much of the planning area and all of the harvest units were visited and inspected for soil concerns following the *Protocol for Assessment and Management of Soil Quality Conditions* (see Appendix E for a detailed assessment by unit). Many of the potential treatment stands have had some prior entry related to harvest with some having had several entries over many years. This has been largely selection type harvests where individual trees or groups of trees were chosen and removed. Scattered skid trail systems are still evident in many of the stands. These are largely well vegetated, stable, with recovering surface duff layers and understory vegetation with no chronic erosion or other problems observed. All units where activities are proposed to occur are currently within Forest Plan standards for DSC.

Detailed descriptions of soil series found in this project planning area are located in the project file (Soils Specialist Report).

ENVIRONMENTAL CONSEQUENCES

The analysis for effects to soils considered soil types and existing conditions of the soil resource, proposed actions and alternatives with chosen operational systems, design features (see Table 2-6), and contractual and operational controls of land disturbing activities.

Alternative A- No Action

Direct/Indirect and Cumulative Effects

There would be no additional impacts to soils because proposed ground disturbing activities would not occur. Conditions in the area analyzed would remain much the same as now. Slow accumulation of woody material, including smaller branches and duff, would continue unless interrupted by wildfire. Organic material buildup on the surface would increase productive capacity somewhat, but would also increase the risk of widespread, high-intensity wildfire that could remove large amounts of this material at once over large areas. The lower intensity mosaic pattern of prescribed fire would not occur with subsequent release of nutrients for plant uptake and invigoration. The possibility of uncharacteristic higher intensity wildfire would increase the risk of larger areas of severely burned soils. Road conditions would remain much the same, except road maintenance would not occur on closed system road sections that are proposed for utilization.

Effects Common to All Action Alternatives

Direct/Indirect Effects – (Alternatives B and C)

One difference between action alternatives is that Alternative C has fewer units and less acreage, such that the area of disturbance (both in total and in areas exceeding detrimental criteria) would be less in proportion to the reduction in total acres for each alternative and activity. Another difference is that there would no temporary road construction and decommissioning in Alternative C.

Timber Harvest -Soils in most of the units proposed for treatments have considerable volcanic ash content (ash soils) with susceptibility to compaction in both wet and dry conditions, water erosion hazard, displacement and dry condition dusting (key concerns for these soil types). All soils in the area have at least some ash-influence in the surface layer. Utility of the harvester/forwarder system for ground-based harvest (or other silvicultural treatments) mitigates to a great extent the potential for these adverse effects.

Ongoing monitoring of timber sale activities indicates that Forest Plan standards and guidelines are being met using forwarder systems on these soils. Nearly all of the smaller branches and needles are left on site, and even if later the site is jackpot or underburned it allows nutrient retention in the unit. This machinery operates on top of slash and displacement of soil is low at less than 2 percent, and compaction is normally less than 4 percent. No landings need to be constructed because the short logs can be decked along the length of adjacent haul roads.

Tractor operations which skid logs across the surface create a greater area of bare mineral soil subject to erosion. Skidding can also create "dusting-up" of volcanic ash soils if the soil is very dry and there is little surface duff and branches to buffer the surface. Control of operations during fluctuating moisture and freeze/thaw conditions (winter operations) is crucial. On Umatilla National Forest, timber sale administrators have been doing a very good job working with contractors on this issue for many years. .. Ongoing monitoring of similar operations, vegetation, and soil types on Forest land indicates soil impacts exceeding detrimental criteria are typically in the 2-5 percent range; if fuels and slash treatments are included impacts are typically in the 4-8 percent range. Erosion hazard is all but eliminated in typical operations of this type, with only occasional areas of bare soil limited to short sections (typically less than 25-feet in length) with a mosaic pattern that is not conducive to concentrating water sufficient to move soil.

Skyline systems typically produce considerably less ground disturbance than ground-based systems of any kind. Landings required for skyline systems can at times represent the larger proportion of soil disturbance, especially when large enough to accommodate slash processing with whole-tree yarding. An estimated landing size of 0.2 acres was used when calculating estimated detrimental soil disturbance. Landings are assumed to be 100 percent detrimentally disturbed for assessment purposes although this is not the case in all situations. In Alternative B temporary road construction of approximately 0.20 miles (0.5 ac) is included in disturbance estimates for units 88 and 89.

The approximately 0.25 mile (about 1,300 feet) of new road construction would create a long-term loss to the productive capacity of the road template (approximately 0.6 acres). Closure and stabilization of the road after project use would minimize future risk of sediment movement from the road template. Any cut and fill slopes would be treated to control erosion as soon as conditions allow (erosion and vegetative recovery is highly dependent on weather).

Prescribed Fire -Effects of concern from prescribed fire activity would be related to areas of severe fire intensity, and total exposed soil surface subject to potential erosion hazard. The prescription for underburning and pattern of heavy fuel concentrations are prime determining factors affecting the extent of high severity burn areas. Contemporary prescriptions for underburning rarely create severe burn conditions and the total area of severely burned soils is expected to be very small, usually 0 to 5 percent in broadcast treatment areas, and up to 10 percent in treatment areas if there are numerous concentrations of heavy fuels loadings resulting from either harvest activity or down woody levels. Exposed soil would be expected to be scattered in a mosaic pattern similar to heavy fuel loading patterns, rarely in continuous areas to become an erosion hazard.

Jackpot concentrations of fuels have a higher likelihood of severe heat levels, but have been achieving acceptable results under similar conditions when prescriptions are followed. The extent of severely burned areas is highly variable depending on concentration numbers, location, fuel loadings, and burning conditions.

Mechanical Fuel Treatments -Use of mechanical fuel treatments adds additional equipment traffic while generally reducing the number of spots of severe burn intensity. Mastication (slash busting) equipment is proposed in thinning or improvement cut harvest units to reduce created and existing slash and protect the remaining stand, which includes a considerable proportion of fire intolerant species. This equipment is usually mounted on a small-body excavator with wide tracks. It has relatively low ground pressure and can work on top of downed logs and existing or created slash. It can produce additional compaction and some displacement while turning. Operation on downed slash and other woody material and use of existing trails keeps additional compaction and displacement effects very low. Monitoring of grapple-piling operations on Umatilla National Forest indicates detrimental soil impacts in the 0-2 percent range.

Other Proposed Activities

There would be no measurable detrimental effects to soil resources from implementation of hardwood restoration, non-commercial thinning, meadow restoration, or implementation of the proposed Forest Plan amendment to change management allocation of Elk Flats Meadow from D2-Research Natural Area to A9-Special Interest Area.

Cumulative Effects – (Alternatives B and C)

Residual impacts from previous management activities over the past several decades have been estimated through field review of proposed harvest units. Activities include road building, timber harvest, site preparation, livestock grazing, fire suppression activities, and prescribed fire. Cumulative effects relative to erosion hazard are not relevant within treatment units as surface recovery occurs rapidly enough to eliminate this as a cumulative concern. Observations from monitoring of skid trails and temporary roads with minor cuts and fills showed that there is a rapid regrowth of vegetation after use. Undisturbed roots resprouted within a few weeks after use.

Field review of units that had prior tractor skidding showed they were well recovered. Residual impacts were estimated using the Region 6 *Protocol for Assessment and Management of Soil Quality Conditions*. There were no units that had severe damage that would require a more detailed survey. The contribution of residual impacts was based on the DSC determined by the field review and subsequent evaluation by the Forest's Soil Scientist.

Proposed harvest systems and/or operating conditions have been developed in response to concern over soil impacts. Use of harvester/forwarder equipment and designated forwarder routes minimizes additional displacement and compaction effects. Old trails and landings are used as much as possible. The estimated detrimental soil conditions displayed in Appendix E of this document includes residual conditions from prior activities. In conjunction with use of existing trails or landings, proposed activities in Alternatives B and C can be expected to stay well within Forest Plan standards and guidelines.

Areas of prescribed burns may add incrementally to the total area of severely burned soils in the area, but should be minimal if ignited within the burning prescription. Exposed soil created by prescribed fire would be short-term, approximately one to two months for spring burns and up to six months for a fall burn, until the vegetation recovers.

Units that would experience the most cumulative disturbance are those with proposed harvest activity, mechanical fuel treatment, and prescribed fire. Monitoring of like areas and activity on Umatilla National

Forest indicates detrimental soil condition levels range from 5-12 percent with the higher percentage in units with less downed wood and slash, deep ash soils, or shallower soils where equipment operated in wet conditions. These operations typically reuse the same trails for equipment movement; therefore have overlapping traffic effects where little additional increase in detrimental disturbance occurs.

Monitoring of other harvest activity on Umatilla National Forest indicates cut-to-length processors and full-suspension forwarders result in detrimental soil impacts (per Forest Plan definition) dominantly in the 2-5 percent range (including fuels treatments in most cases, hence the slightly higher range than indicated above) with lesser compaction (in particular) on the shallower soil types. Residual soils, and those with thin volcanic ash mantles (10 inches or less), have high strength in dry conditions and do not compact easily. They are still susceptible to surface displacement. The deeper soils, most with high ash content, are still susceptible to compaction even when dry as soil strength does not increase in ash soils to the same degree as in other parent materials. Results with in-woods processors (including the cut-to-length systems using forwarders) have been quite favorable. The slash mats spread compressive forces while little to no displacement occurs because there is minimal turning force, or dragging of trees to move surface soil. Landings often overlap existing roads, thereby, limiting additional impacts to unaffected soil areas as logs are simply piled roadside with no landing construction or scraping needed.

The following table is a comparison by alternative of effects to the soil resource.

Table 3-3 Summary Comparison of Effects to Soil by Alternative

Activity Measure	Alternative A	Alternative B	Alternative C
Total gross activity acres (harvest and fuels treatments)	0	2,500	1,300
Acres of added detrimental disturbance	0	140	80
New road construction (acres)	0	0.6	0.6
Total acres of DSC	73* (acres in Alt. B) 39* (acres in Alt. C)	215**	120**
*Existing Condition **Post-activity			

FINDING OF CONSISTENCY:

Forest Plan Consistency

Forest Plan standards and guidelines for detrimental soil condition (DSC) would be met with implementation of any alternative. A minimum of 80 percent of an activity area would be maintained in a condition of acceptable productivity potential.

HYDROLOGY

SCALE OF ANALYSIS

Cobbler project planning area is located in two hydrologic unit codes[1] HUC 5 Watersheds, Grande Ronde River-Grossman and Wenaha River. These watersheds are divided into 16 HUC 6 Subwatersheds (SWS).

[1] Hydrologic unit code (HUC) is a national level, interagency map of the hydrologic system from regional scale drainage (e.g. Columbia Basin) to subwatershed level (40,000-100,000 acres) drainage.

Four of these SWS are located in Cobbler project planning area. All SWS acres are in public ownership; Umatilla National Forest, Wallowa Whitman National Forest, and Oregon Department of Fish and Wildlife. The following table lists the subwatersheds in Cobbler project planning area.

Table 3-4 Subwatersheds in Cobbler Project planning area

Subwatershed Number	Subwatershed Name	Umatilla National Forest Approximate Acres	Total HUC 5 Approximate Acres
170601060103	Elbow Creek	12,400	12,400
170601060104	Grande Ronde River-Bear Creek	15,900	21,300
170601060305	Wenaha River-Rock Creek	17,400	17,400
170601060308	Wenaha River-Cross Canyon	19,400	19,600

Hydrologic system and the hydrologic effects of proposed actions are analyzed for National Forest System (NFS) lands HUC 6 SWS. Cumulative effect indicators including Equivalent Treatment Acres (ETA) are reported by HUC 6 SWS.

Treatment alternatives are evaluated based on their effect to hydrologic function and condition, water quality, and water yield.

Indicators for comparison purposes between alternatives are:

- Hydrologic Function and Condition:
  - road density
  - miles of road in RHCAs
- Water Quality:
  - water temperature,
  - sediment
- Water Yield:
  - ETA Model

AFFECTED ENVIRONMENT

Cobbler project planning area has a mixed maritime-continental climate with seasonal extremes of temperature and precipitation. Most precipitation comes as winter rain or snow occurring between November and May. Annual precipitation increases with elevation from 39 inches at the eastern project boundary on the Grande Ronde River (elevation 2,000 feet) to about 62 inches in the headwaters of Alder Creek (elevation 5,000 feet). Flow is generally dominated by snowmelt with peaks in the spring and low flow in August and September. Regional rain-on-snow events in 1964 and 1996 caused large scale flooding.

Topography of the project planning area is characterized by uplifted basalt plateaus and deeply dissected canyons with moderate to steep sideslopes. Headwaters of the streams of the project planning area are in the low gradient uplands and flow to the Grande Ronde River or the Wenaha River through steep canyons. The high gradient portions of these streams are generally inaccessible and have received little or no management disturbance. Fish are present in lower reaches adjacent to the large river systems and the National Forest System (NFS) program of stream survey for aquatic habitat has evaluated most of these areas. Many of the surveys were made during the 1996 field season following a regional rain-on-snow flood. The highest flow of record at the nearest Grande Ronde River stream gage occurred in February 1996, which likely accounts for the surprisingly high degree of bank instability found during the surveys. Evaluation of several instream habitat and channel condition parameters may be found in the biological evaluation (BE) and specialist's report prepared for this project by the District fish biologist.

Hydrologic Function and Condition

Roads

The following table displays road density and road stream interactions for the 4 SWS in Cobbler project planning area.

Table 3-5 Road Density and Road Stream Interaction

Subwatershed Number	Subwatershed Name	Road Density (Open/ Closed) (mi. per sq. mi)	Road Density (Open/Closed and Decommissioned (mi. per sq. mi)	Road Miles within RHCAs	Miles of road per mile of RHCA	Stream and Road Intersections
170601060103	Elbow Creek	3.68	4.20	5.86	0.13	63
170601060104	Grande Ronde River-Bear Creek	1.59	1.74	2.82	0.03	40
170601060305	Wenaha River-Rock Creek	0.84	0.85	0.04	0.00	6
170601060308	Wenaha River-Cross Canyon	1.62	1.64	1.8	0.03	25

Shallow impermeable clay layers underlie portions of the project planning area and road systems interact with the shallow ground water flow to varying degrees. GPS locations, with notes about road problems, are in the project file and have been provided to the District road manager for use in developing the road maintenance package for the project. Not all of the roads which were visited would be used in the project, therefore, not all road problems could be corrected by the project.

Forest Road (FR) 6222 was identified as having a high watershed risk in the Forest's Roads Analysis (2004) based on its location near Squaw Creek and its initiation of localized slumping during construction. Currently the slump is controlled and there is no evidence it contributes sediment to Squaw Creek. A blocked culvert ponds water from a small perennial channel and saturates the road bed. About 100 feet of the ditch adjacent to this pond holds standing water year-round and contributes to the saturated road bed. Clay soils at the surface on portions of this road hold water and affects trafficability.

FR 6214 road system has dammed shallow ground water flow, and seasonally wet sedge areas have been created in most of the swales that the roads cross. These seasonally wet areas attract livestock. The influence of the road extends up the draws for about 50 feet and the off-site effect is negligible.

Ditch down-cutting on segments of FR 6219 indicates the need for more drainage. This road is located in areas with clay layers that restrict drainage. The road template is sloughing into the ditch in some locations.

Road density was calculated using the Forest's roads database and GIS system. Densities for the existing road system are displayed along with the densities including roads identified as decommissioned. During early road decommissioning projects, roads were sometimes abandoned with no decompaction work performed. Typically those roads would be overgrown and stable within several years. Some drainage problems may remain (decommissioned road FR 6222428). Open/closed road density in Elbow Creek SWS is high (3.68 miles per square mile). This subwatershed includes FR 6219 and the problematic segments of FR 6222. Other project planning area SWS road densities are low (less than 2.0 miles per square mile) which in-part reflects the amount of acres of roadless and wilderness in these SWS.

The upland plateau location of roads in the project planning area is generally outside of fish habitat due to impassible topographic barriers in the steep canyons leading to the Grande Ronde River and to Wenaha River. There are a few miles of road located inside non-fishbearing stream RHCAs. In Cobbler project planning area Elbow Creek SWS is most affected from the road system both with overall indicators such as, road density and number of stream crossings, and with specific road systems (FR 6222 and FR 6219).

Water Quality

Water Temperature

No daily water temperature data has been collected for the streams in the project planning area. Spot checks and data from nearby streams are discussed in the BE and specialist's report prepared for this project by the District fish biologist (project file).

Sediment

No sediment data has been collected in the project planning area. The sediment regime is most likely elevated over pre-management due to the existing road system, cattle use of channels for water sources and adjacent trailing, channel disturbance from flooding, and other actions. Roads inside RHCAs are the most likely to contribute sediment to surface waters, primarily FR 6222 and FR 6219. The downcut ditch on segments of FR 6219 indicates erosion that is being delivered down slope through ditch relief culverts. This road is not inside the RHCA of Elbow Creek at this location.

Water Yield

ETA

The relationship between created openings in forested landscapes and changes in water yield and peak flows has been documented by numerous studies. Changes in these parameters would be of concern for aquatic habitat and biota, downstream water users, and for channel morphology. Recent reviews of scientific literature demonstrate that the relationship is highly variable (Stednick 1995, and Scherer 2001). Generally effects are not seen below 15-20 percent equivalent clearcut or treatment acres (ECA or ETA), and in a local study effects were not seen below 50 percent ECA (Helvey 1995). Grant et al. (in press) suggests that increased peakflows could occur at $\geq$ 20 percent ECA and that the potential for effects to channel morphology is in the 5-10 year recurrence interval flow ranges.

Umatilla National Forest's equivalent treatment acre (ETA) model (Ager and Clifton 2005) was used to evaluate the cumulative effects of harvest through time in this project planning area and to see what change the proposed alternatives would make to this indicator. The following table shows ETA calculations for the SWS in Cobbler project planning area and other SWS in the Grande Ronde River-Grossman and Wenaha River Watersheds.

Table 3-6 ETA Calculations by SWS for Cobbler Project Planning Area and Other SWS in Grande Ronde River-Grossman and Wenaha River Watersheds

		Existing Condition 2007
SWS	**SWS Name**	**ETA**
170601060101	Sheep Creek*	7.8%
170601060102	GRR/Clear Creek	3.2%
170601060103	**Elbow Creek**	**6.1%**
170601060104	**GRR/Bear Creek**	**5.0%**
170601060106	GRR/Slickfoot Creek	4.2%
170601060301	Upper S.FK. Wenaha River	0.4%
170601060302	Lower S.FK. Wenaha River	0.3%
170601060303	N.FK. Wenaha River	0.5%
170601060304	Beaver Crk.	0.1%
170601060305	**Wenaha River-Rock Crk.**	**0.6%**
170601060306	Upper Butte Crk.	0.1%
170601060307	Lower Butte Crk.	0.0%
170601060308	**Wenaha River- Cross Canyon**	**2.0%**
170601060309	Upper Crooked Creek	0.0%
170601060310	First Creek	0.1%
170601060311	Lower Crooked Creek	0.1%
170601060312	Lower Wenaha River	8.9%

* calculated for Lower Sheep Timber Sale, ongoing, not in harvested data base at this time
bold indicates SWS in project planning area

CLEAN WATER ACT

The Environmental Protection Agency has designated the State of Oregon as having responsibility to implement the Clean Water Act. The Clean Water Act requires that water quality standards be developed to protect beneficial uses and a list be developed of water quality impaired streams (303d list). The Cobbler project planning area is located in the Lower Grande Ronde Subbasin. Oregon Department of Environmental Quality (ODEQ) has identified beneficial uses as listed below:

- Aquatic Life Uses — Char (bull trout), salmon and trout spawning and rearing, migration
- Recreation — Fishing, Boating, Water Contact Recreation
- Water Supply Uses — Domestic, Industrial, and Agricultural
- Miscellaneous uses — Wildlife & Hunting, Hydro Power

See the following web site for addition information:
http://www.deq.state.or.us/regulations/rules.htm

Water Quality Standards

Water temperature standards are based on life stages of fishes and measured with 7-day-average maximums. In the Cobbler Project planning area the following standards apply:

Bear Creek and Elbow Creek
- salmon and steelhead spawning; may not exceed 13.0° C (55.4° F) January 1 – May 15.

Alder Creek, Bear Creek, and Elbow Creek
- salmon and trout rearing and migration use; may not exceed 18.0° C (64.4° F)

Burnt Canyon and Cross Canyon
- Core cold-water habitat, may not exceed 16° C (60.8° F).

Swamp Creek, Big Hole Canyon, Elk Creek, and unnamed tributaries to the Wenaha
- Bull trout spawning and juvenile rearing; may not exceed 12° C (53.6° F)

Sedimentation: The formation of appreciable bottom or sludge deposits or the formation of any organic or inorganic deposits deleterious to fish or other aquatic life or injurious to public health, recreation, or industry may not be allowed

Water Quality Standards may be found at the following web site:
http://arcweb.sos.state.or.us/rules/OARs_300/OAR_340/340_041.html

Impaired Waterbodies-303d Category 5 Streams

The most recent water quality assessment and 303d list of impaired waters in the Grande Ronde Basin is found in Oregon's 2004/2006 Integrated Report. None of the streams in the Cobbler project planning area are found on this list. The project area drains to the Grande Ronde River and Wenaha River, both of which have listings. The following table shows the listing parameters and criteria for Oregon Department of Environmental Quality's 303d list.

Table 3-7 Water Quality Impaired Streams ODEQ 303d List Category 5

Listing Parameter	Listing Criteria
Grande Ronde River; water temperature, Year-round salmon and trout rearing and migration.	18° C 7 day average max temperature. Receiving waters.
Grande Ronde River; Dissolved Oxygen, salmon and steelhead spawning.	Not less than 11.0 mg/L or 95% of saturation. Jan. 1-May 15. Receiving waters.
Grande Ronde River; sedimentation, undefined	See above. Receiving waters.
Wenaha River; water temperature, August 15 – June 15, salmon and steelhead spawning.	13° C 7 day average max temperature. Receiving waters
Wenaha River; water temperature, year around non-spawning.	16° C 7 day average max temperature. Receiving waters.

See the following web site for additional information:
http://www.deq.state.or.us/wq/assessment/rpt0406/search.asp

The Forest Service's responsibilities under the Clean Water Act are defined in a Memorandum of Understanding (MOU) between Oregon Department of Environmental Quality and the Forest Service, May 2002, and updated in 2006. The MOU designates the Forest Service as the management agency responsible for meeting the Clean Water Act on NFS lands and recognizes best management practices (BMPs) as the primary mechanism to control nonpoint source pollution on NFS lands. There is further recognition that BMPs are developed by the Forest Service as part of the planning process and includes a

commitment by the US Forest Service to meet or exceed standards. The agreement is currently expired. Both agencies are committed to working within the scope of the MOU and are actively working on an update. Completion is expected shortly.

ENVIRONMENTAL CONSEQUENCES

Alternative A - No Action

Direct/Indirect and Cumulative Effects

Hydrologic Condition and Function

Roads

No change to the existing road system is foreseen under this alternative. Road density and proximity to channels would remain the same. Few of the project planning area roads have regular maintenance. Problems identified in the affected environment section above would remain and through time would worsen to some degree as weather and use degrade road drainage.

Water Quality

Water temperature

Water temperature would improve slowly over time as near channel vegetation grew and provided more shade. The magnitude of this change is unknown and directly related to the degree that shade currently departs from site potential. Disturbance events like fires and floods could reverse this trend. The timeframe for shade and water temperature improvement is long, and related to the growth rate of site potential vegetation, which in the case of conifers is measured in decades.

Sediment

Ongoing use by ungulates and continued lack of road maintenance would be the primary management related sources of accelerated erosion. Natural disturbance regimes like flood and fire would be the dominant sediment risks for the future.

Water Yield

The affected environment section above discusses analysis methods and results. In subwatersheds with existing recent harvest, vegetative recovery through time would reduce ETA values. Current values of ETA suggest that there is no measurable difference between current conditions and those with no harvest. Additional growth of conifer stands into the future would not measurably change water yield or peak flows.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

Hydrologic Condition and Function

Roads
About 0.25 miles of new road would be constructed to unit 42 (Wenaha-Rock Creek SWS) and be used for future access in the area. The alignment would not cross any wet areas or draws and would have minimal cut and fill. The proposed location and alignment would minimize effects to hydrologic function. Road density would increase by less than 0.01 miles per square mile in the Wenaha-Rock Creek SWS, a negligible amount. No change in the miles of road inside RHCAs would occur in either action alternative.

FR 6222 would be used for haul, and timber sale contract provisions would be used to replace an undersized culvert with a drain dip, drain standing water in ditches, add other drain dips as necessary, narrow the road where it is over-widened, and rock portions of the road. Work would take place at seeps and on a side drainage tributary to and inside the RHCA of Squaw Creek. The rocked drain dip which would replace a plugged culvert would remain in the topographic draw.

The project planning area has numerous seeps and areas of shallow ground water. Where proposed haul routes encounter wet areas, new drainage structures and surface rock would be installed.

Road maintenance and reconditioning associated with the proposed timber sale would improve drainage and reduce risk to the hydrologic system from inadequate drainage as discussed above. Hydrologic function would be improved locally by this work.

Water Quality

Water Temperature
Proposed harvest activities, fuels treatments, biomass removals, and non-commercial thinning would not occur inside of interim PACFISH RHCAs. Interim PACFISH widths for RHCAs range from 1-2 tree heights depending on flow regime and the presence/absence of fish (Umatilla National Forest, 1990). Shade is controlled by about one tree height (FEMAT, 1993). There would be no effect to water temperature from these treatments.

Fire ignition for landscape prescribed fire or activity fuel treatments would not occur inside RHCAs but fire would be allowed to back into RHCAs. No ignition and increased moisture in RHCAs would cause fire intensity to drop and reduce fuel consumption. Shade would not be significantly reduced and potential effects to water temperature would be negligible.

Proposed meadow and hardwood restoration projects are in areas with ephemeral and intermittent channels. No surface water is present during summer months and the projects would not remove shade near drainages. There is no potential to affect water temperature with these projects.

Sediment
Roads - FR 6222 would be insloped in an area of perennial seeps, a plugged 12 inch culvert would be removed, and two drain dips with rocked aprons at the outlet would be constructed. Work would occur

inside the RHCA of Squaw Creek and would occur during the Grande Ronde steelhead instream work-window. Low flow season work would minimize sedimentation from the activity. However, some sediment would enter Squaw Creek as standing water drained from currently un-drained sites and water seeped from worksites. Turbidity could be visible but deposition would be negligible. These effects would be short-term, less than one week. No sediment effects would be expected from other road maintenance and conditioning. This work would improve drainage and reduce risk of erosion and sedimentation relative to the existing condition and would reduce sedimentation from roads used for timber haul.

Landscape Prescribed Fire - About 8,000 acres of steep canyon land in Grande Ronde-Bear Creek and Elbow Creek subwatersheds is proposed for landscape prescribed fire. This treatment would target more southerly aspects of the major drainages. A mosaic burn with patches of exposed mineral soil would be expected. Exposed soil would be surrounded and buffered by remaining duff and vegetation. Slope distances on exposed mineral soil would be short, preventing significant overland flow from developing and the surrounding duff and vegetation would act as a filter, should any sediment move. Natural mulching by needles and leaves would provide some ground cover before the first winter season occurs.

No ignition would occur in RHCAs during implementation of landscape prescribed fire, though fire would be allowed to back into RHCAs. The use of black line and natural control points would minimize construction of handlines. Fire intensity and the extent of fire coverage would generally be reduced in RHCAs because no ignition would occur in them to maintain the fire. Some mineral soil would be exposed in near channel positions, but it would be less than in the upland portions and with a mosaic pattern. There would be very little effect to existing down material and vegetation density in near channel positions.

The risk of erosion from landscape prescribed burning would be limited due to short slope lengths of exposed soil, and the risk of sedimentation is low due to surrounding unburned debris and vegetation. However, because mineral soil might be exposed adjacent to channels, a small amount of sediment could enter channels during intense storms and spring runoff for the first year after burning. Risk is low that sedimentation could occur at levels which would measurably affect water quality or deposition in channels. The mosaic of unburned vegetation in channels and current levels of debris and other channel roughness would slow and reduce the transport of any sediment which might enter channels from these activities. This risk would not extend beyond the first growing season after burning due to regrowth of surface vegetation and accumulation of natural mulches.

Other Proposed Projects - Hardwood restoration projects would include ATV use in crossing intermittent channels during their dry season. These trips would be used to carry poles and other heavy supplies. Any single crossing site would be used no more that three times. Locations for crossings would be chosen where bank angles are low enough and vegetation (grass and sedges) are dense enough that channel banks would not break down. Some soil could be exposed. These mitigations and design features would limit soil exposure to very small areas and sedimentation would be negligible.

Lodgepole would be cut for post and poles that would be used for fencing hardwood sites and for personal-use permits. These trees would be removed from areas outside of RHCAs and vehicle access of up to 300 feet off road would also be limited to areas outside of RHCAs.

Meadow restoration would use hand cutting of encroaching conifers. These trees would be dropped and burned during meadow burning. The meadows are near the tops of ridges and no channels or RHCAs would be involved in this activity.

Non-commercial thinning would occur throughout the project planning area over a period of years. Thinning would be done by hand or mechanical masticator and outside of PACFISH interim RHCAs. Hand thinning does not expose soil. Mechanical masticators create soil disturbance where the tracked equipment makes turns. Mechanical masticator trail spacing would average 50 feet apart, would occur over existing slash where possible, and turning would be minimized.

Project design features (see Table 2-6) would minimize or eliminate soil exposure and erosion and PACFISH interim RHCAs would protect channels and surface waters from disturbance. There is no risk to water quality from proposed post and pole cutting, meadow restoration, non-commercial thinning, or the proposed Forest Plan amendment to change management allocations of Elk Flats Meadow RNA to a Special Interest Area in Alternatives B and C.

ALTERNATIVE B

Direct/Indirect Effects

Hydrologic Function and Condition

Roads

About 0.20 miles of temporary road are proposed for construction between Units 88 and 89 for skyline logging system access. This temporary road would be built on a ridge where a user-developed jeep trail already exists. It would not require cut and fill construction. If the road remains over winter, waterbars would be installed to prevent erosion. Upon completion of timber sale activities the road would be subsoiled, berms would be pulled into the roadbed, it would be revegetated with native seed, and mulching with existing slash would occur. The road entrance would be camouflaged to discourage use. There is no risk to water quality or hydrologic function because the location of the road is far enough away from any channels. Post sale work would recover soil productivity to the extent possible and minimize the potential for future use.

Water Quality

Sediment

Design features (Table 2-6) for proposed actions in Alternative B would include no-harvest RHCAs of PACFISH interim widths. These design features would prevent damage that could contribute to erosion and sedimentation into channels and streams (Belt et al., 1992). Slope gradients would not exceed 35 percent on these ground based harvest units. Harvester/forwarders are low disturbance systems with average trail spacing about 50 feet apart and operating over a slash bed. Low pound per square inch (psi) equipment and slash mats left on trails reduce compaction compared to more conventional systems. Skyline logging systems are low disturbance systems with average trail spacing about 150 feet apart. Conventional ground based logging systems with tops attached to the last log would have the potential for more disturbance. Average trail spacing for conventional ground based logging systems would be 100 feet, which helps to reduce the overall quantity of disturbance.

These treatments would cause some exposure of mineral soil. This soil exposure would be scattered and would be interspersed with undisturbed ground surface. Surrounding undisturbed vegetation and RHCA protection would prevent transport of any eroded sediment into surface waters.

Monitoring Results - Effects of ground based harvest methods were monitored in 2001 and 2002. Twenty-four harvester/forwarder trails in 10 units of the Abla and Cliffhanger Timber Sales were

evaluated for spacing, gradient, and percent bare soil. Standards for trail spacing and gradient were met. An average of 1 percent mineral soil exposure was measured on forwarder trails. Since trails occur on about 10 percent of harvest acres, the total soil exposure was about 0.01 percent of harvest acres.

Roads - Maintenance and Use – Road maintenance would occur on all system roads used by a timber sale and would include blading, ditch relief culvert cleanout, and ditch cleanout as needed on portions. Culvert cleanout and necessary ditch cleanout would lead to immediate reductions in risk from the road system. Closed roads would be left in a self-maintaining condition. Detrimental effects from ditch cleanout would be short-term, less than one year.

Erosion and sedimentation effects of log haul on forest roads have been the subject of numerous studies. Log haul has been demonstrated to increase sedimentation from hydrologically connected roads during precipitation events, with the effect decreasing as traffic is reduced or ends (Reid 1984). Dry season use of roads or restricting logging traffic during surface runoff from roads can reduce this effect by interrupting or reducing the road-stream connectivity. Umatilla National Forest's *Commercial Road Use Rules* would require log haul to stop when runoff from roads creates turbidity in streams. It states as follows:

> *Commercial use of National Forest roads shall be suspended when commercial contract or permit operations create a continuous discharge of sediment into live streams that result in an increase in turbidity…Visual evidence of this may be identified by the increase in turbidity in live running streams evident at points downstream from the outflows of culverts, ditchlines, or fords. (Umatilla National Forest, 2001)*

In a study of sediment production from forest roads, newly cleaned ditches were found to have a sediment yield substantially more than blading of the road surface or traffic use (Luce and Black 2001). This is likely due to the disruption of armored or vegetated surfaces, leading to a larger supply of fine, erodible sediment in a feature that carries water during storms. Ditch cleanout would be used only when ditch function was compromised and would minimize disturbance of existing vegetation and natural armoring practices, which are common on the Umatilla National Forest. Road use restrictions and minimized ditch cleanout would reduce sediment production from road use to the extent possible.

Fuels Treatments - Activity fuels would be treated with a mix of mechanical mastication and pile and burn. Market economics may not support biomass removal for fuels treatments and would be replaced by a combination of mastication and prescribed burning. Relatively few acres of pile and burn or prescribed fire would occur in activity units. No mastication or other fuels treatment would occur in RHCAs. No ignition would occur in RHCAs during fuels treatments; pile burning or prescribed fire burning would be allowed to back into RHCAs where they are adjacent to prescribed fire areas. There would be very little effect to existing down material and vegetation density in near-channel positions. The potential for sediment to reach channels from these treatments is negligible.

Cumulative Effects

Water Quality

Sediment

Existing ongoing actions, road use, and livestock grazing would cumulate in an additive manner with sediment effects from proposed actions. Ongoing livestock grazing on the Eden C&H Allotment occurs in the project planning area. Cattle and other ungulates use closed and abandoned roadbeds as trails and

use created ponds, wet areas created by damming of subsurface flow by roads, live streams, and ponded remains of stream flow for water sources. Ground cover is reduced in these areas and erosion is increased. Except for channel associated disturbance, this erosion does not affect surface water since there is no mechanism that would move it to channels. Disturbance near and in channels does lead to sedimentation to some unquantified degree. Most of the channels in activity areas are intermittent or barely perennial (seeps or small spring fed pools). Transport of sediment occurs during spring runoff.

Projects proposed in Cobbler project planning area have been designed and mitigated to prevent or minimize damage to ground cover, erosion, and sedimentation. Road drainage improvement, especially work on FR 6200 could cause short-term, less than one week, sedimentation. The potential for sedimentation from any other proposed actions is negligible. Project activities proposed in Alternative B offer no opportunity for measurable cumulative effects with ongoing actions.

Water Yield

Effects of past harvest and proposed harvest and conifer mortality from landscape prescribed burning on water yield and peak flows are analyzed and cumulated with the Equivalent Treatment Acre (ETA) Model as described in the Existing Condition section of this report. Table 3-8 displays the results of the analysis. ETA percentages increase in the 4 subwatersheds of the Cobbler project planning area. The increases are well below levels at which effects have been seen to water yield, peakflows, or timing of peakflows. The proposed harvest and landscape burning would have negligible effect on hydrologic functions; capture, storage, and release of water.

ALTERNATIVE C

Direct/Indirect Effects

Water Quality

Sediment

Alternative C would have fewer acres of harvest and fuels treatments than Alternative B (Table 2-10). Descriptions of actions, design features, and mitigations remain the same between action alternatives. The potential for sedimentation into surface waters from these proposed actions is negligible as in Alternative B.

Miles of road use and road maintenance would be less in Alternative C than in Alternative B. Risks of increased erosion from road use and road maintenance and benefits of improved drainage would be somewhat less in Alternative C than in Alternative B.

Cumulative Effects

Sediment

As in Alternative B, proposed actions in Alternative C have been designed and mitigated (see Table 2-6) to eliminate or minimize off-site sediment effects. Road drainage improvement, especially work on FR 6200 could cause short-term, less than one week, sedimentation. The potential for sedimentation from any other proposed project activity is negligible. Projects proposed in Alternative C offer no opportunity for measurable cumulative effects with ongoing actions.

DRAFT

Water Yield

Fewer harvest acres in Alternative C than in Alternative B lead to lower ETA percentages in the subwatersheds with harvest. Negligible effects to water yield, peakflows, and timing of peakflows would be expected from implementing Alternative C, as is also the case in Alternative B.

Table 3-8 ETA Calculations by SWS for Cobbler Project Planning Area and other SWS in those Watersheds

		Existing Condition 2007	Alt. B 2009	Alt. C 2009
SWS	**SWS Name**	**ETA**	**ETA**	**ETA**
170601060101	Sheep Creek*	7.8%	7.8%	7.8%
170601060102	GRR/Clear Creek	3.2%	2.4%	2.4%
170601060103	**Elbow Creek**	**6.1%**	**9.4%**	**8.2%**
170601060104	**GRR/Bear Creek**	**5.0%**	**9.5%**	**8.3%**
170601060106	GRR/Slickfoot Creek	4.2%	3.7%	3.7%
170601060301	Upper S.FK. Wenaha River	0.4%	0.3%	0.3%
170601060302	Lower S.FK. Wenaha River	0.3%	0.3%	0.3%
170601060303	N.FK. Wenaha River	0.5%	0.4%	0.4%
170601060304	Beaver Crk.	0.1%	0.1%	0.1%
170601060305	**Wenaha River-Rock Crk.**	**0.6%**	**1.1%**	**0.8%**
170601060306	Upper Butte Crk.	0.1%	0.1%	0.1%
170601060307	Lower Butte Crk.	0.0%	0.0%	0.0%
170601060308	**Wenaha River- Cross Canyon**	**2.0%**	**4.7%**	**3.3%**
170601060309	Upper Crooked Creek	0.0%	0.0%	0.0%
170601060310	First Creek	0.1%	0.1%	0.1%
170601060311	Lower Crooked Creek	0.1%	0.1%	0.1%
170601060312	Lower Wenaha River	8.9%	7.2%	7.2%
* calculated for Lower Sheep Timber Sale, ongoing, not in harvested database at this time				
bold indicates sws in analysis area				

FINDING OF CONSISTENCY

Clean Water Act Compliance

The Umatilla National Forest incorporated protection of water quality as an important management goal and explicitly set ground disturbance and shade standards to protect it in the 1990 Land and Resource Management Plan. In the mid 1990s PACFISH amended the plan by adding standards and guides and RHCA protections designed for, among other objectives, maintenance and recovery of shade and morphology components (including sediment regime) of water temperature. Managing to these standards has protected ground cover and existing shade and allowed for recovery of those elements at near natural rates for a decade. Restoration work aimed at reducing sediment sources through road decommissioning has been ongoing, much of it occurring since the floods of 1996 and 1997.

Umatilla National Forest has a high rate of compliance with BMPs. RHCAs in School Fire Salvage Project FEIS were monitored in 2006. Buffers on 18 units, 23 percent of identified RHCA influence units, were monitored in July and August 2006. Results are displayed in the table below. Average buffer widths exceeded standards for all stream categories.

Table -3-9 Average Buffer Width by Stream Category
School Fire Salvage Sales

	Average (ft)	Number of Measurements	PACFISH Standard (ft)
Fish Bearing Streams	325	32	300
Perennial Non Fish Bearing	187	59	150
Intermittent	150	87	100
Dissected Ephemeral	36	34	No standard BMP=25 ft.

RHCA effectiveness was also measured and reported in 2001 as follows: no cases of erosion or sedimentation were observed post harvest in RHCAs.

Identification of BMPs (see Appendix D) for proposed activities has been completed, and any project which might occur in this planning area would be considered for monitoring in the Umatilla National Forest annual BMP monitoring plan. These activities would not detrimentally affect beneficial uses. Riparian and channel components that protect water quality would be maintained. Other design features and BMPs would control disturbance that could lead to erosion and sedimentation. Effects of proposed actions would not adversely or measurably affect water temperature or dissolved oxygen (DO). Short-term measurable turbidity effects could occur during replacement of a culvert. Best Management Practices have been incorporated into project design features (Table 2-6) for the culvert replacement and will be monitored. Cobbler Timber Sale and Fuels Reduction project is in compliance with the Clean Water Act for implementation of any alternative.

Forest Plan
Implementation of design criteria and BMPs as described above, Umatilla National Forest commercial road use rules, as well as standard Umatilla National Forest's timber sale contract specifications would constitute compliance with Forest Plan standards and guidelines for hydrologic and water quality components.

FISHERIES

SCALE OF ANALYSIS
Because streams hosting ESA listed threatened and endangered and Region 6 sensitive fish are within and adjacent to the project area, there may be potential for the Cobbler Timber Sale and Fuels Reduction Project to affect these fish species.

Indicators for comparison purposes between alternatives are:

- pool frequency
- water chemistry
    - * temperature
    - * sediment
    - * chemicals/contaminants
- large woody debris
- stream channel conditions
    - * bank stability
    - * lower bank angle
    - * substrate
- change in peak or base flows
- increase in drainage network
- road density and location

Following is a list of maps (located in the project file) created for the Fisheries report and used in this analysis.

Figure 1 – Shaded relief illustration of project planning area topography
Figure 2 – Fish distribution in project planning area subwatersheds
Figure 3 – Harvest by decade in the project planning area
Figure 4 – Wildfires by decade in the project planning area
Figure 5 – Aerial photography taken in 2005 of the project planning area.

AFFECTED ENVIRONMENT

Listed, proposed, and sensitive species known or expected to be in the project area or that the project potentially affects

Fish occupancy has been confirmed in the Grande Ronde River, Meadow Creek, Elbow Creek, Squaw Creek, Alder Creek, Bear Creek, Wenaha River, and Cross Canyon Creek. Fish occupancy has not been confirmed for Big Hole Canyon Creek, Swamp Creek, Elk Creek or Burnt Canyon Creek, but it is likely that fish use at least the lower portions of these streams as well.

Six species/stocks of ESA listed or Forest Service Region 6 sensitive fish occupy streams within or a short distance downstream or downslope of the Cobbler project planning area. Designated critical habitat for four ESA threatened fish species is within borders, or is a short distance downstream of the project planning area. These same streams are also classified as Magnuson–Stevens Essential Fish Habitat. See the table below for a listing of these fish species.

Table 3-10 Listed Fish Species - Presently or Historically found or Expected on Umatilla National Forest in or Near the Cobbler Project Planning Area

Stock	Classification	Grande Ronde Subbasin	
		Within project Subwatersheds	Outside of project area
Snake River steelhead	ESA Threatened	Yes	Yes
Snake River spring/summer Chinook salmon	ESA Threatened	Yes	Yes
Snake River fall Chinook salmon	ESA Threatened	No	Yes
Columbia River bull trout	ESA Threatened	Yes	Yes
Snake River Sockeye salmon	ESA Endangered	Extirpated[1]	Extirpated[1]
Coho Salmon	ESA Threatened[2]	Extirpated	Extirpated
Redband trout	Region 6 Sensitive, Umatilla NF MIS[3]	Yes	Yes
Pacific lamprey	Region 6 Sensitive	Apparently extirpated	Apparently extirpated
Margined Sculpin	Region 6 Sensitive	Yes	Yes

[1]Sockeye Salmon have been extirpated from the Grande Ronde River/Wallowa Lake area. A very small run still returns to Redfish Lake (Salmon River basin), maintained at least in part, through a captive broodstock program. (Good, Waples & Adams, 2005)
[2]Applies to coastal California, Oregon, and lower Columbia River populations. The Grande Ronde River run of coho salmon has been extirpated since the 1950s, and so there is no ESU listed for this area. (Good, Waples & Adams, 2005)
[3]MIS = Management Indicator species. Since Redband and Steelhead are both *O. mykiss* and juveniles are indistinguishable in the field, they will not be addressed separately in this evaluation

Some fish stocks native to the area (coho, lamprey, sockeye) have been extirpated, but these losses were due to activities outside of, and mostly far removed from, the project planning area.

In addition, a number of other non-listed fish are found in the Wenaha and Grande Ronde Rivers immediately adjacent to, or a short distance downstream of the project planning area (see Table 3-11). Some of these are exotic species and are potential invaders, particularly if area streams should warm appreciably.

Table 3-11 Additional Fish Species Present in the Lower Grande Ronde River and/or Lower Wenaha River

Species	Native or Exotic
Black Crappie	Exotic
Smallmouth Bass	Exotic
Bridgelip sucker	Native
Large scale sucker	Native
Carp	Exotic
Dace	Native
Northern pike minnow	Native
Brown bullhead catfish	Exotic
Peamouth	Native
Chislemouth	Native
Brook Lamprey	Native

Species	Native or Exotic
Channel Catfish	Exotic
Mountain Whitefish	Native
Cottid (probably several species)	Native
Redside shiner	Native
Sources: Del Groat, Pomeroy Ranger District, personal comm., 2008; USDI Bureau of Land Management et al, 1993; personal observations, DMC.	

Occupied and unoccupied habitat essential for listed or proposed species recovery, or to meet Forest Service objectives for sensitive species.

General characterization of the project area

Ten named streams are within or partly within the project area (see Table 3-12 below). Five of these drain into the Wenaha River and five drain into the Grande Ronde River.

Information in Table 3-13 gives a general characterization of the project area streams. The Grande Ronde River is the largest stream in the project area, although the Wenaha River is also a substantial stream.

Occupied habitat recognized as essential (ESA Designated Critical Habitat) for recovery of Spring/Summer and Fall Snake River Chinook Salmon includes:

> "…river reaches of the Columbia, Snake, and Salmon Rivers, and all tributaries of the Snake and Salmon Rivers…presently or historically accessible to Snake River Spring/Summer Chinook salmon…" (Dept. of Commerce, Dec. 28, 1993)

Table 3-12 Named Streams Draining the Cobbler Project Planning Area

Stream Name	Hydrologic Unit Code
Lower Grande Ronde River	1706010601
Meadow Creek	170601060102
Elbow Creek	170601060103
Squaw Creek (Elbow trib)	170601060103
Alder Creek	170601060104
Bear Creek	170601060104
Wenaha River	1706010603
Cross Canyon Creek	170601060308
Big Hole Canyon Creek	170601060305
Swamp Creek	170601060308
Elk Creek	170601060302
Burnt Canyon Creek	170601060308

Table 3-13 Characteristics of Cobbler Project Planning Area Streams

Stream (HUC)	Date of Survey	Gradient, %	Flow (cfs)	Average Bankfull Width, Feet	Average Flood Prone Width, Feet	Average Bankfull Max Depth, Feet	Average Bankfull Depth, Feet	Average Bankfull Width/Depth Ratio
Meadow Creek	8/14/2002	30.25		17.90	43.75	2.03	1.34	15.25
Elbow Creek	7/12/1996	8.00		20.35	34.90	1.37	0.72	34.06
Alder Creek	7/9/1996	10.00	6.0	17.09	30.89	1.37	0.84	22.75
Bear Creek	7/9/1996	7.00	7.0	21.54	34.18	2.23	1.40	16.02
Wenaha River, Reach 1	July, 1991	1	439					30.87
Wenaha River, Reach 2	July, 1991	1	322					27.03
Wenaha River, Reach 3	July, 1991	1	197					20.31
Grande Ronde River, Reach 1	1996		620					
Grande Ronde River, Reach 2	1996							51.4
Grande Ronde River, Reach 3	1996							17.8

For the project planning area, this would include all of the named streams downstream of barrier waterfalls in the analysis area subwatersheds, since even those reaches that are not accessible to adult salmon because of their small size, can still be used by juveniles for rearing purposes. This would include the Grande Ronde and Wenaha Rivers and their named tributaries in project area subwatersheds.

Designated Critical Habitat for Snake River steelhead includes most of the named streams of the analysis area (Dept. of Commerce, Sept. 2, 2005).

Designated Critical Habitat for bull trout does not include any federal lands in the Grande Ronde River Basin (Dept. of the Interior, Oct. 6, 2004). It does include those parts of the Grande Ronde River and Lookingglass Creek on non-federal lands downstream of the forest boundary. Potential project effects to those reaches would be considered as downstream cumulative effects of Cobbler project activities to bull trout critical habitat.

All accessible aquatic habitat is occupied at some time each year by a listed, proposed, or sensitive fish species, so there is no unoccupied habitat in project planning area subwatersheds recognized as essential for listed or proposed species recovery.

Two primary river systems could potentially be affected by Cobbler project activities; the Wenaha River, a wilderness stream, mostly without active management; and Grande Ronde River, influenced by active present and past management. Neither river is actually within the project planning area, although the Grande Ronde forms the eastern border of the project planning area, and tributary streams to both rivers flow from the project planning area.

Wenaha River is mostly within a congressionally designated wilderness (Wenaha-Tucannon). Habitat in the upper reaches of the river near the project area are quite cold, and near pristine.

Grande Ronde River is larger than the Wenaha and those parts of the Grande Ronde adjacent to Cobbler project planning area are designated as a Wild and Scenic River. Before reaching the Cobbler project planning area it flows through agricultural, city, and forest lands. Summer water withdrawals upstream of the project area reduce its flow in summer, and help to make it warmer than it would otherwise be. Because of agricultural and other management activities upstream, it carries a higher sediment load. It also carries contaminants (fertilizers, urban and industrial wastes) from human activities upstream of the project planning area (ODEQ, 1999).

Because of difficult access, the lower reaches of Grande Ronde and Wenaha River tributaries draining the project area watersheds have mostly not been directly altered by past management activities. Upper reaches of these tributaries are more readily accessible by road, and have been directly affected by past management activities, including timber harvest right up to and across the stream channel. Those parts directly affected by past management are upstream of the fish-bearing portions of the streams.

Magnuson-Stevens Fishery Conservation and Management Act, Essential Fish Habitat

Essential fish habitat applies only to habitat for commercially important fish species; for Umatilla National Forest these are Chinook and coho salmon. Under authority of the Magnuson-Stevens Fishery Conservation and Management Act and Public Law 104-297, the Sustainable Fisheries Act of 1996, the Pacific Fishery Management Council has identified both the upper and lower Grande Ronde Hydrologic Units (HUC's 17060104 and 17060106) as Essential Fish Habitat (EFH) for both Chinook and coho salmon. The Pacific Fishery Management Council defines EFH as "all currently viable waters and most of the habitat historically accessible to salmon within the USGS hydrologic units identified…"

For adult Chinook this would include the mainstem Wenaha and Grande Ronde Rivers. Adult Chinook would not have used project area streams tributary to the Grande Ronde or Wenaha Rivers, because they are too small during the summer for them to survive or to spawn.

Juvenile Chinook however, would use at least the lower reaches of some tributaries, probably including Elk, Elbow, Alder, and Bear Creeks. These streams are remote and little studied and so juvenile Chinook distribution has not been documented in them, but it seems likely that they would have used them historically, and probably still used them.

Coho on the other hand, are smaller fish and winter spawners (Groot and Margolis, 1991). Many of the smaller streams (Alder Creek, Elbow Creek, Elk Creek, Meadow Creek, Bear Creek,) would have been cool, flowing, and accessible during their spawning times. So adult coho could conceivably have used these streams before they were extirpated from the Grande Ronde system.

Therefore, most named streams downstream of longstanding natural barriers in the analysis area should be counted as essential fish habitat.

Habitat description

Data for evaluation of aquatic habitat conditions comes from several sources: Forest Service aquatic habitat inventories; temperature records from thermographs deployed by Forest Service; and reports of habitat monitoring and inventories from the Oregon State Department of Fish and Wildlife (ODFW). Data on upland conditions in the watershed (i.e. road density, area harvested or burned) are derived mostly from Forest Service Geographic Information System (GIS) databases and mapping exercises.

Aquatic habitat inventories using Forest Service Region 6 stream inventory methods, a modified Hankin and Reeves (1988) protocol, were conducted on Elbow Creek (1996), Bear Creek (1996), Alder Creek

(1996), Meadow Creek (2002), the Grande Ronde River (1992 – exact date uncertain) and Wenaha River (1991 and 2007). Squaw Creek and Cross Canyon Creek are confirmed as fish bearing for at least part of their length (DMC personal observations), but have not been inventoried. Because of their locations and the size of their drainage basins, Elk Creek, Big Hole Canyon Creek, and Burnt Canyon Creek are probably fish bearing in their lower reaches, but this has not been confirmed by observation and habitat in these streams has not been inventoried.

There are three major components to Cobbler Timber Sale and Fuels Reduction project (1) timber harvest, (2) prescribed fire, and (3) hardwood stand restoration. Each of these types of activities carries potential for effects to some components of aquatic habitat. Only those habitat components potentially affected by these types of activities or that are specifically addressed as PACFISH Riparian Management Objectives (RMOs) are addressed in this analysis. Table 3-14 summarizes reasons for including individual aquatic habitat parameters in this evaluation.

Table 3-14 Reasons for Including Aquatic Habitat Components in Cobbler Project Effects Analysis

Habitat Component	PACFISH RMO	Habitat Could Potentially be Affected by:		
		Timber Harvest	Prescribed Fire	Hardwood Stand Restoration
Pool frequency	X		X	
Water quality				
Temperature	X	X	X	
Suspended sediment		X	X	X
Chemical contamination		X	X	
Large woody debris	X	X	X	
Stream Channel conditions				
Bank stability	X	X	X	X
Lower bank angle	X			
Substrate		X	X	X
Flow regime				
Flow timing		X	X	X
Flow volume		X	X	X
Road density and location	Not a habitat parameter. Included because it could affect habitat quality			
Disturbance history regime	Not a habitat parameter. Included because it could affect habitat quality			

In addition to aquatic habitat parameters, certain conditions of the watershed, outside of the stream channel, can have substantial bearing on quality of aquatic habitat and are also potentially affected by one or more of the types of activities comprising the Cobbler project. Some of these watershed conditions must also be addressed as part of the biological evaluation of land management projects. These include road density, road locations, and alterations to the drainage network. The existing conditions of these parameters will also be summarized in this chapter.

Pool Frequency

Most streams in the project do not meet PACFISH riparian management objectives (RMOs) for pool frequency, but this may be a mostly natural condition. Three of the Grande Ronde River tributary streams in project planning area subwatersheds would meet the PACFISH RMO for pool frequency (Table 3-15). Meadow Creek has only one-third of the PACFISH RMO for pool frequency. This may be an artifact of the higher gradient of this stream, which results in a larger proportion of cascades and fewer pools.

Because these small tributary streams are Rosgen B-type, (moderately high gradient, step-pool configuration) deep pools are naturally scarce here. The Grande Ronde River and the Wenaha River are not close to meeting the PACFISH RMO for pool frequency. The Wenaha River is almost entirely within a congressionally designated wilderness, and so it seems that the pool frequency there must be a natural or very near natural condition. The section of the Grande Ronde River adjacent to the project area is a Wild and Scenic River, and so here too, the low pool frequency would seem to be mostly natural.

Table 3-15 Pool Statistics for Cobbler Project Planning Area

Stream	Date	Average Wetted Width	PACFISH RMO pools/mile	Inventoried pools/mile
Meadow Creek	8/14/2002	6.81	96	32.57
Elbow Creek	7/12/1996	11.76	56	62.36
Alder Creek	7/9/1996	11.96	56	84.13
Bear Creek	7/9/1996	14.34	56	73.21
Wenaha River, Reach 1	1991	76.5	18	3.3
Wenaha River, Reach 2	1991	65.6	23	3.5
Wenaha River, Reach 3	1991	48.9	26	3.9
Grande Ronde River, Reach 1	1996	119.5	18	1.8
Grande Ronde River, Reach 2	1996	134.6	14	1.4
Grande Ronde River, Reach 3	1996	135.2	14	1.7
Grande Ronde River, Reach 4	1996	135.0	14	0.6

In summary, three of the inventoried stream reaches in or adjacent to the Cobbler project planning area meet PACFISH RMO for pool frequency. Eight inventoried stream reaches do not.

Water Quality

Two of the components of water quality, temperature and suspended sediment, are addressed in the Hydrology section of this chapter. Chemicals/contamination is addressed in this section.

Chemicals/contamination

Water quality data is limited for project area streams, but water quality appears to be high for the Wenaha River and the tributary streams draining the project area subwatersheds. Water quality of the Grande Ronde River bordering the project planning area is somewhat degraded due to present and past activities upstream of the project area, outside of National Forest.

The Grande Ronde River carries contaminants (fertilizers, urban and industrial wastes) from human activities upstream of the project area (ODEQ, 1999). To the knowledge of the Forest Service, levels of contaminants have not been measured in those reaches of the river running through the project planning area, but both pH and nitrogen levels are higher than natural in reaches downstream of the Grande Ronde Valley (upstream of the Cobbler project planning area), at least in summer (ODEQ, 1999, and ODEQ 1999, appendix B). The Forest Service knows of no source of chemical contamination for tributary streams on National Forest lands, and therefore concludes that past and present Forest Service management activities do not increase levels of chemical contaminants in the Grande Ronde River. In fact, the tributary streams flowing from the National Forest would have a diluting effect to contaminant levels in the Grande Ronde.

In summary, except for the Grande Ronde River itself, streams in and adjacent to the project planning area are almost certainly free of chemical contamination.

Large Woody Debris

Two Grande Ronde tributary streams in the project planning area subwatersheds would meet the PACFISH RMO minimum of 20 pieces of large woody debris (LWD) per mile (see Table 3-16) within the portions surveyed. Woody debris frequency in Meadow Creek and Bear Creek, and Grande Ronde and Wenaha Rivers is below the PACFISH RMO. Although there has been substantial timber harvest in these subwatersheds in the past, timber harvest noted by the aquatic habitat inventory team was more than 300 feet from fish bearing portions of the stream channel, so would not be responsible for the low wood frequency reported by the aquatic habitat inventory. In summary, woody debris frequency seems low for project area streams, but this may be a natural condition.

Table 3-16 Instream Woody Debris Frequencies in Cobbler Project Planning Area Streams

Stream Name (Hydrologic Unit Code)	Date	PACFISH LWD[1] frequency
Meadow Creek	8/14/2002	16.8
Elbow Creek	7/12/1996	28.5
Alder Creek	7/9/1996	52.5
Bear Creek	7/9/1996	8.6
Wenaha River, Reach 1	1991	14
Wenaha River, Reach 2	1991	16
Wenaha River, Reach 3	1991	33
Grande Ronde River, Reach 1	1996	10
Grande Ronde River, Reach 2	1996	4
Grande Ronde River, Reach 3	1996	12
Grande Ronde River, Reach 4	1996	6

[1]Wood >12 inches diameter x 35 feet long

Stream Channel Conditions

Bank stability

The PACFISH RMO for bank stability is 80 percent stable bank. Elbow Creek and Alder Creek do not meet this PACFISH RMO (see Table 3-17). Meadow and Bear Creeks do meet this RMO. No data is available for streams tributary to the Wenaha River, Squaw Creek, or Grande Ronde River.

The high bank instability (raw, eroding banks above the bankfull level) values for Elbow and Alder Creek may be related to the very high flows of the preceding winter. Winter flows in Meadow, Elbow, Alder, or Bear Creek have not been measured or recorded, but the highest flow on record for the Grande Ronde River at Troy, a short distance downstream, was in the winter of 1995-96, when on February 9, 1996, a flow of 51,800 cfs was recorded (USGS http://waterdata.usgs.gov/nwis/uv?13333000). Similarly high flows were recorded for many streams in the Blue Mountains at this time, and it is likely that flows were high in Elbow and Alder Creeks as well. It is not clear why Bear Creek would have such low bank instability, since that data was collected in the same summer as data for Elbow and Alder Creeks, and

Bear Creek is in a similar topographic setting and is located between Alder and Elbow Creeks. There appears to have been less timber harvest and road building in the Bear Creek drainage than in Elbow Creek, but Bear Creek is not much different from Alder Creek in that regard, so that would not seem to explain the large difference in bank instability.

Based on limited available data, bank stability of some streams in the project planning area does not meet PACFISH RMOs.

Table 3-17 Bank Stability of Cobbler Project Area Streams

Stream Name (HUC)	Date	Percent Unstable Bank
Grande Ronde River		no data
Meadow Creek (170601060102)	8/14/2002	16.47%
Elbow Creek (170601060103)	7/12/1996	51.69%
Alder Creek (170601060104)	7/9/1996	39.89%
Bear Creek (170601060104)	7/9/1996	3.44%
Wenaha River		no data

Lower Bank Angle

There is no data available for this PACFISH RMO for project planning area streams.

Substrate

Substrate quality in project area streams is mixed, with most streams having either high embeddedness or high percentages of fines in the substrate, while low embeddedness or percentages of fines in the substrate has been reported for three of the tributary streams. There is some substrate data for some streams in the project planning area, but it is a mix of data types depending on protocol at the time of the stream survey. Available data includes cobble embeddedness, Wollman pebble counts, and dominant and subdominant substrate particle size category (see Table 3-18).

There is no PACFISH RMO for substrate. To be considered good habitat by standards of National Marine Fisheries Service (1996) or the US Fish and Wildlife Service (1998), substrate should contain less than 12 percent fines (particles <0.85 mm) and be less than 20 percent embedded. Embeddedness and particle size data are not available for Meadow Creek but it meets the criteria for percent fines. Alder Creek and Bear Creek meet the criteria for both embeddedness and percent fines. Elbow Creek does not meet the criterion for embeddedness, but probably would meet the percent fines criteria, since the reported value of 12.2 percent for material <2mm is close, and a fraction of that material, probably more than 0.2 percent would be larger than 0.85 mm.

Elbow, Alder, and Bear Creek data were collected in the summer following the highest streamflow ever recorded on the Grande Ronde River, and it seems likely that these tributary streams also experienced very high stream flows at that time, which probably caused substantial erosion and stream sedimentation. That event was 12 years ago, so the reported values may not be representative of present conditions in these streams.

Table 3-18 Substrate Data for Cobbler Project Planning Area Streams

Stream	% Embedded	Wollman		Particle Size Category*	
		%< 2mm	%< 6mm	dominant	subdominant
Meadow Creek	n/a	1.2			
Elbow Creek	29	12.2	15		
Alder Creek	15	10	11.5		
Bear Creek	11	4	6.5		
Wenaha River, Reach 1	35			co	gr
Wenaha River, Reach 2	33			co	co
Wenaha River, Reach 3	31			co	sb
Grande Ronde River, Reach 1				sb	co
Grande Ronde River, Reach 2				sb	lb
Grande Ronde River, Reach 3				sb	co
Grande Ronde River, Reach 4				sb	lb
*Particle size - co = cobble; gr = gravel; sb = small boulder; lb=larger boulder					

The embeddedness values for the Wenaha River seem surprisingly high for a wilderness stream, and would not meet National Marine Fisheries Service or U.S. Fish and Wildlife criteria for best habitat. This may be a result of the low gradient for most of the surveyed length of the stream. The Grande Ronde River has an even lower gradient and is more affected by upstream management than the Wenaha, so its substrate is not likely to be in better condition than the Wenaha.

In summary, the substrate component of habitat quality appears to be contributing to good fish habitat in Meadow, Alder and Bear Creeks, but not for the remainder of the project area streams.

Change in Peak or Base Flows

The flow regimes in project area subwatersheds are probably near natural. Upstream water withdrawals have reduced summer base flows in the Grande Ronde River. The management influences on Wenaha River and its tributary streams draining the project planning area that could affect peak or base flows include timber harvest, prescribed fire, and road construction. Measurable changes in water yield are generally not seen until greater than 15 percent of a watershed is in a cutover condition (Stednick 1995). None of the project area subwatersheds or other nearby watersheds tributary to the Grande Ronde or Wenaha rivers have received that level of treatment and so detectable changes in peak or base flows would not be expected for them (see Hydrology section Table 3-8)..

Increase in Drainage Network

Drainage network increase was calculated following a convention of 200 feet increase for every road stream crossing (Table 3-19). The greatest drainage network extension of project area subwatersheds is for the Elbow Creek subwatershed.

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Table 3-19 Drainage Network Extension in Cobbler Project Area Subwatersheds Within National Forest Boundaries

Subwatershed (6th field Hydrologic Unit Code)	Count of Stream & Road Intersections	Drainage network extension (ft)	Total stream miles[1]	Drainage network extension as a % of total stream length
Grande Ronde River – Clear Creek. (170601060102)	27	5,400	41	2.47%
Elbow Creek (170601060103)	63	12,600	47	5.13%
Grande Ronde River – Bear Creek. (170601060104)	40	8,000	91	1.67%
Wenaha River-Rock Creek[2] (170601060305)	6	1,200	53	0.43%
Wenaha River-Cross Canyon Creek[2] (170601060308)	25	5,000	56	1.70%

[1]Total stream miles within National Forest boundaries.
[2]Mostly or entirely within the Wenaha-Tucannon Wilderness

Road density and location

The project planning area subwatersheds have a history of high intensity management on the broad ridgetops, including a history of regeneration (clearcut) and similar harvest, often up to and across class 3 and 4 stream channels, but with much less management activity over the breaks on the steep slopes.

In subwatersheds potentially affected by Cobbler Timber Sale and Fuels Reduction project, only Elbow Creek has a high existing road density of >2 miles/square mile (see Table 3-5 – Hydrology section).

Because of the topography of the area, which has broad, flat ridgetops and steep walled, narrow canyons, most roads are located high in the watersheds, mostly distant from stream channels. This has resulted in few road miles inside of riparian habitat conservation areas (RHCAs) (see Table 3-20) and almost no roads near fish-bearing streams. Even Elbow Creek subwatershed, in which almost 13 percent of the stream channels have roads within their RHCAs, has no roads within the RHCAs of fish-bearing streams.

Table 3-20 Road Locations with Respect to Stream Channels in Project Planning Area

HUC 6	Stream Miles	Total Road Miles	Road Miles within RHCAs	Miles of Class 1* and 2** Streams	Road Miles within RHCAs of Class 1 & 2 Streams
Grande Ronde River – Clear Creek. 170601060102	41.43	22.01	2.48	8.87	0.28
Elbow Creek 170601060103	46.51	81.29	5.86	3.56	
Grande Ronde River – Bear Creek. 170601060104	90.72	52.73	2.82	21.82	0.1
Wenaha River-Rock Creek. 170601060305	52.8	22.8	0.04	8.19	

HUC 6	Stream Miles	Total Road Miles	Road Miles within RHCAs	Miles of Class 1* and 2** Streams	Road Miles within RHCAs of Class 1 & 2 Streams
Wenaha River-Cross Canyon Creek 170601060308	55.6	49.62	1.8	7.83	
Totals	804.46	389.39	24.17	121.4	
Class 1 streams contain anadromous fish Class 2 streams contains resident fish only					

Most past timber harvest has been in the headwaters areas. Some such disturbance was years ago and harvest units are in various stages of vegetative recovery. Full hydrologic recovery is usually assumed after 30 years. All fish-bearing streams in the project planning area subwatersheds have had some harvest adjacent to streams.

ENVIRONMENTAL CONSEQUENCES

Alternative A - No Action

Direct/Indirect and Cumulative Effects

Implementation of Alternative A would not change management in these watersheds, and therefore would not change direct, indirect, or cumulative effects to fish or their habitat. Alternative A would tend to maintain the present condition of aquatic species and aquatic habitat in all project area streams and subwatersheds. Alternative A would therefore not reduce the viability of spring/summer Chinook salmon *(Oncorhynchus tshawytscha)*, fall Chinook salmon (also *O. tshawytscha)*, Snake River steelhead trout *(Oncorhynchus mykiss)*, and Columbia River bull trout (*Salvelinus confluentu)s* or other aquatic species in the project planning area watersheds.

Biological Determination: There would be no timber harvest, no fuels reduction, no log haul, no hardwood (aspen, cottonwood, mountain mahogany) or dry meadow, restoration activities, and no prescribed fire, proposed under the no-action alternative. There is therefore no mechanism for direct or indirect effects to ESA listed species of fish or to Region 6 sensitive fish, or to their habitat, and no contribution to cumulative effects to these fish or their environment. Therefore there would be *No Effect* to Proposed, Endangered, Threatened or Sensitive Fish species from implementation of Alternative A.

For the same reasons there would be no unavoidable adverse environmental effects, and no irreversible or irretrievable commitment of resources.

Alternative B

Direct/Indirect Effects

There would be no direct effects to any aquatic species, because there would be no project activities in fish-bearing portions of streams, or even in RHCAs of fish-bearing portions of streams.

Pool Frequency

Since, with the exception of prescribed fire, there would be no project activities that could alter pool forming structures in streams, and no changes in stream flow volume or timing, this project would not affect pool frequency of streams in project area subwatersheds.

Landscape prescribed fire has the potential to both consume tree boles that could have added to pool forming structures in streams, or kill live streamside trees, causing them to fall into the stream sooner than they otherwise would have. Thus, prescribed fire has both the potential to increase and decrease the pool frequency in project area streams. The most likely outcome would be no detectable change in pool frequency ascribable to this project.

Water Quality

Water Temperature

Proposed harvest activities, including timber sales, post and pole sales, fuels treatments, biomass removals, and non-commercial thinning would not occur inside of interim PACFISH RHCAs. RHCA widths range from 1-2 site potential tree heights or more, depending on flow regime and the presence/absence of fish (PACFISH, 1995). Most effective shade is contributed by trees within one tree height distance of the stream channel (FEMAT, 1993). Since trees that could affect stream water temperatures would not be harvested in this project, there would be no effect to water temperature from harvest treatments.

Ignition for landscape prescribed fire or activity fuel treatments would not occur inside RHCAs but fire would be allowed to back into RHCAs. Higher moisture levels in RHCAs would keep fire intensity low, reducing fuel consumption and decreasing likelihood of killing trees that provide stream shade. Shade would not be significantly reduced and potential effects to water temperature would be negligible (Peterson, 2008).

Proposed meadow and hardwood restoration projects, although partially within RHCAs, are in areas with ephemeral and intermittent channels. No surface water is present during summer months when work within the RHCA would be undertaken, and projects would not remove shade near drainages. There is no potential to affect water temperature with these projects (Peterson, 2008).

Sediment

All harvest activities would take place outside of PACFISH RHCAs. Sediment in non-channelized flows rarely travels more than 300 feet (Belt, O'Laughlin and Merrill, 1992), and harvest activities in harvest units would implement harvest methods designed to keep sediment production low, so sediment from harvest units is very unlikely to reach streams.

New road construction, both temporary (0.20 miles) and permanent (0.25 miles), would be outside of PACFISH RHCAs and would not cross any stream channels, and would not be expected to deliver sediment to any streams.

Treatments at the spring seep area on FR 6222, are inside of PACFISH RHCAs and would involve work in a perennial stream channel and therefore, would deliver some sediment to Squaw Creek but at a point about a mile upstream of the known distribution of fish. This site is presently problematic because water from the seeps and springs in the road cutbank flow down the road surface, eroding the road and delivering sediment to upper Squaw Creek. A small perennial stream at the lower end of this site is

frequented by range cattle, which have trampled the stream and broken down the stream bank, and because of this it is also a source of fine sediment to Squaw Creek. These problems would be corrected by the proposed road work, so although there would be a pulse of sediment introduced into upper Squaw Creek by this activity, over the long-term, sediment delivery to the stream would be reduced. Since known fish distribution ends about a mile downstream of the project area, fish are unlikely to be adversely affected by this activity.

Culvert and ditch work would take place on side drainages tributary to and inside the RHCA of Squaw Creek. This work would occur during the dry season, water would be diverted from the work sites, and standard erosion control methods would be applied. This would limit sedimentation from the work. However, some sediment would enter Squaw Creek upstream of fish-bearing areas, as standing water drained from currently un-drained sites and water seeped from worksites. Turbidity could be visible but deposition would be negligible. These effects would be short-term, less than 1 week. No sediment effects would be expected from other road maintenance and conditioning. This work would improve drainage and reduce risk of erosion and sedimentation from roads used for haul.

Some timber harvested under Alternative B might be hauled over FR 6300, which runs closely along Lookingglass and Little Lookingglass Creeks for about three miles. This is an open road that receives considerable public use. In the unlikely event that additional traffic of log hauling were conducted under very wet conditions the pumping action of the heavy truck traffic would suspend additional fine sediment in water running off of the road surface, which would contribute additional sediment to Lookingglass and Little Lookingglass Creeks. Most of the haul over this stretch of road would be during the dry season when there would be no water leaving the road to transport sediment to the stream, but there could be some log haul during wet weather when fine sediment produced by the action of traffic over the wet, gravel surfaced road would run off the road into Little Lookingglass or Lookingglass Creek in ESA listed bull trout, Chinook salmon, and steelhead habitat. Road use rules would require haul to be suspended if there is a continual discharge from the road surface that produces a visually evident increase in turbidity downstream. Sediment sufficient to produce a visually evident increase in turbidity downstream would also be sufficient to cause adverse effects to fish, so road use rules alone are not sufficient to prevent adverse effects to fish. It might not rain during timber haul, or if it did, it might not be sufficient to produce road surface runoff, and in some places there is some buffering capacity between the road and the stream, so it is unlikely that substantial quantities of sediment from this source would enter the stream.

Approximately 3 miles of FR 6300 along Lookingglass and Little Lookingglass Creeks that would not otherwise have been plowed, might be plowed for log haul for timber sale activities. Since these streams are directly adjacent to the road in some places, there is a small possibility that some snow and accompanying sand or soil could be plowed into the stream channel. These would be very small amounts, since it is in the interest of road managers to maintain the gravel surface on the road insofar as possible. Snowplows are usually required to use “shoes” (a kind of spacer under the blade) to prevent the blade from directly scraping the road surface, but because the road surfaces are not perfectly flat, some small amounts of gravel or soil will usually be removed with the snow. Project design features (Table 2-6) requires equipment operators to plow snow away from the stream channel, but some parts of FR 6300 closely parallel Little Lookingglass Creek for a very long distance, and it may not always be possible to do this. Therefore, snow plowing this road carries a small risk of introducing a small amount of sediment into Lookingglass or Little Lookingglass Creeks.

Flows in Lookingglass and Little Lookingglass Creeks are generally strong at times and likely to have road surface runoff or require snowplowing, so it is highly unlikely that there would be a detectable sediment increase. Moreover, it is likely that the timber purchaser would not haul over FR 6300, instead

using the graveled county road along the Grande Ronde River, which is a little farther from the edge of the watercourse, further reducing risk of introduction of sediment into the river.

About 8,000 acres of steep canyon land in Grande Ronde-Bear Creek and Elbow Creek subwatersheds is proposed for landscape prescribed fire. The project would target more southerly aspects of the major drainages. A mosaic burn with patches of exposed mineral soil would be expected. Exposed soil would be surrounded and buffered by remaining duff and vegetation. Slope distances on exposed mineral soil would be short, preventing significant overland flow from developing and the surrounding duff and vegetation would act as a filter, should any sediment move. Natural mulching by needles and leaves would provide some ground cover before the first winter.

No ignitions would occur in RHCAs for landscape prescribed fire, though fire would be allowed to back into the RHCAs. Minimal hand line would be constructed because use of black line and natural control points would make handline mostly unnecessary. Fire intensity and the extent of fire coverage would generally be reduced in RHCAs because no ignition would occur to maintain the fire there. Some mineral soil would be exposed near to stream channels, but less than in the upland portions and in a mosaic pattern. There would be very little effect to existing down woody material and vegetation density near stream channels.

The risk of erosion from landscape burning would be limited due to short slope lengths of exposed soil and the risk of stream sedimentation is low due to sediment trapping effects of surrounding unburned debris and vegetation. However, because mineral soil might be exposed adjacent to channels, a small amount of sediment could enter channels during intense storms and spring runoff for the first year after burning. Risk of stream sedimentation at levels which would measurably affect water quality or deposition in channels is low. The mosaic of unburned vegetation in channels and the current levels of debris and other channel roughness would slow and reduce the transport of any sediment which might enter channels from these activities. This risk would not extend beyond the first growing season after burning due to regrowth of surface vegetation and accumulation of natural mulches.

Hardwood restoration projects would include ATV use crossing intermittent channels during their dry season. These trips would carry poles and other heavy supplies. No one crossing site would be used more that three times. Locations for crossings would be chosen where bank angles are low enough and vegetation (grass and sedges) are dense enough that channel banks would not break down. Some soil could be exposed. These mitigations would limit soil exposure to very small areas and sedimentation would be negligible.

Lodgepole would be cut for post and poles that would be used for fencing hardwood sites and for personal-use permits. These trees would be removed from areas outside of RHCAs and vehicle access of up to 300 feet off road would also be limited to areas outside of RHCAs.

Encroaching conifers in meadows would be cut by hand (chainsaws) as part of the meadow restoration activities. These trees would be dropped and burned during meadow burning. The meadows are near the tops of ridges and no channels or RHCAs would be involved in this project component.

Non-commercial thinning would occur throughout the planning area over a period of years. Thinning would be done by hand or mechanical masticator and outside of RHCAs. Hand thinning does not expose soil. Mechanical masticators may create soil disturbance where the tracked equipment turns. Mechanical masticator trail spacing would average 50 feet apart, and would occur over existing slash wherever possible.

Project design features (Table 2-6) would minimize soil exposure and erosion and PACFISH interim RHCAs would protect channels and surface waters from disturbance by post and pole harvest and non-commercial thinning. There is no risk to water quality from the proposed post and pole, meadow restoration, non-commercial thinning, or proposed Forest Plan amendment to change management area allocation for Elk Flats Meadow from a RNA management area designation (D2) to a Special Interest (A9) management area designation in action Alternatives B and C (Peterson, 2008).

Chemicals/contamination

Timber harvesting and transport machinery containing fuels, lubricants, and coolants would be used outside of RHCAs except where the machinery operates on roads that are within RHCAs. Equipment refilling would be done outside of RHCAs. Chemicals for management of prescribed fire would be used only outside of RHCAs.

Meadow restoration work would necessarily include use of chainsaws and ATVs in some meadow areas, which are within the RHCAs of intermittent headwater streams. Special precautions (Table 2-6), including storage and refilling of chainsaws and drip torches outside of RHCAs, would prevent introduction of these chemicals into streams. No travel by ATV would occur within meadows except when they are dry, and travel would be limited to three or fewer passes by ATVs. Where conifers are felled within meadows or RHCAs for hardwood restoration sites, slash may be hand piled and burned, but the only chemicals involved in this activity would be drip torch fuel, and it would be consumed in the burning process. Because of the duff and vegetation on the ground surface and the relatively flat ground surface in the area, ash from the slash burn piles would not be likely to reach stream channels, and if it did it would not be in quantities that would be detectable.

Large Woody Debris

Since there would be no commercial timber harvest activities, no post and pole harvest activities, and no non-commercial thinning in fish-bearing stream reaches or in RHCAs of fish-bearing reaches of streams, there would be no changes in large woody debris frequency due to timber harvest activities.

There is a small chance that prescribed fire that could back into RHCAs could either kill some trees that would then fall into the stream channel sooner than they otherwise would have, providing additional large woody debris. On the other hand, fire might consume some down woody debris presently in place, reducing woody debris frequency. Overall, large woody debris frequency is unlikely to change measurably.

Hardwood and meadow restoration component of this project would include felling of some trees in RHCAs of intermittent, non fish-bearing headwater streams. Trees felled in RHCAs of these areas would be left on site. Slash from these felling activities would be burned, and some of the tree boles might also be partially consumed by the slash burning, but overall, large woody debris frequency would not decrease and could slightly increase in these intermittent, headwater streams.

Stream Channel Conditions

Bank Stability

Since there would be no project activities occurring in fish-bearing stream reaches or in RHCAs of fish-bearing reaches of streams, there would be no changes in stream bank conditions.

Hardwood and meadow restoration components of this project would include some crossing of headwater stream channels by ATVs, but only when the stream channel is dry, and crossing sites would be chosen so

as to cause the least amount of damage to stream banks, and since these sites are well upstream of fish habitat, there would be no degradation to this component of aquatic habitat. There would be insufficient change in flow volume or timing to alter stream bank condition.

Substrate

Since there would be no detectable changes in erosion, sedimentation, or flow there would be no change in stream channel substrate attributable to implementation of Alternative B.

Change in Peak or Base Flows

Potential for effects for Alternatives B and C to stream flow volume and timing were evaluated by the District hydrologist, (Table 3-8), using the ETA/ECA model (Ager and Clifton, 2005).

Recent reviews of literature demonstrate that the relationship between created openings and water yield or peak or base flows is highly variable (Stednick 1995, and Scherer 2001). Generally effects are not seen below 15-20 percent equivalent clearcut or equivalent treatment acres (ECA or ETA) and in a local study; effects were not seen below 50 percent ECA (Helvey 1995). Grant et al. (in press) suggests that increased peakflows could occur at 20 percent ECA.

Harvest and prescribed fire activities would not raise the percent ECA of any subwatershed to a level that would produce detectable changes in flow (Peterson, 2008).

Increase in Drainage Network

Because there would be only a very small amount of new road construction (0.25 miles of permanent closed system road and 0.20 miles of temporary road), and these new roads would not cross any stream channels, and would have no other linkage to existing streams, this project would produce no increase in the drainage network of the project planning area subwatersheds.

Road Density and Location

Road density would be increased by less than 0.01 miles/square mile in Wenaha-Rock Creek subwatershed. This would be entirely outside of RHCAs, and would have no damaging effects to any component of aquatic habitat.

Cumulative Effects

Existing ongoing actions, including road use and livestock grazing, as well as many activities upstream in the Grande Ronde River Valley well beyond Umatilla National Forest, would be additive with sediment effects from proposed project activities. Ongoing grazing on the Eden Allotment occurs in the analysis area. Cattle and other ungulates use closed and abandoned roadbeds as trails and use created ponds, wet areas created by damming of subsurface flow by roads, live streams, and ponded remains of stream flow for water sources. That reduces ground cover and increases erosion in these areas. Except for channel associated disturbance this erosion does not affect surface water since there is no mechanism that would move the sediment produced to stream channels. Disturbance near and in channels does lead to sedimentation to some unquantified degree. Most of the channels in project activity areas are intermittent or barely perennial; seeps or small spring fed pools. Transport of sediment occurs during spring runoff.

Damage to ground cover, as well as erosion and sedimentation, would be prevented or minimized by the design features (Table 2-6). Road drainage improvement, especially work on FR 6200 and 6222 could cause short-term sedimentation, lasting less than one week. The potential for sedimentation from any

other proposed project activity is negligible. Projects proposed in Alternative B offer no opportunity for measurable cumulative effects with ongoing actions.

There is some slight risk of additional stream sedimentation from prescribed fire and log haul activities which cannot be entirely avoided, but even if this sedimentation occurred it is not likely to be of sufficient intensity or duration to cause adverse effects to aquatic organisms or their habitat. Therefore, no adverse effects to fish or aquatic habitat are expected from implementation of Alternative B.

Since there would be no commitment of fisheries resources under Alternative B, or of resources essential to maintenance of listed fish or their habitat, neither would there be any irreversible or irretrievable commitment of fisheries resources.

Biological Determinations

Because of the very slight risk of additional stream sedimentation from prescribed fire activities and log haul, which although very small, cannot be entirely eliminated, implementation of Alternative B "*May Affect, But Is Not Likely to Adversely Affect"* Snake River steelhead, Snake River Spring Chinook salmon, Snake River Fall Chinook salmon, or Columbia River bull trout. For the same reasons Alternative B, *May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing Or Cause A Loss Of Viability To The Population Or Species* of Region 6 sensitive redband trout or margined sculpin.

Adverse effects are not expected, so there are no recommendations for removing, avoiding or compensating for adverse effects.

Determination of Effect to Magnuson-Stevens Act Essential Fish Habitat

For the same reasons given above, the proposed Cobbler Timber Sale and Fuels Reduction Project "*May Affect, But Is Not Likely To Adversely Affect"* Magnuson-Stevens Act Essential Fish Habitat of Snake River spring/summer salmon, Snake River fall Chinook salmon or coho salmon.

Alternative C

Direct/Indirect Effects

Implementation of Alternative C would harvest less timber and have fewer acres of fuel reduction activities than Alternative. Because activities proposed in Alternative C are of the same type as described in Alternative B, differing only in the amount of activity, the difference between Alternatives B and C in terms of effects to fish and aquatic habitat is effectively nil.

The calculated ETA/ECA (Table 3-8) is slightly less than for Alternative B, and is well below the level at which effects to stream flow would be detectable, and so the difference in potential for effects to fish and aquatic habitat is not quantifiable, would not be detectable, and for the purposes of this analysis is zero.

Landscape prescribed fire, post and pole harvest, dry meadow restoration, hardwood restoration, and non-commercial thinning and Forest Plan amendment proposed under Alternative C are identical to those activities as proposed under Alternative B.

Cumulative Effects

Cumulative effects of Alternative C would be indistinguishable from those of Alternative B. Activities proposed in Alternative C offer no opportunity for measurable cumulative effects with ongoing actions.

There is some slight risk of additional stream sedimentation from prescribed fire and log haul activities which cannot be entirely avoided, but even if this sedimentation occurred it is not likely to be of sufficient intensity or duration to cause adverse effects to aquatic organisms or their habitat. Therefore, no adverse effects to fish or aquatic habitat are expected from Alternative C.

Since there would be no commitment of fisheries resources under Alternative C, or of resources essential to maintenance of listed fish or their habitat, neither would there be any irreversible or irretrievable commitment of fisheries resources.

Biological Determinations

Alternative C would have a determination of "*May Affect, but is Not Likely to Adversely Affect*" Snake River steelhead, Snake River Spring Chinook salmon, Snake River Fall Chinook salmon, or Columbia River bull trout. For the same reasons Alternative C "*May Impact Individuals Or Habitat, But Will Not Likely Contribute To A Trend Towards Federal Listing Or Cause A Loss Of Viability To The Population Or Species*" of Region 6 sensitive redband trout or margined sculpin.

Adverse effects are not expected, so there are no recommendations for removing, avoiding or compensating for adverse effects of the Cobbler project Alternative C.

Determination of Effect to Magnuson-Stevens Act Essential Fish Habitat

For the same reasons given above, the proposed Cobbler project *"May Affect, But Is Not Likely To Adversely Affect"* Magnuson-Stevens Act Essential Fish Habitat of Snake River spring/summer salmon, Snake River fall Chinook salmon or coho salmon.

FINDING OF CONSISTENCY

As discussed above, implementation of any alternative would be consistent with the Forest Plan as amended, ESA, and Magnuson-Stevens Act.

VEGETATION

SCALE OF ANALYSIS

The geographical context for affected environment and estimating direct and indirect effects is National Forest System (NFS) lands within the Cobbler project planning area that are being proposed for treatment. The geographical extent for estimating cumulative effects is NFS lands within the Cobbler project planning area (approximately 34,000 acres). Acreage figures reported in this report are approximate and rounded to the nearest acre. Affected environment information used for analysis of vegetation was done using Umatilla National Forest "Composite" vegetation database (Powell 2004a) with updated data for recent surveys and field work; EVGPI database which interprets existing vegetation by use of aerial photography with no purpose of the classification of existing forest vegetation and of those areas having limited or no vegetation potential; aerial detection surveys using aerial sketch maps that are completed annually; and forest inventory plots (Current Vegetation Survey (CVS)) an equal-interval grid system that samples both forest and non-forest ecosystems.

Effects are measured using forestland condition, characterized using species composition, structural diversity, stocking densities, and provision of wood products.

Indicators for comparison purposes between alternatives are:
Improvement of species composition:

- Acres currently dominated by early seral species where competition from late seral ingrowth is reduced
- Acres where the proportion of early and mid-seral species is increased (western larch and ponderosa pine)
- Acres of diseased and damaged stands regenerated to young trees of primarily early seral species.
- Acres of hardwood species fenced and/or released from encroaching conifers
- Acres at Elk Flats Meadow changed to management area A9 with Forest Plan amendment

Improvement of forest stand structures:

- Acres changed from outside structural class HRV to within HRV
- Acres currently dominated by trees $\geq$ 21 inches DBH where competition from late seral ingrowth is reduced,

Improvement of forest stand densities:

- Acres of stand density reduction to recommended stocking levels

Provision of wood products:

- Acres of high-risk lodgepole pine stands harvested.

AFFECTED ENVIRONMENT

Background

The southern three-quarters of Cobbler project planning area are in the Grande-Ronde River-Grossman Creek watershed. This corresponds to the area formerly classified as the Grande Ronde River-Rondowa Watershed. Existing vegetation conditions and some historical vegetation conditions were described in the Upland Forest Vegetation Analysis of the Grande Ronde - Rondowa Watershed document prepared by the Umatilla Forest Silviculturist, Dave Powell, in 2002 (watershed analysis was not completed).

Forest inventory plots located in the watershed, rather than the individual stand data used for Cobbler vegetation analysis, were analyzed to characterize some of the components. Because a different data source was used and the area analyzed includes more area than just the Cobbler project planning area, some differences in forest vegetation conditions were found.

Forest sustainability was the focus of the vegetation analysis. Forest sustainability was defined as an ecosystem-oriented approach that allows the utilization of forests for multiple purposes (e.g., biodiversity, timber harvesting, non-wood products, soil and water conservation, tourism and recreation) without undermining their availability and quality for present and future generations. This means that sustainable forests contain insects, diseases, and other tree-killing agents, but not to the extent that they jeopardize the long-term integrity, resiliency, and productive capacity of the forest. A conclusion was reached that "a significant threat of stand-replacing disturbance exists within the Grande Ronde-Rondowa watershed that could dramatically alter plant and animal structure and composition."

Primary vegetation condition concerns raised in the vegetation analysis include susceptibility of forest stands to insect and disease mortality, overstocked forest land, substantial reductions in the area of early-

seral species, and conditions on dry sites that are inconsistent with ecosystem sustainability and resilience. In addition, native hardwoods (deciduous tree species, primarily quaking aspen and black cottonwood) and western white pine were found to be limited vegetation components of particular concern. Enhancement of these limited vegetation components was recommended.

An important factor influencing forest sustainability is tree damage or death caused by insects and diseases. Many insects and diseases respond directly to forest composition, structure, and density (e.g., their host-type habitat). Moderate to high levels of forest damage occurred in the Grande Ronde-Rondowa watershed during the late 1980s and the early 1990s, primarily from defoliating insects and bark beetles.

For the watershed as a whole, high risk (susceptibility) was found to be present for western spruce budworm, and moderate to high risk for Douglas-fir tussock moth. Douglas-fir beetle had moderate risk. Risk from all other insect or disease agents (Douglas-fir dwarf mistletoe, mountain pine beetle in lodgepole pine, mountain pine beetle in ponderosa pine, mixed conifer root diseases, spruce beetle, and white pine blister rust) was rated low for the Grande Ronde-Rondowa watershed as a whole.

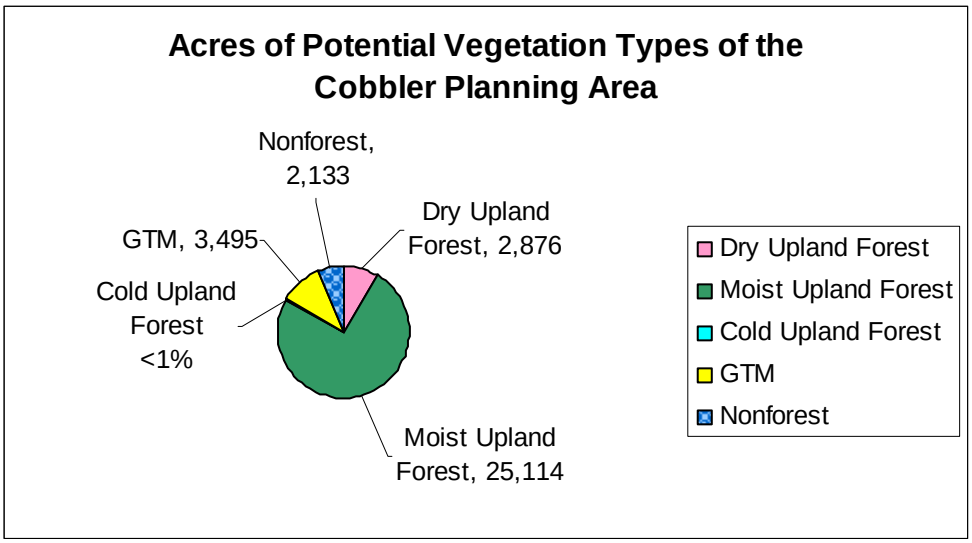
Fifty percent of the Grande Ronde-Rondowa watershed has tree density levels that threaten future sustainability of upland forests. Nutrient cycling, and the availability of soil moisture and growing space, is undoubtedly impaired in these overstocked sites. In addition, these dense stands exhibit a high susceptibility to crown fire.

The vegetation report of the Grande-Ronde Rondowa watershed analysis (Powell 2002) shows that approximately one-half of the acres in the Cool Moist upland forest plant association group (PAG), which make up 87 percent of the acres in the Cobbler planning area, and one third of the acres in the Warm Dry upland forest PAG, which make up 13 percent of the acres in the Cobbler project planning area are overstocked.

Potential Vegetation

Approximately 75 percent of the Cobbler project planning area is classified as moist upland forest (UF) potential vegetation group (PVG) (Powell el al 2007). Approximately 9 percent is classified as dry UF, only 1 percent as cold UF, and 10 percent does not fit well into the forest categories and for the purposes of this analysis was classified as Grass-Tree Mosaic (GTM). Approximately 6 percent of the area outside of the canyons is non-forest which is dry or moist meadows or hardwood stands. See Silviculture Report (project file) for a detailed table of potential by potential vegetation types, plant association groups, and plant associations.

Figure 3.1 Potential Vegetation Types



Sources/Notes: Summarized from the Cobbler project vegetation database (NFS lands only). Powell et al. (2007) describes how potential vegetation types (PVT) were assigned to plant association groups (PAG) and to potential vegetation groups (PVG).
Grass-tree mosaic, abbreviated GTM, is made up of patches or stringers of trees occurring on open, generally steep hillsides.

Forest Cover Types

Forest cover type characterizes the existing vegetation composition for each stand by tree species. The canopy cover of each species occurring in the stand is estimated. In stands where one tree species comprises more than half of the total canopy cover, a cover type is assigned using the majority species (e.g., Grand fir where grand fir comprises more than 50 percent of the tree canopy cover); types where no single species comprised more than half of the canopy cover are named for the plurality species along with "dominated mix" to denote the mixed-species composition (e.g., Grand fir dominated species mix) where grand fir is predominant but did not exceed 50 percent of the tree canopy cover) (Powell 2004a).

Table 3-21 Cover Types- Cobbler Project Planning Area, All PVGs Combined

Cover Type	Acres	Percent of Acres
Grand fir	8,560	26
Grand fir dominated species mix	4,900	15
Subalpine fir	1,170	3
Subalpine fir dominated species mix	290	1
Western larch	760	2
Western larch dominated species mix	930	3
Lodgepole pine	1,700	5
Lodgepole pine dominated species mix	350	1
Engelmann spruce	780	2

Cover Type	Acres	Percent of Acres
Engelmann spruce dominated species mix	300	1
ponderosa pine	2,680	8
ponderosa pine dominated species mix	3,650	11
Douglas-fir	2,950	9
Douglas-fir dominated species mix	2,680	8
Non-forest	1,900	6

Species Composition

Historical Range of Variability (HRV) Analysis for Species Composition

Recent broad-scale assessments concluded that for dry forestland, existing vegetation conditions are out-of-balance when compared with historical conditions (Caraher et al. 1992, Hessburg et al. 1999, Quigley and Arbelbide 1997).

Because active management suppressed surface fires over several return intervals (fire cycles), dry sites historically dominated by ponderosa pine have changed more than any other forest ecosystem over the past 90 years (Hessburg et al. 2005).

The information presented in Table 3-22 suggests that compared to historical conditions, dry upland forestland supports too much of the grand fir and interior Douglas-fir forest cover types and too little of the ponderosa pine forest cover type; moist upland forestland supports too much of the grand fir forest cover type and too little of the western larch and Douglas-fir cover types.

Table 3-22 Cover Type HRV - Cobbler Project Planning Area by PVG

Cover Type	Dry Upland Forestland PVG			Moist Upland Forestland PVG		
	Historical Range	Current Amount		Historical Range	Current Amount	
	Percent	*Percent*	*Acres*	*Percent*	*Percent*	*Acres*
Grass-forb	0-5	0	0	0-5	0	0
Shrub	0-5	0	0	0-5	0	0
Western juniper	0-5	0	0	na	na	na
Ponderosa pine	50-90	29	1,043	5-15	14	3,528
Douglas-fir	5-15	50	1,841	15-30	8	2,079
Western larch	0-10	0	6	10-30	7	1,646
Broadleaved trees	na	na	na	0-5	0	0
Lodgepole pine	0-5	0	0	5-30	8	1,974
Western white pine	na	na	na	0-5	0	0
Grand fir	1-5	21	756	5-30	52	12,754
Spruce-fir	na	na	na	0-15	10	2,508
Totals		100	3,646	Totals	100	24,489

yellow = below cover type HRV	In Dry Upland Forest, ponderosa pine, the primary early seral species, is below HRV.
	In Moist Upland Forest, Douglas-fir, a mid seral species, and western larch, an early seral species, are below HRV.
pink = above cover type HRV	In Dry Upland Forest, Douglas-fir, usually a late seral species, and grand fir, a late seral species, are above HRV.
	In Moist Upland Forest, grand fir is above HRV.

na = not applicable

"Shading indicates cover types that are either above or below the historical range of variability. Historical ranges are approximate and were adapted from Morgan and Parsons (2000); they were based on multiple 1200-year simulations representing landscapes in a "dynamic equilibrium" with their disturbance regimes." (Powell and Walker 2006)

Structural Stand Class

Historical Range of Variability (HRV) Analysis for Forest Structural Stand Class

The following table shows a landscape-level assessment of HRV for forest stand structural classes (also referred to as stages). The landscape used for the HRV analysis is the Cobbler project planning area. The planning area size (34,000 acres) meets the Forest Plan amendment (Eastside Screens) direction to analyze an area of 15,000-35,000 acres. The HRV analysis includes only National Forest lands. The analysis is based on "potential vegetation hierarchy" for the Blue Mountains section of northeastern Oregon, southeastern Washington, and west-central Idaho (Powell et al. 2007).

The table below shows the comparisons of current stand structure conditions with the HRV for each PVG. Late old structure (LOS) is represented as old forest single stratum (OFSS) and old forest multi strata (OFMS). Shading indicates structure classes that are below the HRV, double line borders around cells indicate structure classes that are above the HRV. Historical ranges are approximate and direction for their use is in Blackwood 1998, "Historical percentages for use with HRV analyses."

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Table 3-23 Comparison of Current Conditions to HRV by Forest Stand Structural Class

Upland Forest (UF) PVG	Total Acres	(SI)	SEOC	SECC	UR	YFMS	OFMS	OFSS
Moist UF Acres	24,488	3,428	12,696	751	152	2,330	5,131	0
Moist UF Current % of acres		14%	52%	3%	1%	10%	21%	0%
Moist UF HRV % of acres		1 - 15%	0 - 5%	1 - 25%	5 - 25%	20 - 60%	10 - 60%	0 - 5%
Dry UF Acres	3,646	540	509	910	296	378	792	221
Dry UF Current % of acres		15%	14%	25%	8%	10%	22%	6%
Dry UF HRV % of acres		5 - 15%	5 - 20%	0 - 10%	0 - 10%	5 - 25%	5 - 20%	15 - 70%

Structural Class –a stage or recognizable condition that relates to the physical orientation and arrangement of vegetation; the size and arrangement (both vertical and horizontal) of trees and tree parts. Following is a definition of each structural stage (Oliver and Larson 1996).

Stand Initiation (SI) – one canopy stratum of seedlings and saplings is present; grasses, forbs and shrubs coexist with trees.

Stem Exclusion (SE) – one canopy stratum comprised mostly of pole-sized trees (5-8.9" DBH) is present. The canopy layer may be open (*stem exclusion open canopy-SEOC*) on sites where moisture is limiting, or closed (*stem exclusion closed canopy- SECC*) on sites where light is a limiting resource.

Young Forest (YFMS) – three or more canopy layers are present; the size class of the uppermost stratum is typically small trees (9-20.9" DBH). Large trees may be absent or scarce.

Understory Reinitiation (UR) – two canopy strata are present; a second tree layer is established under an overstory. Typically, overstory mortality has created growing space for the establishment of understory trees.

Old Forest (OFMS & OFSS) - a predominance of large trees (>21" dbh) is present in a stand with one or more canopy strata. On warm or hot sites with frequent, low-intensity fires, a single stratum many be present (*old forest single stratum OFSS*). On cold or moist sites without recurring underburns multi-layer stands with large trees in the uppermost stratum may be present (*old forest multi strata – OFMS)*

Notes:

Shading indicates structure classes that are below the historical range of variability, double line borders around cells indicate structure classes that are above the historical range of variability. Historical ranges are approximate and direction for their use is in Blackwood 1998, "Historical percentages for use with HRV analyses".

Summarized from the Cobbler vegetation database. Forest structure classes and historical ranges are defined in Blackwood 1998.

Forest Stand Density

Overstocked forests have tree density levels in a self-thinning zone where trees compete aggressively for moisture, sunlight, and nutrients. Forests in the self-thinning zone experience mortality as crowded trees die from competition or are killed by insects and diseases that preferentially seek out trees under stress (Powell 1999). Forest stand density in the Cobbler project planning area was analyzed and compared to historical estimates of density classes. Table 3-24 below summarizes tree density for current conditions.

It is estimated that with a properly functioning disturbance regime influenced primarily by frequent surface fire (Agee 1998), dry upland forestland had 60 percent of its acreage supporting low-density forest, 30 percent supporting moderate-density forest and 10 percent supporting high-density forest.

The dry upland forestland portion of the Cobbler project planning area has much more acreage supporting high-density forest (83 percent currently; 10 percent historically) than would be expected, and much less acreage supporting moderate-density forest (4 percent currently; 30 percent historically) and low-density forest (13 percent currently; 60 percent historically).

It is estimated that with a properly functioning disturbance regime influenced primarily by mixed-severity fire (Agee 1998) and defoliating insects, moist forestland had 30 percent of its acreage supporting low-density forest, 50 percent supporting moderate-density forest and 20 percent supporting high-density forest.

The moist upland forestland portion of the Cobbler project planning area has much more acreage supporting high-density forest (53 percent currently; 20 percent historically) than would be expected, and less acreage supporting moderate-density forest 24 percent currently; 50 percent historically) or low-density forest (23 percent currently; 30 percent historically).

Table 3-24 Tree Density Analysis for Current Vegetation Conditions

Tree Density Description	Dry Upland Forestland		Historical Percent	Moist Upland Forestland		Historical Percent
	Acres	Percent		Acres	Percent	
Low tree density	480	13	60	5,590	23	30
Moderate tree density	155	4	30	5,890	24	50
High tree density	3,015	83	10	13,000	53	20

Sources/Notes: Summarized from the Cobbler vegetation database. "Dry UF" refers to the dry upland forestland potential vegetation group; "Moist UF" refers to the moist upland forestland potential vegetation group. Queries for calculating tree density classes are provided in Powell (2005).

Elk Flats Meadow

Elk Flats Meadow is a montane meadow of tufted hairgrass and other grasses, rushes and sedges surrounded by a mixed conifer forest. Mature aspen trees occur in three ecological settings: in wet basins and flats, along the fringe of the meadow up against the conifer stand, and intermixed with the conifers. The channel and much of the meadow are usually dry after mid summer.

This site is the largest aspen site on Walla Walla District and is one of the largest sites in the Blue Mountains. Aspen clones on this site are severely declining (Powell 2007b, Spiegel 2003, Schmitt 1999, Crowe 1998, Schmitt 1992). Browsing by elk, deer, and at times unauthorized cattle, and defoliation by satin moth have weakened these clones. Fire suppression has allowed conifers to spread into the aspen stands, causing competition for light, water, and nutrients. Fire no longer creates seedbeds or releases

stands of sprouts as it did historically. This area currently identified as Forest Plan management area D2-Research Natural Area was evaluated by Forest Service ecologists who determined that this site should not be recommended for official designation as an established RNA, but that designating the site as a "special interest area" might provide more options to sustain aspen (Johnson 2000).

The short-term goals for managing Elk Flats Meadow are to maintain existing mature aspen trees and protect regenerating suckers. The long-term goals are to:

- Restore aspen to some approximation of its historical extent in the Elk Flats Meadow area.
- Maintain portions of all four aspen clones, as determined by DNA analysis that was completed.
- Restore or maintain other vegetation in the meadow.
- Restore or maintain riparian/channel function where needed
- Develop and place an interpretive sign at the site.
- Determine age classes of both aspen and conifer trees.
- Establish a restoration plan for the entire Elk Flats Meadow area.

Insects and Disease

Past Conditions
Annual aerial mapping of insect and disease agents and severity has been done since 1947.

Forest stands containing true firs and Douglas-fir have been susceptible to defoliation from Douglas-fir tussock moth and western spruce budworm. Combining all incidents of defoliation from these two agents since 1947, we find that 3 percent of the area has had defoliation damage in 11-13 of those years. Approximately 42 percent has had defoliation damage in 8-10 of the years, 49 percent has had damage in 5-7 of the years, and 7 percent has had damage in 2-4 of the years. The latest heavy defoliation episodes were in 1972 and 1973, from Douglas-fir tussock moth, and 1987 through 1992, from western spruce budworm.

Current conditions
Over the last ten years, activity by Douglas-fir beetle, fir engraver, western pine beetle, balsam wooly adelgid, larch casebearer, and tussock moth has been mapped in the area. Mortality from fir engraver has been the greatest, with scattered patches of mortality occurring over approximately 8,000 acres.

Susceptibility to insects and diseases
Susceptibility to native defoliator insects, bark beetles, dwarf mistletoes and root rots was analyzed using the Cobbler vegetation databases and the rating systems in Schmitt and Powell (2005). The results show that the stands are especially highly susceptible to mixed conifer root rot diseases, defoliator insects, and fir engraver bark beetle. Only 4 percent of the area is highly susceptible to mountain pine beetle attacking lodgepole pine, concentrated in the southwest portion of the planning area, and 62 percent of the area is moderately susceptible, scattered over most of the planning area. Maps showing the distribution of the stands by risk category for the rated insects and diseases are in located in the project file (Silviculture Report). The following table shows insect and disease risk ratings by acres for Cobbler project planning area.

Table 3-25 Insect and Disease Risk Ratings for Cobbler Project Planning Area.

Insect or Disease	Risk Category	Acres*	Percent of Area
Douglas-fir Beetle	Low	6,580	20
	Moderate	19,460	58
	High	5,660	17
Douglas-fir Dwarf Mistletoe	Low	11,880	35
	Moderate	12,480	37
	High	9,300	28
Mountain Pine Beetle (Lodgepole Pine)	Low	11,300	34
	Moderate	20,900	62
	High	1,370	4
Bark Beetles (Ponderosa Pine)	Low	12,090	36
	Moderate	19,650	58
	High	1,930	6
Mixed Conifer Root Diseases	Low	10,540	31
	Moderate	8,900	26
	High	14,230	42
Defoliators: Western Spruce Budworm and Douglas-fir Tussock Moth	Low	9,260	28
	Moderate	13,910	41
	High	10,480	31
Fir Engraver	Low	5,480	16
	Moderate	13,350	40
	High	12,870	38
Western Larch Mistletoe	Low	10,320	31
	Moderate	22,170	66
	High	1,180	3
* acres are not additive			

ENVIRONMENTAL CONSEQUENCES

Alternative A – No Action

Direct/Indirect Effects - Species Composition

No new forest vegetation activities would occur in the project planning area if Alternative A is selected for implementation. Forest stands would continue to increase in density of late seral species and become more susceptible to insect, disease, and fire damage. Hardwoods would continue to decline and may eventually be lost in this landscape.

Direct/Indirect Effects - Forest Stand Structure

Forest stand structures would continue to diverge from historical conditions. Multi layered stands would continue to increase while single layered stands would decrease. Old forest stands would be at risk of becoming more multi layered.

Direct/Indirect Effects - Stand Density

Forest stands would continue to increase in density of late seral species and become more susceptible to insect, disease, and fire damage.

Effects Common to All Action Alternatives

Direct/Indirect Effects - Species Composition (Alternatives B and C)
The same number of acres of regeneration harvest in diseased and damaged mixed conifer stands (278 acres) would create openings and transitory forage. Those acres would be planted to assure dominance by early seral species, and other species would seed in naturally.

The same number of acres (115) of hardwoods would be protected and enhanced.

The same number of acres at Elk Flat Meadows would be converted from Forest Plan management area D2- Research Natural Area to management area A9 – Special Interest Area, which would allow for management to protect and enhance that special area.

Direct/Indirect Effects - Forest Stand Structure (Alternatives B and C)
The same number of acres of regeneration harvest in diseased and damaged conifer stands (approximately 280 acres) would create Stand Initiation (SI) stand structure.

Effects that Differ by Action Alternatives

Direct/Indirect Effects - Species Composition (Alternatives B and C)
In Alternative B more acres would be thinned with early seral species being the preferred leave species. A combination of all commercial and non-commercial thinning treatments would increase the proportion of early seral species on approximately 4,040 acres in Alternative B, and on 2,900 acres in Alternative C. In stands that are currently dominated by early seral species, competition from late seral ingrowth would be reduced by commercial and non-commercial thinning on approximately 1,430 acres in Alternative B and on 1,220 acres in Alternative C. In the long-term, shelterwood and/or seed-tree regeneration harvest, alone or combined with commercial thinning on some units, would increase or maintain early seral species on 340 acres in Alternative B, and 300 acres in Alternative C when the units are planted or naturally regenerated.

Cumulative Effects – Species Composition (Alternatives B and C)
Having more of the early seral species in stands and across the landscape is valuable as they are more resistant to insects, disease, and fire. For dry upland forest, the table below shows the number of acres that would change through commercial and non-commercial thinning from late seral to early seral species in Alternative B, and the effect on the comparison to HRV (Table 3-22). This includes foreseeable future non-commercial thinning. Ponderosa pine (PP), the primary early seral species, is currently below HRV. Thinning treatments in Alternative B would bring the species composition close to the HRV for dry upland forest. Grand fir, which is above HRV, would be the lowest priority for leave in the thinning, and its proportion would be reduced. Douglas-fir, which is also above HRV, would be a lower priority for leave than ponderosa pine and its proportion would also be reduced.

Table 3-26 Alternative B - Changes in Species Composition from Late Seral to Early Seral Species

Dry Upland Forest	Historical Range percent (Table 3-22)	Current condition (pretreatment) acres	Pretreatment percent	Acres of change	Post treatment acres	Post treatment percent
Early seral (PP)	50 - 90	1,050	29	450	1,500	41

For moist upland forest, of the early seral species, western larch is currently below HRV and ponderosa pine and lodgepole pine are within HRV. Approximately 2,380 acres of thinning treatments in stands dominated by late seral species would occur in Alternative B, and future foreseeable non-commercial thinning would increase the proportions of early seral species. Grand fir, which is above HRV, would be the lowest priority for leave, and its proportion would be reduced.

For dry upland forest, the table below shows the number of acres that would change through commercial and non-commercial thinning from late seral to early seral species in Alternative C, and the effect on the comparison to HRV. This includes foreseeable future noncommercial thinning.

Table 3-27 Alternative C - Changes in Species Composition from Late Seral to Early Seral Species

Dry Upland Forest	Historical Range percent (Table 3-22)	Current condition (pre- treatment) acres	Pretreatment percent	Acres of change	Post treatment acres	Post treatment percent
Early seral (PP)	50 - 90	1,050	29	370	1,420	39

Treatments in Alternative C would not bring the species composition as close to HRV for dry upland forest as would Alternative B.

For moist upland forest, of the early seral species, western larch is currently below HRV and ponderosa pine and lodgepole pine are within HRV. Approximately 1,460 acres of thinning treatments in stands dominated by late seral species in Alternative C and future foreseeable noncommercial thinning would increase the proportions of early seral species on fewer acres than in Alternative B. Grand fir, which is above HRV, would be the lowest priority for leave, and its proportion would be reduced.

Direct/Indirect Effects - Forest Stand Structure (Alternatives B and C)

Forest stand structure – post harvest

The following table shows the predicted changes in forest stand structure that would result from implementing each action alternative. The approximately 485 acres of Old Forest Multi Strata that are proposed for thinning in Alternative B are expected to remain old forest, because the trees removed would be the smaller trees in the stands, and approximately two-thirds of the basal area would remain in each stand after thinning. Stands would change from Old Forest Multi Strata to Old Forest Single Stratum structure because the lower canopy layer would be reduced. Stands that are classified as Stem Exclusion Closed Canopy would change to Stem Exclusion Open Canopy after thinning. No thinning in old forest is proposed in Alternative C.

Other stands treated with thinning are not expected to change in structure. Stands treated with stand regeneration prescriptions would change from their current structure to Stand Initiation. See the table below for changes in forest stand structure.

Table 3-28 Changes in Forest Stand Structure, all PVGs Combined

Alternative A Acres Treated	Alternative B Acres Treated	Alternative C Acres Treated	Change in Stand Structure
0	485	0	Old Forest, Multi Strata (OFMS) to Old Forest, Single Stratum (OFSS)
0	130	60	Young Forest Multi Strata (YFMS) no change
0	15	15	Young Forest Multi Strata (YFMS) to Stand Initiation (SI)
0	15	15	Understory Reinitiation (UR) no change
0	285	220	Stem Exclusion Closed Canopy (SECC) to Stem Exclusion Open Canopy (SEOC)
0	1,170	680	Stem Exclusion Open Canopy (SEOC) no change
0	320	255	Stem Exclusion Open Canopy (SEOC) to Stand Initiation (SI)
0	60	20	Stand Initiation (SI) no change

Cumulative Effects – Forest Stand Structure (Alternatives B and C)

To compare action alternatives to the existing condition, refer to Table 3-23. By implementing Alternative B, the number of acres that are outside HRV decreases in moist upland forest SEOC and in dry upland forest SECC. Dry upland forest OFMS would change from slightly above HRV to within, and OFSS would increase although it would still be below HRV. Moist upland forest YFMS, which is currently below HRV, would decrease by 1 percent. There is a net change of approximately 530 acres from outside HRV to within HRV in Alternative B and approximately 255 acres in Alternative C. The following two tables display these changes.

In the tables below, PVG-forest stand structure combinations that are above HRV are shown with a double line around the cell in the table. PVG –forest stand structure combinations that are below HRV are shaded with gray. The remaining cells in the table are within HRV.

Table 3-29 Alternative B - Post Harvest Treatment Forest Stand Structure by PVG for Moist and Dry Upland Forest

Potential Vegetation Group (PVG)	Total Acres	SI	SEOC	SECC	UR	YFMS	OFMS	OFSS
Moist Upland Forest - Acres	24,448	3,813	12,773	304	152	2,315	4,477	654
Moist Upland Forest % of acres		15%	51%	3%	1%	9%	19%	1%
Moist Upland Forest - HRV % of acres		1 - 15%	0 - 5%	1 - 25%	5 - 25%	20 - 60%	10 - 60%	0 - 5%

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Potential Vegetation Group (PVG)	Total Acres	SI	SEOC	SECC	UR	YFMS	OFMS	OFSS
Dry Upland Forest - Acres	3,646	540	509	910	296	378	792	221
Dry Upland Forest % of acres		15%	20%	20%	8%	10%	18%	9%
Dry Upland Forest HRV % of acres		5 - 15%	5 - 20%	0 - 10%	0 - 10%	5 - 25%	5 - 20%	15 - 70%

Shading indicates structure classes that are below the historical range of variability, double line borders around cells indicate structure classes that are above the historical range of variability. Historical ranges are approximate and direction for their use is in Blackwood 1998, "Historical percentages for use with HRV analyses".

By implementing Alternative C, the number of acres that are outside HRV decreases in moist upland forest SEOC and in dry upland forest SECC. Moist upland forest YFMS, which is below HRV currently, would decrease by 1percent.

Table 3-30 Alternative C, Post Harvest Treatment Forest Stand Structure by PVG for Moist and Dry Upland Forest

Potential Vegetation Group (PVG)	Total Of ACRES	SI	SEOC	SECC	UR	YFMS	OFMS	OFSS
Moist Upland Forest - Acres	24,488	3,749	12,390	751	152	2,316	5,131	0
Moist Upland Forest % of acres		15%	51%	3%	1%	9%	21%	0%
Moist Upland Forest HRV % of acres		1 - 15%	0 - 5%	1 - 25%	5 - 25%	20 - 60%	10 - 60%	0 - 5%
Dry Upland Forest - Acres	3,646	540	509	910	296	378	792	221
Dry Upland Forest % of acres		15%	15%	24%	8%	10%	22%	6%
Dry Upland Forest HRV % of acres		5 - 15%	5 - 20%	0 - 10%	0 - 10%	5 - 25%	5 - 20%	15 - 70%

Shading indicates structure classes that are below the historical range of variability, double line borders around cells indicate structure classes that are above the historical range of variability. Historical ranges are approximate and direction for their use is in Blackwood 1998, "Historical percentages for use with HRV analyses".

Direct/Indirect Effects for Stand Density (Alternatives B and C)

In Alternative B, stand density would be reduced on a total of approximately 4,040 acres of forest stands through thinning and non-commercial thinning-, increasing resiliency to disturbance from insects, disease, and fire. In Alternative C, stand density would be reduced on approximately 2,900 acres.

Cumulative Effects for Stand Density (Alternatives B and C)

The tables below show the changes in stand density as compared to HRV for Alternatives B and C.

Table 3-31 Alternative B - Tree Density Analysis for Post Harvest and Non-Commercial Thinning

Tree Density Class	Acres pretreatment	Percent pretreatment	Acres post treatment	Percent post treatment	Historical Percent
Moist Upland Forest					
Low	5,590	23	6,685	27	30
Moderate	5,894	24	6,300	26	50
High	13,004	53	11,500	47	20
Dry Upland Forest					
Low	476	13	530	15	60
Moderate	155	4	590	16	30
High	3,014	83	2,530	69	10

Table 3-32 Alternative C - Tree Density Analysis for Post Harvest and Non-Commercial Thinning

Tree Density Class	Acres pretreatment	Percent pretreatment	Acres post treatment	Percent post treatment	Historical Percent
Moist Upland Forest					
Low	5,590	23	6,200	25	30
Moderate	5,894	24	6,290	26	50
High	13,004	53	12,000	49	20
Dry Upland Forest					
Low	476	13	495	14	60
Moderate	155	4	410	11	30
High	3,014	83	2,740	75	10

Insects and Disease

The following table shows the acres of high, medium, and low risk stands that would be harvested in Alternatives B and C. In regeneration units, reforestation would be conducted to increase the proportion of disease and insect resistant species. Trees infected with dwarf mistletoe would be cut or girdled so they would not pass the disease on to the new generation of trees. In intermediate treatment units, the preferred species for leave would be the more disease and insect resistant species.

Table 3-33 Acres Proposed for Harvest by Insect and Disease Risk Classification

	Alternative B Acres*	Alternative C Acres*
Defoliation Risk		
High	1,140	420
Medium	910	570
Low	440	290
Western Larch Dwarf Mistletoe Risk		
High	30	30
Medium	1,960	930
Low	490	310

	Alternative B Acres*	Alternative C Acres*
Fir Engraver Risk		
High	1,610	700
Medium	650	440
Low	180	130
Root Rot Risk	Acres	Acres
High	1,390	600
Medium	580	320
Low	510	340
Mountain Pine Beetle in LP	Acres	Acres
High	120	70
Medium	1,830	960
Low	530	240
*Acres are not additive		

Provision of Forest Products

In Alternative B, approximately 125 acres of lodgepole pine stands that are at high risk of mountain pine beetle attack would be harvested. In Alternative C, approximately 70 acres of high risk lodgepole pine would be harvested.

Harvesting lodgepole pine before there is severe mortality from mountain pine beetle allows the wood to be used while it is high quality, rather than after it is dead and has lost some value.

FINDINGS OF CONSISTENCY

Forest Plan

Both action alternatives would provide timber to help meet the demand for wood products and provide socioeconomic benefits to the local and regional economy. Action alternatives would produce timber volume and economic value, thereby contributing a portion of the Forest Plan's allowable sale quantity (see FP, chapter 4). All vegetation management is consistent with forest-wide and management area Forest Plan standards and guidelines.

National Forest Management Act Consistency Finding

The National Forest Management Act of 1976 (P.L. 94-588), including its amendments to the Forest and Rangeland Renewable Resources Planning Act of 1974 (P.L. 93-378), states that when trees are cut to achieve timber production objectives, the cuttings shall be made in such a way that "there is assurance that such lands can be adequately restocked within 5 years after harvest" (P.L. 93-378, Sec. 6, (g), (3), (E), (ii)). The Forest Plan also includes this standard (see FP, page 4-70).

All of the timber harvest areas proposed for regeneration harvest, except those dominated by lodgepole pine, are proposed for tree planting to ensure that they would be adequately restocked within 5 years after harvest. Stands dominated by lodgepole pine are expected to regenerate naturally to at least minimum acceptable stocking levels within 5 years after harvest. The FP lists natural regeneration as the preferred reforestation method where site conditions and objectives are appropriate (FP, page 4-72).

The National Forest Management Act of 1976 (P.L. 94-588) states that "it is the policy of the Congress that all forested lands in the National Forest System be maintained in appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans."

All intermediate harvest (thinning), regeneration harvest, reforestation (tree planting and natural regeneration), and hardwood restoration proposals would be consistent with National Forest Management Act requirements to maintain forested lands in appropriate forest cover, and with related Forest Plan goals, objectives, standards and guidelines: promoting a stand structure and species composition minimizing risks from insects, disease and wildfire (FP, page 4-67); a wide variety of activity methods are allowed, including site preparation, tree improvement, reforestation, tree protection, release and weeding, noncommercial thinning, fertilization, pruning, commercial thinning, salvage harvest and regeneration (final) harvest (FP, page 4-68); natural regeneration should be the preferred forest regeneration alternative where economic, stand, and site conditions are appropriate and where natural regeneration does not conflict with other resource objectives identified and documented during the project planning process (FP, page 4-72); favor species during development of silvicultural prescriptions for long-term stand health, vigor and productivity as specifically related to insect and disease impacts; economic efficiency; and biological diversity needs for wildlife species, visual quality or other resource values (FP, page 4-72); for mixed-conifer forest, maintain stands dominated by early-seral species, including ponderosa pine, western white pine and western larch, because the potential for insect and disease depredation is high if late-seral tree species are favored in these forest types (FP, page 4-73); in the ponderosa pine working group, silvicultural prescriptions would feature ponderosa pine while other associated tree species would be maintained at low levels sufficient to provide for ecological diversity needs; in the lodgepole pine working group, tree species diversity should be encouraged by promoting western larch and Engelmann spruce (page 4-73); special and unique ecological communities such as aspen and other hardwood species should receive special attention; silvicultural prescriptions would specifically address measures to protect, maintain and enhance aspen and other hardwood clones, clumps and sprouts (FP, page 4-74).

FUELS

SCALE OF ANALYSIS

The area of analysis is the Cobbler project planning area. Existing fuel conditions and trends have been summarized for the project planning area, which encompasses approximately 34,000 acres.

The town of Troy and the Promise, Eden, and Bartlett Bench areas are listed as Priority Wildland Urban Interface (WUI) areas within the Wallowa County Community Wildfire Protection Plan (CWPP). Cobbler project planning area is about 5 miles to the west of these communities. Although the Wallowa County CWPP defines strategies and identifies projects that should occur within these WUI areas, it does not address areas that lie outside of WUI boundaries. Although possible, it is unlikely that fuels treatments that occur within the Cobbler project planning area would affect a fast moving wildfire burning in the direction of these priority areas.

Indicators for comparison purposes between alternatives are:

- Acres treated within fire regimes of high departure from historical fire return intervals (Condition Class 3)
- Acres treated within fire regimes of moderate departure from historical fire return intervals (Condition Class 2)
- Acres treated with extreme, very high, and high crown fire potential

AFFECTED ENVIRONMENT

Natural Fire Regimes

A natural fire regime is a general classification of the role fire would play across a landscape in the absence of modern human mechanical intervention, but including the influence of aboriginal burning (Agee 1993, Brown 1995). Natural fire regimes describe the historical fire conditions under which vegetative communities evolve and are maintained. These represent the structure and composition of vegetation in a fire environment in the absence of human interaction. The high severity fire regimes were those in which the effect of a fire was usually a stand replacement event. The low severity fire regimes were those in which the typical fire was gentle to dominant vegetation across much of the area it burned, while moderate severity fire regimes had a complex mix of severity levels (Agee 1998).

Coarse scale definitions for natural (historical) fire regimes have been developed by Hardy et al. (2001) and Schmidt et al. (2002) and interpreted for fire and fuels management by Hann and Bunnell (2001). The five natural (historical) regimes are classified based on the average number of years between fires (fire frequency) combined with the severity (amount of replacement) of the fire on the dominant overstory vegetation. These five natural fire regime groups are described in Table 3-34 below.

Table 3-34 Natural Fire Regime Groups

Fire Regime Group	Fire Return Frequency	Fire Intensity/Severity
I	0-35 years	Low to mixed severity (surface fires most common with less than 75% of the overstory vegetation replaced)
II	0-35 years	High severity (stand replacement with greater than 75% of the dominant overstory replaced)
III	35-100+ years	Mixed (less than 75% of the overstory vegetation replaced)
IV	35-100+ years	High severity (stand replacement with greater than 75% of the dominant overstory replaced)
V	>200 years	High severity (stand replacement with greater than 75% of the dominant overstory replaced)

Cobbler project planning area is primarily represented by fire regime groups I and III, with less than 100 acres represented by fire regime V. It is composed of 27 percent dry upland forest, which is classified as fire regime I and 73 percent moist upland forest, which is classified as fire regime III. Of forested land within the analysis area, 13 percent is fire regime group I and 87 percent is fire regime group III. Table 3-35 below lists the historical fire regime groups and Figure 3-2 visually displays the fire regime groups for the Cobbler project planning area.

Table 3-35 Fire Regime and Acres Within Cobbler Project Planning Area.

Fire Regime Group	Acres	Percent
I	9,030	27
II	0	0
III	24,540	73
IV	0	0
V	90	<1

Forested areas currently defined as fire regime I in Cobbler project planning area typically contain larger diameter (>21 inches DBH), widely spaced ponderosa pine and Douglas-fir trees as the dominant and co-dominant species in the stand, a layer of intermediate (10-21 inches DBH) ponderosa pine, grand fir, and Douglas-fir trees of variable spacing, and a suppressed layer (0-10 inches DBH) consisting mainly of grand fir and Douglas fir trees, saplings, and seedlings, with roughly 150-250 trees per acre of all size classes. Surface vegetation is predominantly grass with scattered shrubs.

Forested areas in fire regime III primarily contain larger diameter widely spaced ponderosa pine and Douglas-fir as the dominant and co-dominant species in the stand (with fewer large pine than fire regime I), a layer of intermediate (10-21 inches DBH) grand fir, Douglas-fir, western larch and occasionally lodgepole pine and Engelmann spruce, and a suppressed layer (0-10 inches DBH) consisting mainly of grand fir and Douglas fir trees, saplings, and seedlings, with approximately 350-450 trees per acre, and in some stands, nearly 600 trees per acre. Surface vegetation consists of patchy grass, forbs and small shrubs, with little to none occurring in some of the more dense stands.

Under historical conditions in fire regimes I and III, fires were of low to mixed severity and occurred every 1 to 100 years. Carried primarily by surface fuels, these fires consumed litter, duff and downed wood, controlled establishment of fire intolerant species and eliminated ladder fuels and elevated crown bases by killing the majority of trees in the suppressed and intermediate layers (Agee, 1994; Youngblood, 2008). These low to moderate intensity fires tended to favor the largest trees with the thickest bark, and promoted the growth of grasses and a low and patchy shrub layer (Hessburg, 2005). Crown fires occurred rarely under these conditions, which can be attributed to the lack of surface fuel continuity, raised crown base heights, and reduced crown bulk densities. When they did occur, crown fires were high-severity, climate-driven events (Youngblood, 2008; Hessburg, 2005).

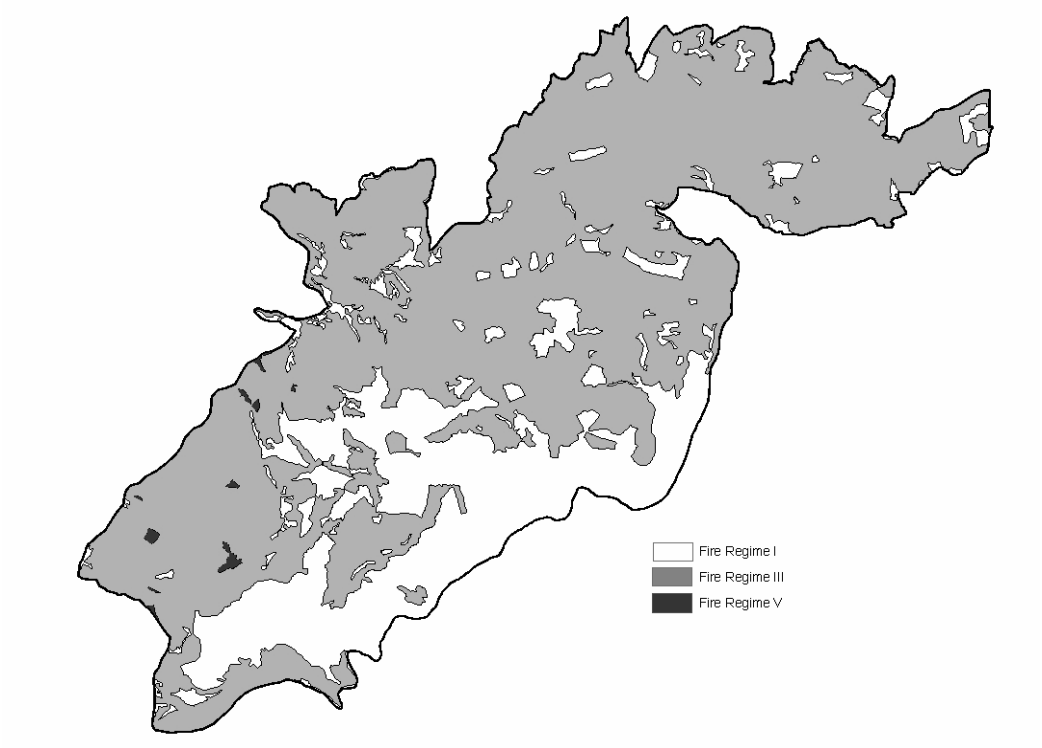

Figure 3-2 Spatial Distribution of Fire Regimes in Cobbler Project Planning Area.

Condition Class (CC)

Fire regime Condition Class describes the deviation from natural fire regimes in terms of fire return interval (length between subsequent fires) and vegetative change from historical composition and density (Hann and Bunnell, 2001). Missed fire return cycles result in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. (Schmidt, 2002) There are three condition classes numbered 1 through 3, with a Condition Class 1 being within the historical range of variability and Condition Class 3 showing the greatest deviation from historical fire regimes and vegetative structures. The following table describes the condition classes and gives and example of each.

Table 3-36 Fire Regime Condition Class* Descriptions

Condition Class	Fire Regime	Examples of management options
Condition Class 1	Fire regimes are within an historical range, and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.	Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.
Condition Class 2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire	Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be

Condition Class	Fire Regime	Examples of management options
	frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.	restored to the historical fire regime.
Condition Class 3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.	Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the historical fire regime.

*Fire Regime Current Condition Classes are a qualitative measure describing the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure, and fuel loadings. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, livestock grazing, introduction and establishment of exotic plant species, introduced insects or disease, or other management activities.

Source: Schmidt, K.M.: Menakis, J.P.; Hardy C.C.; Hann, W.J.: Bunnell, D.L. 2002. Development of coarse scale spatial data for wildland fire and fuel management. General Technical Report RMRS-GTR-87.

Approximately 40 percent of the project planning area has moved into Condition Class 2 and nearly 10 percent into Condition Class 3, indicating a transition to more complex fuel conditions. Fuels that would have historically been consumed during periodic wildfires have increased; in many areas surface and aerial (within the canopy) fuel loadings are above historical levels. Table 3-37 reflects the current condition classes in Cobbler project planning area.

Table 3-37 Existing Condition Classes in Cobbler Project Planning Area

Condition Class	Approximate Acres	Percent of Planning Area
1	17,200	51
2	13,500	40
3	2,900	9

Much of this change in conditions can be attributed to past harvest history and fire suppression, as well as other land management activities. Repeated selection cutting over the last 100 years has had a direct

effect of advancing secondary succession (Hessburg, 2005). Ponderosa pine, Douglas-fir, and to a degree, Western larch were the preferred commercial species. These early successional species would be the same species expected to colonize a site following a fire. The thick bark on large diameter ponderosa pine and Douglas-fir make them very tolerant to low severity surface fires (Agee, 1993). As these larger trees were harvested, small openings in the canopy were created and later filled in with fire-sensitive, small diameter Douglas-fir and grand fir. Within fire regime I, this accelerated succession and lack of surface fires has also created a multi-layered canopy structure, an indicator of shift to Condition Classes 2 and 3 (Brown, 2003).

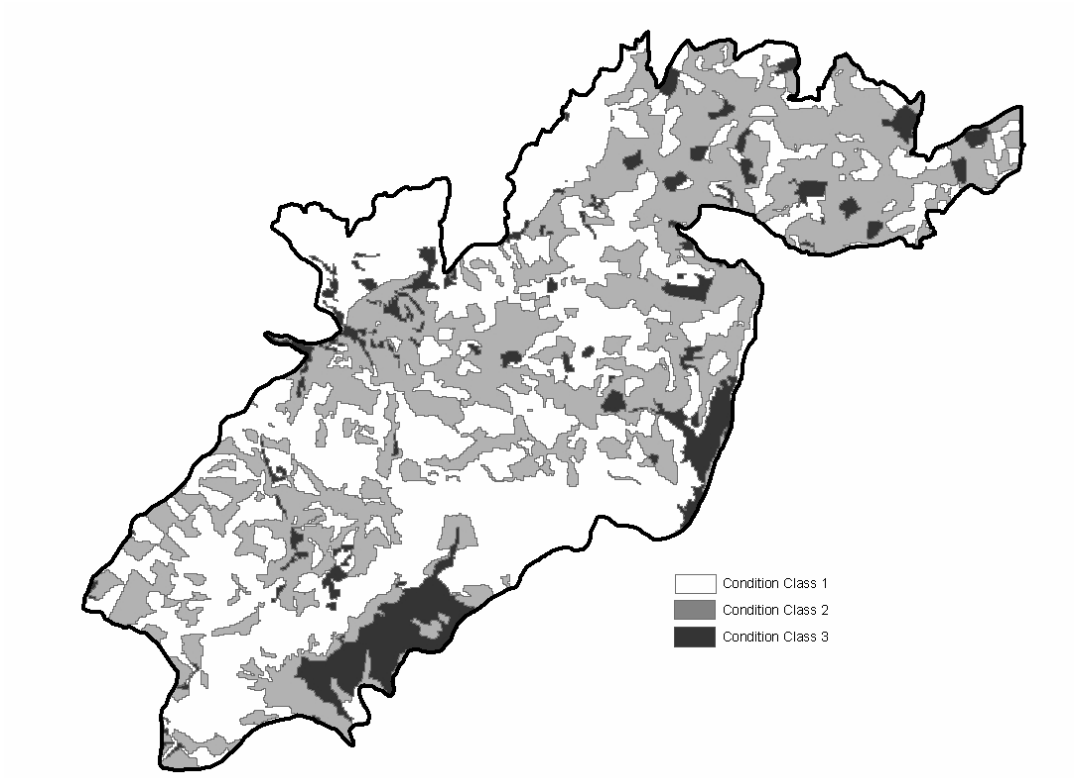

Figure 3-3 Spatial Distribution of Existing Condition Classes in Cobbler Project Planning Area.

Historical vegetation mapping of NE Oregon and SE Washington from 1936-1937 shows that 21 percent of the project planning area was classified as containing 50-80 plus percent ponderosa pine greater than 22 inches DBH, and an additional 31 percent of the area was classified as containing 20-50 percent ponderosa pine, greater than 12 inches DBH. In contrast, current vegetation mapping depicts 21 inches and greater DBH ponderosa pine as the majority or plurality species in only 6 percent of stands in Cobbler project planning area and an additional 18 percent of the area when DBH is greater than 9 inches.

Fire exclusion and fire suppression have also indirectly contributed advancing secondary succession by preventing fires of a size and frequency that allow establishment of early seral species (Hessburg, 2005). Historical wildland fire data shows that very small acreages have burned during the last 30 years in the Cobbler area. Historical large fire information dating back to pre-1900s includes only two large fires, both in the southern-most portion of the analysis area. One of these fires occurred prior to 1900 and the other in 1910 at 3,700 and 380 acres, respectively, for a total of 12 percent of the project planning area. Wildland fire trends from the 1970s to 2006 show that approximately 90 fires occurred burning about 40

acres in total. With regard to fire return frequency, this means that at least two fire return intervals have been missed in fire regime I and one in fire regime III. This absence of fire has resulted in increased surface fuel loads with high connectivity, and increased tree density and canopy layering. Increased canopy cover has led to regeneration of shade tolerant, fire intolerant species, with low crown bases and heat-trapping foliage. These abundant small trees serve as ladders that carry fire from the forest floor to the canopy, increasing the likelihood of high severity, stand-replacement fires (Huff et al., 1995).

Fuel Models

Fire behavior fuel models describe how fire will burn (flame length and rate of spread) through a particular wildland fuel type. There are 13 fire behavior fuel models, which are grouped into four major categories: grass, shrub, timber, and slash. Definitions for each of the 13 fuel models come from Anderson (1982). Criteria are based on the fuels which will carry a fire. Each model yields flame length and rate-of-spread information for the purpose of fire behavior prediction and fire planning.

Fuel models in themselves do not indicate potential for uncharacteristic wildfire behavior and effects, fire regime condition class, or departure from natural conditions. However, the combination of an indicator of departure from natural conditions, along with fuel models can be of considerable value in determining if wildfire behavior and effects have departed from natural conditions (Hahn and Strohm, 2003).

Fuel models 1, 2, 5, 8, and 9 are fuel models which would have existed abundantly in this fire regime I and III dominated landscape. Fire behavior of these representative models (except fuel model 8) is determined by accumulations of fine herbaceous fuels. Fires in these fuel models are not generally very intense because surface fuel loadings are light. Fuel model 8 is representative of closed timber stands with little down woody fuel accumulations or herbaceous fuels.

Some stands may not have changed enough to move into a different fuel model classification, but fire exclusion and associated changes in stand condition has significantly increased the fire behavior potential. Table 3-38 below shows the relative percentages of fuel models in Cobbler project planning area as they are currently classified; however, upon personal observation of the District Fuels Technician, many of these numbers are inaccurate. As an example, many of the stands classified as fuel model 8 are becoming older; as these stands have aged, numerous trees have been out-competed for sunlight and nutrients and are now standing dead or have recently fallen, creating higher fuel loads in all fuel size classes. These higher surface fuel loads are more characteristic of a fuel model 10.

Table 3-38 Approximate Acres and Percent of Cobbler Planning Area by Fuel Models

Fuel Model	Acres	Percent of Area	Flame Length
1	5,200	15	5 feet
2	2,800	8	6 feet
5	1,600	5	5 feet
8	14,400	43	1 foot
9	2,600	8	2 feet
10	6,900	21	4 feet
No Data	200	<1	N/A

Fuel model 10 burns in surface and ground fuels with a greater fire intensity than any other timber model and typically displays the most extreme fire behavior and long distance spotting (Hahn and Strohm, 2003). Dead down fuels include greater quantities of 3-inch or larger limbwood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are frequent and fire intensity is high. From a fire suppression and fuel hazard standpoint, this is the fuel model of most concern.

In Cobbler project planning area, the changes in forest stands and the concurrent increase in down woody fuel loadings have caused a shift from a historical dominance of fuel models 1, 2, 8, and 9 to the dominance of fuel models 1, 8, and 10. This could potentially result in a shift of fire behavior during severe fire weather conditions from what were historically fast moving, but low intensity, surface fires to a fast moving, high intensity crown replacement fire.

Fuel models described below currently exist or historically existed in the project area. Fuel model and representative stand descriptions are intended to help clarify current ground fuel situations.

Fuel Model 1: Fire carries through fine herbaceous fuels that are cured or nearly cured. Very little shrubs or timber is present. Grassland, savanna, and stubble are commonly modeled. Fire is fast moving and low intensity.

***Fuel Model 2*:** Fuel is primarily fine herbaceous fuels, curing or dead. In addition, litter and stem wood from open shrub or timber overstory contribute. Open shrublands or pine stands are most commonly modeled. Fire is fast moving and low intensity.

***Fuel Model 5*:** Fuels consist mostly of litter cast by shrubs and the forbs in the understory. Green stands of deciduous shrubs and plantations of small trees are most commonly modeled.

***Fuel Model 8*:** Closed canopy stands of short-needle conifers or hardwoods that have leafed out support fire in the compact litter layer. This layer is mainly needles, leaves, and occasionally twigs because little undergrowth is present in the stand. Representative conifer types are white pine, lodgepole pine, spruce, fir and larch. Fires are generally slower moving, but under drought conditions and high fine fuel loadings, can be high intensity crown fires.

***Fuel Model 9*:** Describes fires that run through surface litter faster than model 8 and have longer flame heights. Both long-needle conifer stands and hardwood stands are typical. Closed stands of long-needled pine, like ponderosa pine, are usually modeled.

***Fuel Model 10*:** Fire burns in the surface and ground fuels with greater fire intensity that the other timber litter models. Dead-down fuels include greater quantities of 3-inch or larger limb-wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel situation, leading to potential fire control difficulties. Any forest type may be considered if heavy down material is present; examples are insect or disease-ridden stands, wind-thrown stands, over-mature situations with dead fall, and aged light thinning or partial-cut slash.

Crown Fire Potential

Under historical disturbance regimes, frequent surface fires consumed litter, duff, and down wood, controlled establishment of fire intolerant species, reduced density of small diameter stems, opened the stands to increased sunlight, led to vertical stratification of fuels by eliminating fuel ladders between the forest floor and overstory canopy, and maintained early seral plant associations. Crown fires occurred rarely under these natural disturbance regimes. Consequently, the structure in these stands consisted of open, predominantly widely spaced medium to large and old trees, light and patchy ground fuels, and low and patchy cover of fire-tolerant shrubs (Youngblood, 2008, p. 2).

As discussed in previous sections, past management activities and a century of fire suppression in the Cobbler project planning area have resulted in conditions that have greatly deviated from historical norms. Records of past timber harvests show that over 50 percent of the Cobbler project planning area has been entered at least once in the last 30 years. An additional 24 percent of the project planning area contains steep, roadless canyons (Bear Creek, Alder Creek) where there has been no management activity and no record of large fires (within the last 100 years). As a result of these management activities and lack of fire as a maintenance tool in the project area, stand composition has been modified, historical fire regimes have been altered, condition classes have moved from Class 1 to Classes 2 and 3 in nearly 50 percent of stands, and fuel loading has increased. As a consequence of and in conjunction with these changes, crown fire potential has also increased.

Crown fires, high intensity wildfires that advance through a stand's canopy and kill trees in the process, can exhibit violent behaviors, are difficult and dangerous to suppress, and cause great economic damage and ecological disruption (Keyes and O'Hara, 2002). They occur when surface fires create enough energy to preheat and combust live fuels well above the ground or when ladder fuels, in the form of small seedlings, saplings and young trees with low hanging branches, carry fire into the upper canopy. There are two stages of crown fires: the initiation of crown fire activity, referred to as "torching" (also known as passive crown fire), and the process of active crown fire spread, where fire moves from tree crown to tree crown (Agee, 2005).

Torching commences when the surface flame length exceeds a critical threshold, defined by Van Wagner (1977) as a function of the moisture content of overstory foliage and the vertical distance to live crown, known as canopy base height (CBH). Once in the crowns, fire must maintain a minimum rate of spread to become an active crown fire and is primarily determined by topography and weather conditions. The spread rate required to keep fire in the crown hinges on the density of fuels in the canopy, called canopy bulk density (CBD) (Keyes and O'Hara, 2002).

The Forest Vegetation Simulator Fire and Fuels Extension (FVS/FFE) utilizes a torching index (the wind speed required to cause a ground fire to torch trees in the stand) and a crowning index (the wind speed required to sustain a crown fire) to illustrate these conditions (Reinhardt and Crookston, 2003). The matrix of these two values generated by FVS/FFE is classified into five classes of crown fire potential: Extreme, Very High, High, Medium, Low and Non-Forest. Areas that were rated in three highest categories of crown fire potential (Extreme, Very High, and High) are displayed in Figure 3-4 below.

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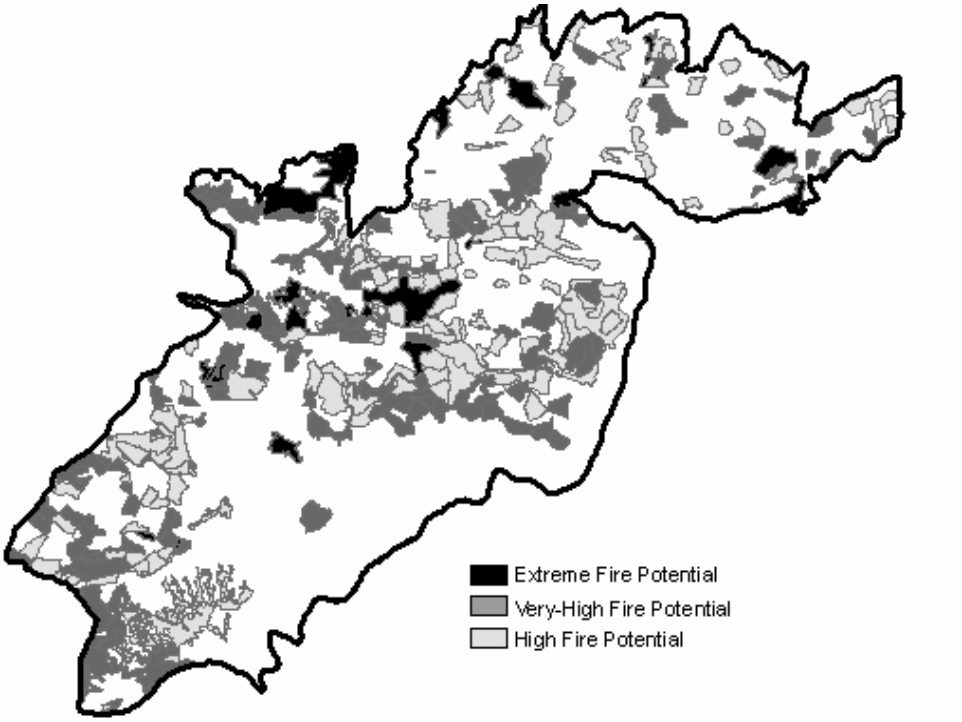

Figure 3-4 Spatial Distribution of Crown Fire Potential in Cobbler Project Planning Area.

Roughly one third of the Cobbler project planning area is classified as having extreme, very high or high crown fire potential. Another 44 percent of the area is categorized as medium crown fire potential, which without treatment, will presumably transition into a higher potential over time. Table 3-39 lists the acres and percent of the project planning area and crow fire potential risk.

Table 3-39 Crown Fire Potential and Acres Within Cobbler Project Planning Area.

Crown Fire Potential	Approximate Acres	Percent
Extreme	1,300	4
Very High	5,400	17
High	4,500	13
Medium	14,700	44
Low	2,300	7
Non-forest	5,200	15
No data	200	<1

ENVIRONMENTAL CONSEQUENCES

The Forest Plan states the following goal; "To provide and execute a fire protection and fire use program that is cost efficient and responsive to land and resource management goals and objectives" (FP pages 4-87 and 4-88).
Resource goals and objectives include:

- Increasing stand resilience to naturally occurring fires.
- Use fire disturbance in shaping forest cover to reflect structure and fire intensity associated with historical forest types.
- Use landscape fire in areas seral to ponderosa pine to reduce hazardous fuels and excess crown cover to emphasize a regime of low intensity surface fire.
- Restore the diversity of vegetation patterns reflective of historical disturbance processes and with a low risk to epidemic insect outbreaks."

As stated in Chapter 1, Purpose and Need, the following objectives related to fuels treatment are defined for this project as follows:

- Modify the intensity and resulting fire behavior along the rim of the Grande Ronde and along Forest Road 62 for safe and effective suppression actions.
- Return fire to the Grande Ronde canyon to maintain the character of frequent fire regime, particularly in the grasslands and brush.
- Reduce ladder fuels to reduce risk of fire spread into the upper canopy
- Reduce ground fuels that would contribute to wildfire intensity and resource damage.

Alternative A – No Action

Direct/Indirect and Cumulative Effects
No new management activities would occur and natural processes would continue. Fuels would increase through time as forest stands became increasingly homogeneous in composition and structure. Shade tolerant species would out-compete early seral ponderosa pine and western larch, creating a more complex structure of aerial (ladder) fuels. As tree populations reach the carrying capacity of the site, mortality would represent a greater proportion of the stand, and dead-standing trees and surface fuels would accumulate. Stand conditions would deteriorate, with more Condition Class 1 stands trending to Condition Classes 2 and 3.

Surface fuel loading would increase across all forest settings, moving those stands not already classified as fuel model 10 into fuel model 10. Increased fuel loading would result in uncharacteristic fire behavior trending to larger and more severe fires on the landscape, potentially threatening the Grande Ronde Wild and Scenic River on the east side of the management area and the Wenaha-Tucannon Wilderness area on the west side.

Increased fire intensity lowers the probability of successful initial attack and drastically increases costs associated with firefighting efforts. Fire behavior models predict greater than 5-foot flame lengths and spotting distances a half mile from the fire's edge. As a result of this increased intensity, hand crews would likely pull away from the flaming front and fight fire indirectly from a nearby ridge or road. Assistance from aircraft, as well as additional crews and engines would be required. In a summer wildfire scenario and under these conditions, initial attack efforts often fail. If this were the case, an overhead team would be needed, along with equipment, supplies and all other logistical requirements associated with an expanding fire perimeter and extended attack operations.

Effects Common to all Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

The differences between these two alternatives are the number of acres treated and the degree of treatment effectiveness. The following table shows the comparison of acres treated by alternative within the project planning area in order to address the purpose and needs identified in Chapter 1.

Table 3-40 Treatment Acres* by Alternative to Meet Purpose and Need of Project

Purpose and Need Objective	Alternative A	Alternative B	Alternative C
Modify the intensity and resulting fire behavior along the rim of the Grande Ronde and along Forest Road 62 for safe and effective suppression actions.	0 acres	10,450 acres	9,250 acres
Return fire to the Grande Ronde canyon to maintain the character of frequent fire regime, particularly in the grasslands and brush.	0 acres	8,000 acres	8,000 acres
Reduce ladder fuels to reduce risk of fire spread into the upper canopy.	0 acres	8,500 acres	8,300 acres
Reduce ground fuel that would contribute to wildfire intensity and resource damage.	0 acres	10,200 acres	9,150 acres
*Acres are not additive			

Activity Fuel Treatments

Fuel treatments subsequent to harvest include yarding tops attached, jackpot burning, underburning, mastication, grapple piling and pile burning. Treatments were determined in an interdisciplinary fashion in order to minimize fire hazard risk while ensuring adequate quantities of down woody material would be retained for biological benefits of wildlife, soils, and ecosystem productivity. Fuel treatments would be adjusted as needed to prevent excessive accumulation of hazardous fuels or unacceptable loss of adequate remaining coarse woody debris. Monitoring would continue throughout project implementation to ensure these fuel objectives are being met.

Treatment of harvest slash would occur seasonally in the fall or spring following harvest. For units where prescribed fire is proposed, the window of acceptable weather and fuel moisture conditions is oftentimes small, and therefore, slash could remain on the ground a year or two before treatment is completed. Units proposed for mechanical treatment are not dependent on burn windows or the curing of the slash so they would likely receive treatments quickly, typically the season following harvest. The table below displays the proposed slash treatments in harvest units. Stand composition and expected mortality dictated whether prescribed burning or mechanical methods were preferred. Mechanical treatments, as the primary method proposed, eliminate stand mortality associated with prescribed fire and protect wildlife and stand cover values.

Table 3-41 Method of Slash Treatment by Acres and Alternative

	Mechanical Treatment and/or Prescribed Burning	Mechanical Treatment	Pile Burning at Landings	Hand Pile Burning in Units
Alternative A	0	0	0	0
Alternative B	500	1,720	230	40
Alternative C	300	850	100	40

Harvest units would be represented by fuel model 11 (slash model) until they are treated. A summer wildfire following harvest, but before slash treatment would burn actively through slash and existing ground fuels. The rate of spread in fuel model 8 (unharvested stands with low surface fuel loading) is 3 chains per hour (1 chain equals 66 feet) and in fuel model 11 it is 6 chains per hour. The rapid spread rate would mean a larger crew would be needed to control the fire and construct fireline. This predicted fire behavior would be diminished in the second fire-season following harvest when snow loads would have compacted untreated slash and red needles would have fallen to the ground.

Treatment of Stands in Condition Classes 2 and 3

A large amount of area within the Cobbler project planning area boundary is classified as fire regime III (mixed), and the number of acres proposed for treatment is reflective of this majority; however, areas in fire regime I (frequent) show more departure from their historical vegetative composition and density then are stands within fire regime III. In Alternative B, 80 percent of fire regime I acres proposed for treatment are in Condition Classes 2 and 3, versus 18 percent of the same in fire regime III (mixed) treatment acres. In Alternative C, these treatment acres account for 80 percent and 21 percent, respectively (see Table 3-42 below). The difference is because the majority of acres in the large prescribed fire area are within fire regime I. This area has missed at least two fire return intervals, and because of its inaccessibility has never had any harvest activity.

By reintroducing fire into the Grande Ronde canyon, fire managers would begin the process of returning stands to Condition Class 1 and maintaining the character of a frequent fire regime by decreasing surface and ladder fuels, decreasing fire intolerant species, and promoting those tolerant of fire. These changes would require several prescribed fire entries over a period of 10 to 20 years and would result in a stand more resilient to crown fires and insect and disease outbreaks.

Although the main focus for fuels treatment is within Condition Classes 2 and 3, it is also important to treat those stands classified as Condition Class 1 to maintain them in that classification. This is the purpose for the majority of treatment acres in fire regime III, where 82 percent of Alternative B and 79 percent of Alternative C acres are classified as Condition Class 1. The type of treatment proposed for these areas is mastication or underburning, where appropriate, to reduce accumulated surface fuels and to thin out seedling and sapling sized ladder fuels. These treatments would keep stands from moving into Condition Class 2 or 3 classifications by retaining large diameter, thick-barked, fire tolerant species and removing smaller diameter, less fire tolerant species and ladder fuels that could lead to a stand replacement event and loss of key ecosystem components.

Table 3-42 Acres Proposed for Treatment by Fire Regime and Condition Class (CC)

Alternative	Fire Regime	CC1	CC2	CC3	Total Acres Treated
A		**0**	**0**	**0**	**0**
B	Frequent	1,350	5,000	300	6,650
	Mixed	3,125	225	450	3,800
Total Acres Alt. B		**4,475**	**5,225**	**750**	**10,450**
C	Frequent	1,285	4,940	285	6,510
	Mixed	2,170	190	380	2,740
Total Acres Alt. C		**3,455**	**5,130**	**665**	**9,250**

Reduction of Risk to Crown Fire

Units chosen for harvest with an objective of fuels reduction were selected because there was a significant ladder fuel component present and they were in a strategic location for fire suppression (i.e. along the rim of the Grand Ronde, Forest Road 62). Harvest of 3 to 9 inch DBH material would remove trees that occupy low to intermediate canopy positions in stands dominated by commercial sized timber. Following removal of these ladder fuels, crown base height (average stand height from the ground to the base of tree crowns) would increase and crown bulk density (amount of fuel located in tree crowns) would decrease. By also rearranging and reducing surface fuels through mechanical means to that characterized by a fuel model 8, surface fires would not burn with enough intensity to reach the elevated level of tree crowns in the stand. This combination of surface and crown fuel treatments effectively reduces the risk of initiation and propagation of crown fires. Therefore, the strategically located treatments would provide firefighters with areas of reduced fire behavior where they can safely and effectively fight fire. The surface rate of spread of 3 chains per hour is well under the production capability of an engine with a three person crew, and low flame lengths allow for direct attack.

The following table is a summary of acres by alternative treated for crown fire potential.

Table 3-43 Summary of Crown Fire Potential Acres Treated

Alternative	Extreme	Very High	High	Medium	Low
A	0	0	0	0	0
B	170	770	540	4,400	550
C	130	710	270	3,800	300

Roughly 23 percent of treatment acres proposed in Alternative B and 22 percent in Alternative C are categorized as being in extreme, very high, or high crown fire potential. However, more important than the number of acres treated in these categories, is the location of units in areas where wildfires have the potential to move very quickly and are not easily suppressed such as, on the rim of the Grande Ronde or Wenaha River canyons.

Predictions of fire behavior and effects following treatment were calculated using the Fuel Manager Analyst Model, Release 3.0.36. Results show that mortality from a crown fire would decrease by almost

40 percent throughout the project planning area. The fraction of crown burned under wildfire conditions would be reduced from 69 percent to 22 percent. Flame lengths would also be reduced from 4.1 feet to 1.2 feet.

Proposed fuel treatments under Alternatives B and C would reduce future ground fuel loadings to that which would more closely resemble fuel loadings that existed under a natural fire regime. They would also serve to make future stands more crown-fire safe and reduce the potential for uncharacteristic wildfire. In treated areas, the level and extent of destruction caused by future wildfire would be reduced, thus helping prevent widespread devastation to large tracts of forest and wildlife habitat, minimizing damage to the forest floor and underlying soils, avoiding risks to human lives and property, and shortening the time for the landscape to heal.

Cumulative Effects (Alternatives B and C)
Other proposed activities associated with this project, ongoing projects, and reasonably foreseeable future projects (reforestation, road decommissioning, culvert replacement, noxious weed control, grazing, firewood gathering) would have no effect on fuel loadings or fire behavior.

FINDING OF CONSISTENCY

Implementation of either action alternative (B or C) would remain consistent with goals and objectives, and standards and guidelines of the Forest Plan. Appropriate management response to wildfires would continue throughout the project planning area during project implementation, and into the future. Low intensity prescribed fire (jackpot burning) would be utilized to treat activity generated fuels as needed to reduce fire hazard risk. No potential opportunities to implement future fuels treatment prescribed fire projects would be eliminated.

AIR QUALITY

SCALE OF ANALYSIS
National Forest land, Troy and Eden Bench areas, and La Grande, Oregon.

Indicators for comparison purposes between alternatives are:

- Expected total particulate emissions ($PM_{2.5}$)
- Duration and timing of emissions
- Communities potentially affected
- Mandatory Class I areas potentially affected

AFFECTED ENVIRONMENT

All of Walla Walla Ranger District is considered a Class II airshed. The nearest Class I airsheds are Eagle Cap Wilderness area, approximately 25 air miles to the southeast of the project area, and Hells Canyon Wilderness, 50 air miles to the southeast. Areas of potential impact from burning operations would likely be confined to the Troy and Eden Bench area, particularly if a strong, nighttime inversion develops or stable air keeps smoke from dispersing. The smoke sensitive community of La Grande is approximately 40 miles from the southernmost planning area boundary. Impacts to downwind communities are not likely to exceed the Oregon Department of Environmental Quality thresholds.

ENVIRONMENTAL CONSEQUENCES

Alternative A – No Action

Direct/Indirect and Cumulative Effects

No new management activities are proposed; therefore, there would be no impacts to air quality from prescribed fire. Models indicate that the amount of particulate material generated by a wildfire is larger than that from prescribed fire because more fuels are consumed in a wildfire scenario. Although wildfire ignition is no more likely under Alternative A than it is under Alternative B or C, fire size and intensity have the potential to be greater; and therefore, smoke production would also be greater in untreated stands versus treated stands.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

Past experience has shown that significant air quality declines are limited in scope to the general burn area and of short duration with the most significant impacts occurring under strong, persistent inversions or highly stable air masses. Burn prescriptions avoid ignitions under these conditions. Table 3-44 shows the emissions produced for every 100 acres of natural fuels when underburning, and activity fuels when jackpot and pile burning. Calculations were made using the Fire Emission Production Simulator (Version 1.1) using the same fuel loading and environmental conditions used for the CrownMass program (used to predict mortality and crown scorch). Even though activity fuel burning produces more CO (carbon monoxide), CH4 (methane gas) and $PM_{2.5}$ (particulate matter of aerodynamic diameter less than or equal to 2.5 micrometers) per 100 acres burned, underburning has a potential to be of higher risk for smoke impacts to communities because it affects a larger area and can smolder for a longer period of time. Carbon monoxide and $PM_{2.5}$ are considered criteria pollutants; these are pollutants that are deemed most harmful to public health and welfare and can be effectively monitored (Hardy et al, 2001).

This project proposes approximately 770 acres of activity fuel burning (jackpot, underburning, grapple pile or hand pile burning) in Alternative B and approximately 440 acres in Alternative C, and 8,000 acres of natural fuel underburning in both alternatives. Resultant smoke emissions would be short in duration for both alternatives. It is anticipated that smoke would persist in the air for no more than 5 days following ignition of both activity and natural fuel prescribed fire areas. See table below for approximate smoke emission figures for both alternatives.

Table 3-44 Smoke Emissions per 100 Acres Burned in Alternatives B and C

Type of Burn	Amount of Fuel Consumed	Total CO*	Total CH4**	Total $PM_{2.5}$***
Natural Fuel Underburning	216 tons	17 tons	0.98 tons	0.77 tons
Activity Fuel Jackpot and Pile Burning	1,282 tons	118 tons	19 tons	22 tons

*CO – carbon monoxide; ** CH4- methane gas; and *** $PM_{2.5}$ =particulate matter of aerodynamic diameter less than or equal to 2.5 micrometers

Mechanical treatment of fuels, including mastication or grapple piling, is proposed for the majority of units in both Alternatives B and C. For the purposes of this EA, effects were analyzed for grapple piling, because it has the potential for greater impact; however, actual mechanical treatment would not be determined until each stand has been looked at more closely. Stands that require some fire for site preparation and regeneration would probably be treated with grapple pile and burn. Stands with species intolerant to fire or that have many small diameter (0-6 inch DBH) trees remaining, would likely receive mastication treatment.

Hand piling of fuels is proposed for portions of units where visual quality is a concern, particularly along Forest Road 62. This would likely be a 100-foot wide strip on both sides of the road where activity fuels would be piled, then burned.

Piles (grapple and hand) would be ignited under very moist conditions in late fall, possibly after an early snowfall. Heat generated by piles should carry smoke to the upper atmosphere for dispersal. As piles cool, smoke would be retained in the area and drift downhill into the valley at night and early morning. Smoke from pile burning is not expected to be of an extent or duration to cause significant impacts to downwind communities. Table 3-45 summarizes the scale of proposed burning for action alternatives.

Table 3-45 Summary of Prescribed Fire Treatments for Alternatives B and C

Alternative	Mechanical Treatment and/or Prescribed Burning	Pile Burning at Landings	Hand Pile Burning in Units	Landscape Underburn	Total Acres Proposed for Burning
Alternative B	500 acres	230 acres	40 acres	8,000 acres	8,770 acres
Alternative C	300 acres	100 acres	40 acres	8,000 acres	8,440 acres

Any prescribed burning operations within the project planning area would comply with the State of Oregon's Smoke Management Implementation Plan, and would be implemented within guidelines of the Smoke Management Program. "Special Protections Zones" have been established around cities in Oregon that do not meet the Federal Clean Air Act PM_{10} Emission Standards. The nearest zone is La Grande, Oregon; current regulations require smoke emissions within 60 air miles radius of the city be documented. The intent of the zones is to minimize the chances of smoke producing activities adding to the current air quality problems. This can be accomplished by following the Smoke Management Program Guidelines and by contacting the State Forestry Weather Forecaster prior to burning. The state will implement restrictions on burning when wind predictions indicate smoke could be carried into sensitive areas. A listing of additional requirements is available in the Oregon Smoke Management Plan. The State of Oregon Smoke Management Plan also has certain areas that are being monitored by detection devices. The following table shows a summary of air quality indicators.

Table 3-46 Summary Air Quality Indicators

Alternative	Duration of Emissions	Timing of Burning Operations	Communities Potentially Affected	Class I Areas Potentially Affected
Alternative A	0 days	N/A	None	None
Alternatives B and C	Persisting in air for no more than 5 days	Natural Fuel Underburning Fall Burning	Troy and Eden Bench Areas	None
		Activity Fuel Jackpots Spring Burning		

Impacts from smoke would be restricted to individual dwellings within the immediate area (Troy and Eden Bench areas) for short periods of time and would be the same for Alternatives B and C. Normally, burn windows precede a rain front which clears smoke quickly as the front passes. The burning would occur before extensive home wood heating and at a time when air can mix. Peak impacts to air quality from smoke occur in the late winter months, a time when forest fuel burning does not occur. Smoke would be visible, but historical records from the EPA do not indicate that fall and spring burning operations exceed health standards in communities being monitored for air quality.

All of Walla Walla Ranger District is considered a Class II airshed. The nearest Class I airsheds are the Eagle Cap Wilderness area, approximately 25 air miles to the southeast of the project, and Hells Canyon Wilderness, 50 air miles to the southeast. The Oregon Smoke Management Program does not allow for burning under conditions which would impact Class I airsheds. The State Forestry Weather Forecaster advises when units can be burned and when burning should not occur or should be curtailed to avoid impacts to these areas. The distance and potential impacts to Class I airsheds is the same in both Alternatives B and C.

Peak levels of smoke impacting air quality would be the same between alternatives because for any day selected for burning, the same amount of acres would be burned. The number of acres proposed for landscape prescribed fire (natural fuels) in the Bear and Alder Creek canyons does not differ by alternative. The number of acres of activity fuel burning does vary by alternative; however, this would not change the amount of smoke in the air at any one time, but it would change the duration that smoke is the air. Alternative B proposes to burn approximately 8,770 acres and Alternative C, 8,440 acres. Burning would occur only within the requirements of the State of Oregon Smoke Management Plan and would not exceed air quality standards.

FINDING OF CONSISTENCY

Implementing either of the action alternatives (B or C) would remain consistent with the goals and objectives, and standards and guidelines of the Forest Plan. Air quality standards would be maintained at a level to meet state and federal standards (Clean Air Act) through the coordination and compliance with Oregon Department of Forestry guidelines and approval process. Available predictive and management methods and models would be used to minimize the effects of smoke on any smoke sensitive areas.

INVASIVE PLANT SPECIES (Noxious Weeds)

SCALE OF ANALYSIS

Invasive plant species analysis is based on the Cobbler project planning area (approximately 34,000 acres).

Indicators for comparison purposes between alternatives are:

- Acres of invasive species by District treatment priority, that have been previously mapped within harvest units and along haul routes, and on the amount of ground disturbance anticipated from proposed activities.

Direction and Policy

The 1999 Executive Order on invasive species (direction found in Forest Service Manual (FSM) 2080), and the National and Regional strategies for noxious weed management identify prevention as the preferred strategy for managing invasive plant species on National Forest Service lands.

Cobbler Timber Sale and Fuels Reduction Project EA is tiered to a broader scale analysis (the Pacific Northwest Region Final Environmental Impact Statement for the Invasive Plant Program, 2005, hereby referred to as the R6 FEIS 2005). The R6 FEIS 2005 culminated in a Record of Decision (R6 2005 ROD) that amended the Umatilla National Forest Plan by adding management direction relative to invasive plants. This project is intended to comply with the new management direction. The portions applicable to this project include the prevention standards that are incorporated in Table 2-6 Design Features and Management Requirements and prevention standards listed in detail in Appendix A of the Invasive Plant Species Report (project file) and apply to activities beginning March 1, 2006.

The terms invasive plant species, noxious weeds, and weeds are used interchangeably in this document to refer to those non-native plant species that are of environmental concern and whose control is addressed as a land management priority at national, regional and local levels (FSM 2080, R6 FEIS 2005, Forest Plan 1990).

Invasive plants are defined as "non-native plants whose introduction does or is likely to cause economic or environmental harm or harm to human health" [Executive Order 13122].

AFFECTED ENVIRONMENT

Information currently in the forest-wide noxious weed inventory database shows 14 invasive species occurring singly or in combination at 155 sites on Forest Service lands within the analysis area, for a total of 1,510 gross infested acres. Three of the species have been removed from the District treatment priority list but are still being tracked.

Thirty-six of the sites have been added to the inventory since 2004. The area of these "new" sites totals about 405 acres.

Eight sites occur in the Grande Ronde River corridor. They include all seven of the leafy spurge sites in the project planning area, and one site has spotted knapweed. Some sites have been treated over time and have been well controlled or eliminated.

Common vectors in spreading weeds in this area include: vehicles, big game animals, livestock, and human activities associated with camping, floating, hunting, horseback riding, and logging.

The following table lists the species present and their respective treatment priority as designated by the Walla Walla Ranger District noxious weed coordinator. Definitions of species priority groups are as follows:

Group 1: Eradicate new populations and/or control existing populations of aggressive weeds

Group 2: Contain existing populations of aggressive weeds

Group 3: Eradicate new populations and/or control existing populations of less aggressive weeds (there are no Group 3 plants in the Cobbler planning area).

Group 4: Contain existing populations of less aggressive weeds

Bull thistle (*Cirsium vulgare*) and flannel mullein (*Verbascum thapsus*) have been recommended for removal from the treatment priority list, because they quickly invade disturbed sites with large populations but generally get crowded out by other vegetation within 3-4 years. Painted lady butterfly (*Vanessa cardui*), a predator of bull thistle, also helps to reduce plant density.

Chicory (*Cichorium intybus*) is also not on the treatment priority list but is being tracked in case it becomes a problem in the future.

A minority of the acres listed here are included in the 1995 Decision implementing the Environmental Assessment for the Management of Noxious Weeds. This 1995 EA allows the possible use of herbicides on the sites listed in that EA, depending on site and weed species.

The following table shows the characteristics of the invasive plant species mapped in the Cobbler project planning area and the treatment priority assigned them by Walla Walla Ranger District.

Table 3-47 Invasive Plant Species in Cobbler Project Planning Area

Noxious Weed Species	Treatment Priority (1 –4, Highest to Lowest)	# of Sites	Gross Acres	Remarks
Centaurea biebersteinii CEBI2 spotted knapweed	1 Highest	16	167	Aggressive invader of disturbed roadsides, grasslands, and forests. Spotted is more intolerant to dense shade and prefers moister habitats than diffuse, is still a problem in forested areas disturbed by logging, fire, or other factors. Seed dispersal is generally passive spread by animals, vehicles and short distance by wind. Dormant seeds may remain viable in the soil for over 8 years, with studies indicating that some seeds may be viable for over 15 years.
Centaurea diffusa CEDI3 diffuse knapweed	2 High	79	826	Aggressive invader of disturbed roadsides, grasslands, and forests. Needs sun. Seed dispersal is generally passive spread by animals, vehicles and short distance by wind. Dormant seeds may remain viable in the soil for over 8 years, with studies indicating that some seeds may be viable for over 15 years.

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Noxious Weed Species	Treatment Priority (1 –4, Highest to Lowest)	# of Sites	Gross Acres	Remarks
				Diffuse cannot tolerate cultivation or excessive moisture.
Chondrilla juncea CHJU rush skeletonweed	1 Highest	2	46	Overwinters as a rosette of hairless, basal leaves. Sheep graze the rosette and early flowering plant. Seed and plant fragments spread by vehicles. The plant spreads primarily by seed, but roots scattered by cultivation can aid in spread.
Cirsium arvense CIAR4 Canada thistle	4 Low	38	602	Establish slowly; difficult to control because of rhizomes. Spreads primarily by vegetative means, and secondarily by seed. Vegetative spread rates of 3 to 6 feet per year. Needs exposed soil with little competition for seedlings to become established. Is shade intolerant. Grows best on mesic soils.
Convolvulus arvensis COAR4 Filed morning glory	4 Low	2	17	Grows best on moist fertile soils. Tolerates poor, dry, gravelly soils, but seldom grows in wet soils. Long, deep (~10 feet) taproot.
Cynoglossum officinale CYOF hound's tongue	4 Low	35	484	Rapidly displaces native vegetation, particularly along streams. Easily spread by the Velcro-like nutlets which adhere to the fur of animals and the clothing of humans.
Cytisus scoparius CYSC4 scotchbroom	1 Highest	1	2	Forms dense thickets that exclude native species, impede access, alter fire regimes and dominate the landscape. Spread by animals and in water, such as creeks. Found in pastures, forest, and wastelands. Long-lived seed.
Euphorbia esula EUES leafy spurge	1 Highest	7	4	Occurs on both disturbed and undisturbed sites, especially abandoned cropland, pastures, rangelands, woodlands, roadsides, and waste places. Tolerant of a wide range of soils including nutrient-poor, dry soils. Most aggressive in semi-arid situations, so invades most rapidly on dry hillsides, dry prairies, or rangelands. Seed viable up to 8 years. Deep, spreading roots
Hypericum perforatum HYPE (St. Johnswort)	4 Low	37	448	Spreads by rhizomes. Common along roads.
Potentilla recta PORE5 sulphur cinquefoil	2 High	32	423	Spreads rapidly, difficult to control. Can grow under open canopied forests and gaps in the forest, as well as roadsides and riparian meadows. Can be confused with native cinquefoils. Leaves look similar to marijuana. Seeds remain viable in soil for at least 3 – 4 years. Spreads by vehicles and equipment, animals, and clothing.

Noxious Weed Species	Treatment Priority (1 –4, Highest to Lowest)	# of Sites	Gross Acres	Remarks
Senecio jacobaea SEJA tansy ragwort	1 Highest	7	64	Found on disturbed sites and bare ground in grazed pastures, roadsides, vacant non-crop lands, and on forest clear-cuts. Optimal growth occurs in full sun or partial shade in well-drained soils. Usually absent in areas with a high water table or acidic soils. Reproduces mostly from seed, but regeneration of shoots can occur from crown buds, root fragments, and intact roots. Disturbance or injury promotes vegetative propagation. Seeds can be viable up to 15 years. Tilling, grazing, or other disturbance will cause dormant seeds to germinate. Plants that go to seed die at the end of the season. Spread by water, wind, people, animals, equipment and vehicles. (All known tansy ragwort sites on the District were inventoried summer of 2002 without finding any plants).
Tanacetum vulgare TAVU Common tansy	4 Low	2	44	Toxic to livestock and humans. Will grow in waste areas, roadsides, and meadows in full sun and in fertile, well-drained soil. Spreads via an extensive, spreading root system and profuse seed production. It especially favors the disturbed soils along ditch banks, where the water quickly spreads the seeds for miles downstream.

ENVIRONMENTAL CONSEQUENCES

Alternative A – No Action

Direct/Indirect Effects

The No Action alternative would not create any further human-caused ground disturbance in Cobbler project planning area.

Cumulative Effects

The spread of invasive plants from currently existing populations and off-forest seed sources would continue at the current level. Animal and vehicle vectors would likely be the primary means of seed introduction into the project area.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

Both action alternatives include activities in or near existing weed sites. The potential risk for spreading weed populations in each alternative is relative to the amount of activity taking place where seeds and

plants could be moved through disturbance. The potential risk for introducing new infestations is relative to the total amount of disturbance and therefore can be compared by the number of acres of activity in each alternative, including transportation activities. Both action alternatives include design features (Table 2-6) to help minimize ground disturbance, limit introduction and transport of weed seed, avoid selected activities in known areas of infestation, reduce disturbance to existing native vegetation, and restore native ground cover as soon as possible after harvest activities are complete.

Inspecting activity areas and haul routes before and during activities is expected to reduce any increase in weed infestations caused by spreading of new seed, even if prevention measures are not 100 percent effective. These prevention measures would not affect spread of any older seed that may be present in the soil seedbank in the vicinity of pre-existing populations. It is not possible to calculate exact acreage reductions resulting from these weed treatments. However, the reductions in areas at risk would be proportional for each action alternative.

The following table shows the number of acres of invasive species, by District treatment priority, which have been previously mapped within harvest units and along haul routes. This indicates the relative potential risk for spreading populations.

Table 3-48 Invasive Species Mapped In Harvest Units and Along Haul Routes by Alternative

Species treatment priority group	Alternative B		Alternative C	
	Acres: within harvest units	Miles: along haul routes	Acres: within harvest units	Miles: along haul routes
High	30	15	10	10
Medium	110	50	60	40
Low	60	25	30	20

The potential risk for introducing new infestations is relative to the total amount of disturbance and therefore can be compared by the number of acres of activity in each alternative, including transportation activities.

Table 3-49 Proposed harvest acres and roads miles used by action alternative

Unit of Measure	Alternative A	Alternative B	Alternative C
Acres	0	2,500	1,300
Miles	0	90	80

The following table shows acres of previously mapped invasive species by priority for project activities, other than harvest units, that are the same for each action alternative. These activities also have the same potential for introducing infestations for both alternatives.

Table 3-50 Acres of Invasive Species Mapped in Non-harvest Activity Areas

Species treatment priority group	Pole areas (acres)	Hardwood restoration areas (acres)	Meadow burn areas (acres)	Landscape burn areas (acres)	Non-commercial thinning areas (acres)	Road material source areas (acres)
High	10	0	0	10	5	0
Medium	85	1	30	50	35	5
Low	50	0	10	40	75	0

Cumulative Effects (Alternatives B and C)

Monitoring, mapping, and assessment of new populations would increase tracking capacity in preparation for treatment under the forthcoming Umatilla Invasive Species EIS. Both of these foreseeable future actions would further reduce the number of acres at high risk of weed spread. It is not possible to calculate exact acreage reductions resulting from these weed treatments.

FINDING OF CONSISTENCY

Implementation of either action alternative (B or C) is consistent with Forest Plan direction, as amended, with respect to noxious weeds. Compliance with Prevention Standard #1 from the Pacific NW Regional FEIS includes the above discussions of existing condition, the mechanisms of invasive species spread, the prevention measures listed as design criteria, and the risks that remain even after implementation of the prevention measures.

THREATENED, ENDANGERED, AND SENSITIVE PLANTS (TES)

SCALE OF ANALYSIS

Threatened, endangered and sensitive plant species analysis is based on the Cobbler project planning area (approximately 34,000 acres).

Indicators for comparison purposes between alternatives are:

- Effects to TES species

AFFECTED ENVIRONMENT

Complete species surveys have been conducted in and around the proposed non-commercial thin units and are listed in the Plant BE report.

Portions of the project planning area have not been surveyed. Approximately 4,000 acres of the 8,000 acres within Bear Creek and Alder Creek drainages proposed for landscape prescribed fire have never been surveyed. This area is very steep and access is a limiting factor for survey work. There is likely habitat for two Region 6 sensitive sedge species, *Carex cordillerana* (Cordilleran sedge) (one site

documented south of the project area along a tributary of the Grande Ronde River) and *Carex crawfordii* (Crawford's sedge) (no known sites but suspected to occur on Umatilla NF) in this unsurveyed area. Cordilleran sedge can grow on shady streambanks, flood plains and gravel bars and also under upland shrubs in Ponderosa pine/Douglas fir forests. Crawford's sedge grows in perennially wet areas with surface water present for the majority of the year; it would be suspected only in Riparian Habitat Conservation Areas (RHCAs).

One additional area south of Lookout Mountain in the NE corner of Section 10 (T4N, R40E), north of the 6200-380 spur road, has not been previously surveyed and contains a cottonwood stand proposed for conifer felling and fencing. This area was surveyed during the summer season of 2008 and no sensitive plant species were found.

Examination of the Umatilla National Forest sensitive plant coverage in GIS shows several sensitive plant locations of Bolander's spikerush *(Eleocharis bolanderi*)(ELBO) in the project area. There are additional spikerush sites proximal to proposed treatment units but not actually within proposed treatment areas. Habitat of spikerush is associated with local hydrology so plants are most often found along the edges of intermittent channels in headwater regions of streams, on gently sloping ground. The plant needs full light, but thrives on poor soils, so can occur both in dry forest openings and in biscuit-mound or scab grasslands. Some populations are associated with roadside hydrology or subtle swales.

There is no known habitat within the project area units for any non-vascular plant species that is currently on the Region 6 Regional Forester's Sensitive species list.

Silene spaldingii is federally listed as Threatened and known to occur on the Umatilla and Wallowa-Whitman National Forests. *Silene spaldingii* occurs primarily in open grasslands with deep Palousian soils.

ENVIRONMENTAL CONSEQUENCES

Alternative A No Action

Direct/Indirect and Cumulative Effects

The no action alternative would not create any further human-caused ground disturbance. Therefore, this alternative would create *No Impacts* to Sensitive species and would have *No Effect* on *Silene spaldingii.*

Effects Common to All Action Alternatives

Direct/Indirect and Cumulative Effects (Alternatives B and C)

There would be no ignitions in RHCAs but fire would be allowed to creep into these areas. No timber harvest or mechanical fuel treatments are proposed in RHCAs. Fire would be introduced resulting in a mosaic of unburned to intensely burned patches. Handline and machine lines will not be needed as the area will be burned in stages utilizing drainage breaks. Given these design criteria, there will be "No Impact" to the two sensitive sedge species suspected to occur within the area proposed for prescribed burning and no surveys would be done in this steep terrain with limited access.

Potential threats to Bolander's spikerush are direct physical disturbance from logging equipment, mechanical fuels equipment, landings, road work, etc. All spikerush sites with the exception of one are proximal to FS Road 6200 proposed for hauling in both action alternatives. Another potential threat to

the spikerush is a change in the local hydrology. These potential threats will be avoided by implementing the design features listed in Table 2-6.

Effects of fire to Bolander's spikerush are unknown. However, because it is a species native to grasslands that historically had a fire return interval as short as 25 years (USFS and USDI 1997), it is likely well adapted to fire. Two sites are in units proposed for prescribed fire. Avoidance of burning these sites is not required. Monitor plots for Bolander's spikerush sites in prescribed fire areas in the Falls/Meadowbrook Vegetation Management Project on the North Fork John Day District were initiated in the fall of 2008. Additional monitoring plots on these sites in this project could contribute to knowledge about the resiliency of this species and its response to fire.

Implementation of this project, including all proposed activities (meadow improvement, hardwood restoration, danger tree removal, Forest Plan amendment, etc…), with either action alternative has a biological determination of *"No Impact"* on any currently listed Region 6 sensitive plant species.

Implementation of this project, including all proposed activities (meadow improvement, hardwood restoration, danger tree removal, Forest Plan amendment, etc…), with either action alternative has a biological determination of *"No Effect"* on ***Silene spaldingii.***

FINDING OF CONSISTENCY

Implementation of either action alternative (B or C) would be in compliance with present federal laws (ESA) regulations and Forest Plan standards and guidelines pertaining to the management of Threatened, Endangered, and Sensitive plant species.

As required, a Biological Evaluation and Biological Assessment for plant species are available and located in the project file.

WILDLIFE

SCALE OF ANALYSIS

The quantity and quality of wildlife habitat was primarily assessed using a Geographic Information System (GIS), district records, and field reviews. Vegetation information used in habitat evaluation was obtained from the project Silviculturist or from GIS databases. In this document, "project planning area" refers to National Forest Service system lands within the Cobbler project planning area (approximately 34,000 acres) identified on the project planning area map. Generally the scale of analysis for wildlife is the project planning area, however, for some species a larger area was considered and those scales are identified in the appropriate sections.

The following categories of wildlife or habitats are discussed: old forest habitat; elk habitat, management indicator species (MIS), dead wood habitat; threatened, endangered and sensitive (TES) species; northern goshawk, and landbird habitat. Landbirds, including Neotropical migratory birds (NTMB), were analyzed based on high priority habitats identified in the Oregon-Washington Chapter of Partners in Flight, Northern Rocky Mountains Bird Conservation Plan (Altman 2000).

AFFECTED ENVIRONMENT- OLD FOREST (Key Issue)

Past harvest, other treatments, and insect/disease epidemics have reduced the amount and connectedness of old forest stands. Public comments were received during scoping requesting that we protect wildlife and consider it a priority in an alternative.

Indicators for comparison purposes between alternatives are:

- Acres of old forest multi-story changed to old forest single story
- Acres of thinning within old forest connective corridors
- Large tree habitat removed (>21 inches DBH trees and snags)

Old forest is a structural stage and is not equivalent to an old growth successional stage. For the purposes of this document, old forest is defined as a stand with a predominance of large trees (> 21 inches DBH) with one or more canopy strata. On warm or hot sites with frequent, low-intensity fires, a single stratum may be present (old forest single stratum (OFSS)). A minimum of 15 percent canopy closure of large trees is required on dry potential vegetation sites. On cold or moist sites without recurring underburns, multi-layer stands with large trees in the uppermost stratum may be present (old forest multi strata (OFMS)). A minimum of 30 percent canopy closure of large trees is required on moist potential vegetation sites. Decaying fallen trees may also be present that leave a discontinuous overstory canopy.

Dedicated Old Growth

The Forest Plan allocated stands between 75 and 300 acres in size as management areas C1-Dedicated Old Growth or C2- Managed Old Growth to provide old growth tree habitat across the forest. Old growth stands were initially classified as suitable and/or capable habitat for a selected management indicator species. Unit size and distribution are variable and depend on the vegetation type and target management indicator species (USFS 1990).

Four Dedicated Old Growth (management area C1) areas are within the project area. At the time these areas were designated, they were classified as capable (#0442) and suitable (#0691, #0451) pileated woodpecker habitat; and suitable marten habitat (#0463). The following lists the four areas within the project planning area.

Table 3-51 Dedicated Old Growth in Cobbler Project Planning Area

ID Number	General Area	Management Area C1 – acres	Comment
0442	Elbow Creek	330	
0691	Grande Ronde Rim	135	Remainder in Scenic Area
0451	Wenaha Forks	120	Remainder in Wilderness
0463	Elk Creek	30	Remainder in Wilderness
Total		615	

Old Forest Structure

Umatilla National Forest Plan Amendment #11 established interim riparian, ecosystem, and wildlife standards for timber sales (Eastside Screens) (USFS 1995). It requires that certain categories of timber sales be screened to evaluate their potential impact on riparian habitat, historical vegetation patterns, and wildlife habitat fragmentation and connectivity. The interim wildlife standard restricts the harvest of timber in stands with a predominance of large trees (>21 inches DBH) if the amount in the area is below the historical range. Umatilla Forest uses the silvicultural terms “old forest multi story” (OFMS), and

"old forest single story" (OFSS) structural stages to assess where and how much large tree habitat is available.

Old forest structure occurs on about 6,100 acres, or 22 percent of the forested portions of the Cobbler project planning area. The amount of old forest is within the historical range of variability in moist upland forest and in dry upland forest except for the dry single story stands (Silviculture Report). Because amounts of old forest are within the historical range in moist forest, harvest in moist old forest is permissible. In the dry upland forest, old growth stands can only be manipulated if the goal is to preserve or enhance old forest character.

Although amounts of old forest are within the historical range in most categories, this does not mean that old forest habitat is plentiful or functional. The total amount of moist old forest is near the low end of the historical range, and in many areas these stands are small and isolated due to past harvest. The patch size and arrangement of old forest stands have been reduced in the past 50 years (Gobar 2004). Wildlife species associated with this habitat likely have larger home ranges, are more susceptible to predation, and expend more energy for survival.

Old Forest Connectivity

Connectivity between blocks of old forest (OFMS, OFSS) has been assessed for the project planning area. Connective habitat does not necessarily need to meet the same description of old forest, but provides "free movement" between old forest stands for various wildlife species associated with these stand conditions.

For the majority of the project planning area, old forest stands and C1 areas are connected to each other with medium tree (9-15 inches DBH) to large tree (>15 inches DBH), stands with widths greater than 400 feet, and attached with 2 or more different connections. Connective stands are primarily in the Young Forest Multi-Strata (YFMS), Young Forest Single-Stratum (YFSS), Stem Exclusion (SE), and Understory Reinitiation (UR) structural stages. The least connected areas include non forested areas, unhealthy stands, and areas that have not grown back since the last timber harvest.

Areas with sparse old forest and poor connectivity include the Bear Flat area, which had heavy insect mortality and subsequent harvest, stands near Elbow Creek, and an area north of Eden Ridge. This is not due to a lack of connective habitat, but rather the distance between old forest stands.

ENVIRONMENTAL CONSEQUENCES - OLD FOREST (Key Issue)

Alternative A – No Action

Direct/Indirect and Cumulative Effects

Existing old forest habitat would remain in its current state in the short-term. Wildland fire, tree disease, or insect infestations could reduce old forest and connectivity corridors at any time. Continuous fuels buildup in the area would cause an increasing potential for a large scale uncharacteristic wildland fire.

Over time, some stands would develop habitat characteristics that would result in additional old forest and connective corridors. Other stands would trend towards overstocked, unproductive stands with limited value as wildlife habitat for old forest-dependant wildlife species. For example, dry forest would likely continue to develop into multi-storied, overstocked stands with encroaching fir.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)
The existing condition of the dedicated old growth stands would not change because no activities would occur within Forest Plan designated C1-Dedicated Old Growth management areas.

Opportunities to develop old forest structure in this watershed should focus on growing forested stands adjacent to existing old forest in order to enlarge patch sizes and replace declining stands (Gobar 2004). Treatments proposed adjacent to old forest stands and in connective corridors between are thinning from below in most units. Two units (units 42 and 59, totaling approximately 75 acres) adjacent to old forest would be shelterwood/seed tree regeneration cuts. Timber harvest, fuels reduction, and non-commercial thinning outside of old forest would improve the health and resilience of stands that are overstocked and/or developing heavy fuels. Reduced stocking levels would decrease stress and associated insect/disease susceptibility on the overstory trees that remain.

Harvest prescriptions would tend to favor leaving early seral species such as ponderosa pine and western larch. Trees $\geq$ 21 inches DBH would not be cut in thinning units unless necessary for safety or to move machinery through the stand. On about 300 acres, patch cuts or shelterwood cuts are prescribed in decadent stands where thinning would not restore growth or vigor, and in lodgepole pine stands that are susceptible to mountain pine beetle. In these stands, trees $\geq$ 21 inches DBH would be cut if they are infected with dwarf mistletoe.

Based on the above, harvest treatments would aid in attaining future old forest structure more quickly than if the stands were left in their current condition, with the exception of about 275 acres of regeneration type harvest.

Thinned stands would remain fully stocked and provide for the free movement of various wildlife species Over time, other stands in early successional stages would develop habitat characteristics that would result in additional connective corridors.

All harvest units would maintain snags and down wood in excess of Forest Plan standards. The healthiest large trees and the soundest large snags would remain as the building blocks for future stand and habitat development.

Landscape prescribed fire is intended to improve forage quality for big game and lessen the impact of a future uncharacteristic wildfire. Although efforts would be made to avoid overstory stands, individual tree and group torching would likely occur in areas where there are sufficient ladder fuels and high occurrences of mistletoe. If fire creeps into old forest stringers in the canyon, some tree mortality would be expected.

A series of dry meadows would be burned to rejuvenate meadow vegetation and reduce conifer encroachment. Some of these meadows are in close proximity to old forest stands that are proposed for thinning. Some fire would likely creep into the area, but the design and timing of prescribed burning would limit the amount of tree mortality while reducing fuels in these stands.

The approximately 0.25 miles of new system road (permanent) would be built through previously harvested stands which contain sapling and pole size trees (<9 inches DBH). There would be no direct effect to old forest. However, the new road construction would remove about one acre of productive forest vegetation that might otherwise grow into large trees. Since this road would be closed to the

public, access to old forest stands for activities such as firewood cutting would not increase.

A Forest Plan amendment to change the proposed Elk Flats Meadow RNA to a Special Interest Area would have no effect to old forest stands. No timber harvest would be scheduled and firewood cutting would not be allowed in the newly created Special Interest Area (management area A9).

Six hardwood stands within old forest are proposed for treatments, including cutting or girdling conifers to reduce competition for light and water, and fencing to reduce browse pressure. Maintaining and enhancing the presence of these microhabitats within old forest would benefit a variety of wildlife species.

Proposed non-commercial thinning that is outside of timber harvest units would not affect old forest. This treatment is exclusively done in previously harvested areas that are in a stand initiation phase.

Alternative B

Direct/Indirect Effects -Alternative B

Timber harvest and fuels reduction treatments would reduce canopy closure and structural complexity on approximately 2,500 acres, but the amount of old forest in the area would remain within the historical range of variability. Harvest is proposed in approximately 485 acres in old forest multi story (OFMS) and in approximately 300 acres of old forest connective habitat

Harvest prescriptions in OFMS would not cause reductions in the overall amount of old forest. Rather, OFMS would be converted to OFSS. This represents a positive effect for some wildlife species and a negative effect for others. Species that may benefit from a conversion of OFMS to OFSS include pygmy nuthatches, flammulated owl, and white-headed woodpecker. Thinning approximately 120 acres in dry upland forest would slightly increase the amount of OFSS, which is deficient in the area.

Northern goshawk, pileated woodpecker, and American marten are examples of species that show a preference for higher canopy closure and generally more complex forest stands. The amount of this habitat would be reduced, but would remain within the historical range of variability.

Thinning in connective corridors would result in fully stocked stands, and provide for the free movement of various wildlife species. Connectivity is not a limiting factor for old forest species in this project planning area.

Approximately 0.20 miles of temporary road would be built to access timber, but would be decommissioned after harvest. The temporary road would remove mainly smaller trees on a ridge. Since this road would be closed to the public, access to old forest stands for activities such as firewood cutting would not increase.

Alternative C

Direct/Indirect Effects - Alternative C

No timber harvest would occur in old forest stands. Since no OFMS would be converted to OFSS, the amount of OFSS in dry forest would remain well below the historical range of variability. Species that use more open old forest would have limited habitat available. Fuels would continue to build in these areas where fir is encroaching into dry stands, creating a higher potential for large-scale habitat loss if a wildfire occurs.

Effects to species that show a preference for higher canopy closure and generally more complex stands would be about 50 percent less than in Alternative B. Thinning and shelterwood type harvest would cause a short-term reduction of canopy cover and structural complexity in about 1,300 acres of younger stands. While this would not affect old forest, about 200 acres would affect connective corridors.

In the long-term these stands would be healthier and able to grow into old forest structure sooner than if not thinned. About 225 acres of thinning in younger stands of dry upland forest would accelerate growth towards the OFSS condition.

Cumulative Effects (Alternatives B and C)

Past timber harvest and roading is reflected in the existing condition. Effects from the recent harvest in the adjacent Lower Sheep project planning area was considered in the existing condition. The amount of old forest in the area would remain within the historical range of variability, even though past regeneration harvest units in the area have not yet recovered to support old forest associated wildlife species.

Proposed harvest treatments would cause a short-term loss of existing old forest structural complexity, but a long-term gain would result due to increased resiliency to potentially large scale disturbances such as insect outbreaks, disease, and wildfire. The overall amount of stands classified as old forest would not change.

Past and ongoing fire exclusion has increased fuel loads and the associated hazard of losing additional old forest structure and fragmenting travel corridors in the event of an uncharacteristically large-scale, high severity wildfire. Proposed fuel treatments would reduce the likelihood of losing large amounts of existing old forest.

Ongoing recreational activities, non-commercial thinning, weed treatment, and firewood cutting would not have a cumulative effect to old forest habitat. Since the majority of roads in the area are closed, access is limited.

AFFECTED ENVIRONMENT - ELK HABITAT (Key Issue)

Cobbler project planning area is within Wenaha Game Management Unit. The management objective (MO) for elk in the Wenaha Game Management Unit is set by Oregon Department of Fish and Wildlife (ODFW) and is currently 4,250 elk. Winter counts indicate that the Wenaha herd has remained about 60 percent below the state objective for the past 10 years. Low calf recruitment is likely due to high rates of predation and nutritional factors.

Past management activities have contributed to less than optimum cover and security habitat conditions within the project planning area.

Indicators for comparison purposes between alternatives are:

- Acres and percent of satisfactory cover
- Acres of total cover (marginal plus satisfactory) reduced
- Acres of hiding cover reduced through non-commercial thinning
- Relative change of forage
- Miles of closed roads used

Elk Cover

The scale of analysis for management area E2 is that which is within the project planning area, and intermixed or adjacent management areas C1-Dedicated Old Growth and C5-Riparian Areas, totaling approximately 19,600 acres. The scale of analysis for management area C4 is that which is within the project planning area, plus contiguous management area C4 south of the project planning area, and intermixed or adjacent C1 and C5, totaling approximately 7,300 acres.

Forested stands with relatively closed canopies are often used by elk disproportional to their availability and can function as security cover or reduce the difference between an animal's body temperature and ambient air temperature. Research from the nearby Starkey Experimental Forest (Cook et al. 1998) and other studies suggest that the presumed thermal benefits of cover could not be substantiated, but recognized that multi-story forested stands are important to elk because of their heavy use throughout the year. Forage quality and quantity influences elk nutrition and may have the greater impact on health and productivity. However, the Umatilla Forest Plan contains standards for elk habitat that we continue to measure against, which are percent cover, open road density, and habitat effectiveness (HEI).

The Forest Plan defines satisfactory cover as 70 percent canopy cover or more in mixed conifer forest, and having more than one tree layer. Marginal cover provides hiding and escape cover, but tree canopy may be less dense and often provides less security.

The amount of satisfactory cover in the project planning area currently meets the minimum Forest Plan standard of 15 percent in management area C4-Wildlife Habitat (1,090 acres). In management area E2 – Timber Big Game, the amount of satisfactory cover (2,360 acres) is two percent above the minimum standard of 10 percent. Total cover (satisfactory and marginal combined) in C4 (4,460 acres) is currently 61 percent, and total cover in E2 (10,200 acres) is currently 52 percent. This is above the Forest Plan standard of 30 percent total cover.

Forage

Elk use lower elevation canyon areas on the north and south sides of the project planning area as winter range. The rest of the area is used by elk in the summer, a time of storing reserves for winter and a time for the growth and development of calves. Forage quality for game animals has not been assessed in this area for many years. Although past timber harvest may have provided short-term increases in forage, the amount and quality of forage is largely controlled by the year to year weather (Wisdom et al. 2005).

Livestock compete with big game for forage resources. The project planning area is within Eden Cattle and Horse (C&H) Allotment, for which 339 cow/calf pairs are permitted. Grazing by cattle throughout August, September, and part of October reduces available forage for elk and deer prior to going into the rut. These effects can lead to elk and deer going into breeding and winter seasons with less body fat than necessary to survive or successfully reproduce.

Noxious weed invasions, if left uncontrolled, can drastically reduce the availability of native forage. Several species of noxious weeds are found in Cobbler project planning area, including spotted and diffuse knapweed. Work is ongoing to monitor and control invasive weeds on the district

Roads

Roads have deleterious effects on habitat effectiveness by taking habitat out of production (1 mile = 4 acres of land), reducing the effectiveness of cover, and increasing disturbance to elk and other wildlife. Elk have been found to select habitats preferentially based on increasing distance from open roads (Rowland et al. 2000). Vulnerability and hunting mortality have been found to be higher in forested

stands with greater road densities and less hiding cover (Weber et al. 2000). About 176 miles of road have been built in the Cobbler project planning area, but 111 miles of these roads are now closed.

With existing closures, the open road density is 1.2 miles per square mile in management area E2 and 1.1 miles per square mile in management area C4. These open road density figures are within Forest Plan desired condition of an average of 2 miles per square mile or less Forest-wide (USFS 1990).

Habitat Effectiveness Index

The elk habitat effectiveness index model (HEI) is used to predict the influence of forest management on elk and other big game species. The model uses the distribution of cover and forage areas, cover quality, and road factors to help indicate how effective an area will be in supporting big game (Thomas et al. 1988). It is intended to be a relative measure of habitat, and does not consider many other factors such as topography, forage quality, weather, predation, and hunting.

In management area C4 - Wildlife Habitat (7,300 acres), the HEI value is 60, which meets the Forest Plan standard that a HEI of no less than 60 will be achieved (FP 4-159). In management area E2 - Timber Management and Big Game (19,600 acres), the HEI value is 61, which is above the Forest Plan standard of 45.

ENVIRONMENTAL CONSEQUENCES- ELK HABITAT (Key Issue)

Alternative A – No Action

Direct/Indirect and Cumulative Effects

Many other factors besides cover and roads influence elk numbers, such as weather, predation, and forage nutrition quality on land owned by various entities. In general, little change in elk and deer numbers would be expected with the current hunting strategies set forth by ODFW.

Cover

The amount and distribution of elk cover and forage would not likely change in the short-term (20 years). Over the long-term (beyond 20 years) given current fire suppression policies, stands would continue to develop a multi-story structure, increasing the amount of satisfactory, marginal, and total cover above what is currently present. The development of more hiding and thermal cover would be beneficial to elk since this area is already broken up by past timber harvest. At the same time, without fuel reduction efforts, the likelihood that a large amount of habitat would be consumed by a heavy fuel driven uncharacteristic wildfire would continue to increase.

Forage

Wherever aspen, cottonwood, and mountain mahogany are not at least partially protected, over browsing by cattle and big game species tends to cause these stands to deteriorate, at times to the point they cannot recover. Similarly, grassland in the canyons need to burn occasionally to invigorate plant growth. Continued fire suppression in this area along without controlled burns would cause important forage species to become more decadent and less nutritious or palatable to ungulates.

Roads

Road densities are not expected to change so human disturbance factors should remain static. In most areas there would be little to no disturbance from road use, heavy equipment noise, and other human activity.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)
Elk and deer populations would respond in various ways to potential habitat changes. Many other factors influence numbers, such as weather, predation, and forage nutrition quality on land owned by various entities. In general, little change in elk and deer numbers would be expected with the current hunting strategies set forth by ODFW.

Cover
Existing satisfactory cover would not be entered in management area C4, because levels are already at the minimum Forest Plan standard of 15 percent. In Alternative B, satisfactory cover in management area E2 would be reduced below the desired condition of 15-20 percent, but would be at or above Forest Plan minimum standard of 10 percent. In Alternative C it would remain at the existing 12 percent.

Harvesting in units within wintering areas would not occur during the winter season (December 1 - March 30). Most units in the wintering area would be thinned, except for two units (totaling about 50 acres) with shelterwood and seed tree harvest. Shelterwood/seed tree harvest could increase winter foraging opportunities in the next few years, but security cover during hunting season would be reduced. Both areas are behind gated closures.

Forage
Prescribed burning in canyons and meadows would improve forage quality for big game. Implementation of activities would be spread over multiple years. Upon completion of each prescribed burn area, there would be a mosaic of unburned, lightly burned, moderately burned, and intensely burned patches. As green-up occurs the following spring and summer; new sprouts would be highly palatable and rich in nutrients.

Aspen, cottonwood, and mountain mahogany enhancement would be beneficial to elk. Although elk would be fenced out of some very small areas for a few years, this action is necessary to ensure the future existence of this important habitat.

Amending the Forest Plan would allow management of aspen in the Elk Flats Meadow area, an area used heavily by elk. These stands are deteriorating quickly and are in need of fencing and conifer felling to encourage aspen sprouting and growth. Protection and enhancement of the aspen in this area would ensure the continued existence of a favored browse species.

Roads
Open road densities would remain low and would not change. Some closed roads would be opened temporarily for harvest and fuels activities; however, they would remain closed to the public. The new road to be constructed is short (0.25 miles) and would be closed to the public. Use of closed roads temporarily opened together with treatment activities could cause a short-term disturbance to elk and other wildlife. Motorized vehicles using roads that have been closed for many years would likely cause elk to avoid these areas and expend more energy moving around. The same is true for noise from heavy equipment operating. Since proposed activities would occur gradually over a five to ten year period, activities would be spread out in space and time, and likely the effects of road use would be negligible.

HEI
The HEI model is not sensitive enough to reflect the difference between action alternatives. The HEI value does not change in either management areas C4 or E2 for both alternatives. The value for C4

remains at 60, and the value for E2 remains at 61. HEI values for action alternatives are within Forest Plan standards.

Alternative B

Direct/Indirect Effects - Alternative B

Cover

Harvest treatments proposed in management area E2 would reduce the amount of satisfactory cover by 2 percent. Satisfactory cover would be at the minimum Forest Plan standard of 10 percent.

Total cover in management area C4 would be reduced by 2 percent (135 acres), and total 59 percent, which is above the Forest Plan standard of 30 percent. Total cover in management area E2 would be reduced by 1 percent, and total 51 percent, which is above the Forest Plan standard of 30 percent. The net reduction in satisfactory and marginal canopy cover would be about 335 acres.

Vegetation clearing for approximately 0.20 miles of temporary road would also remove one-half acre of tree cover on the ridge between two thinning units.

Non-commercial thinning is proposed in some units (225 acres). An additional 1,900 acres of non-commercial thinning is proposed outside of harvest units, bringing the total to 2,125 acres. Hiding cover could be reduced on these 2,125 acres, but this is somewhat dependant upon topography and distance to open roads. Since most of the roads are closed, hiding cover is less critical to elk in this area. Hiding cover in non-commercial thinning units would be restored in these stands within 10 years.

Roads

Proposed project activities would use about 90 miles of existing roads, of which about 40 miles have been previously closed. Although this would cause some disturbance to elk and other wildlife, road use activities would be spread out in time and space. Closed roads would not be open to the public during project activities and would remain closed after the project is completed. The temporary road would be decommissioned and vegetation would eventually grow back.

Alternative C

Direct/Indirect Effects - Alternative C

Cover

Effects to big game habitat are similar between action alternatives, but Alternative C retains some specific cover patches that are locally important to elk. By deferring these key cover stands, negative effects on elk distribution would be reduced.

Existing satisfactory cover would not be entered in either management areas C4 or E2. The amount of satisfactory cover would not change. Total cover (marginal and satisfactory) in C4 would be reduced by 1 percent (100 acres), and total 60 percent, which is above the Forest Plan standard of 30 percent. Total cover in E2 would be reduced by 1 percent (235 acres), and total 51 percent, which is above the Forest Plan standard of 30 percent. The net reduction in satisfactory and marginal canopy cover would be about 335 acres.

Non-commercial thinning is proposed in fewer units (40 acres). An additional 1,900 acres of non-commercial thinning is proposed outside of harvest units, bringing the total to 1,940 acres. This would maintain about 185 more acres of hiding cover in the short-term than Alternative B.

Roads

Proposed project activities would involve using about 80 miles of existing road to access harvest units, of which about 30 miles were previously closed. Road use activities would be spread out in time and space. Closed roads would not be open to the public during project activities and would remain closed after the project is completed. No temporary road construction would occur.

The following table shows a comparison of alternatives for elk habitat.

Table 3-52 Comparison of Forest Plan Standards by Alternative for Rocky Mountain Elk.

Indicator of Response by Management Area	Minimum Forest Plan Standard	Alt. A	Alt. B	Alt. C
C4 Percent Satisfactory Cover	15	15	15	15
E2 Percent Satisfactory Cover	10	12	10	12
C4 Percent Total Cover	30	61	59	60
E2 Percent Total Cover	30	52	51	51
C4 Habitat Effectiveness Index (HEI)	60	60	60	60
E2 Habitat Effectiveness Index (HEI)	45	61	61	61

Cumulative Effects (Alternatives B and C)

Cover

Past timber harvest and road construction has occurred throughout the area, which is reflected in the existing condition. Effects from the recent harvest in the adjacent Lower Sheep project planning area was considered in the existing condition. Bear Flat area is especially devoid of security cover. Thinning, shelterwoods, and proposed and ongoing non-commercial thinning would combine to reduce hiding and security cover on about 4,600 acres in Alternative B, and 3,400 acres in Alternative C. This could influence how elk use an area at a localized scale. Hiding cover in non-commercial thinning units would be restored in these stands within 10 years.

Forage

Grazing by cattle throughout August, September, and part of October reduces available forage for elk and deer prior to going into the rut. These effects can lead to elk and deer going into breeding and winter seasons with less body fat than necessary to survive or successfully reproduce. These effects are the same for all alternatives.

The existence of roads and rock pits are the main soil disturbance that leads to establishment of weeds that can reduce forage resources for elk. Domestic livestock can exacerbate weed spread. Other carriers include various wildlife, people and their animal companions, and vehicles. Past efforts to control weed sites have been successful and monitoring and treatments will continue. Controls to reduce or eliminate

potential noxious weed spread via logging operations would be in place. Any new weed sites would be treated manually as coordinated through the forest weed program.

Roads
Ongoing motorized vehicle use, including ATVs, is expected to continue at current levels. Other forest recreation that uses roads includes hunting, hiking, sightseeing, and berry picking.

Cumulatively the effects of proposed activities in combination with other existing and potential future effects are not expected to have lasting negative impacts to Rocky Mountain elk and other big game species.

MANAGEMENT INDICATOR SPECIES (MIS)

Rocky Mountain elk was selected as an indicator species in the Forest Plan to represent general forest habitat and winter ranges for big game. Effects to elk habitat were discussed in the section above.

AFFECTED ENVIRONMENT-AMERICAN MARTEN

American Marten
The American marten was selected as an indicator species in the Forest Plan to represent complex mature and old growth stands. Preferred habitat for the marten consists of high elevation (> 4,000 feet) stands of dense conifer and down wood often associated with streams. The historic population density and distribution of marten is unknown, but they probably occurred in the area in low numbers. Past timber harvest may have removed a significant portion of what was former marten habitat. A marten survey conducted in 2006 established the presence of at least one marten about 5 miles west of the project planning area. Within the Cobbler project planning area, dense, mature conifer habitat near streams is found in small scattered patches.

ENVIRONMENTAL CONSEQUENCES – AMERICAN MARTEN

Alternative A – No Action

Direct/Indirect and Cumulative Effects
Existing marten habitat would remain in its current state in the short-term. Over time, stands in early successional stages would probably develop into complex, mature stands, which would provide more marten habitat. However, continuous fuels accumulation in the area would also cause an increasing likelihood for a large scale uncharacteristic wildfire.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)
Landscape prescribed fire, meadow burning, hardwood fencing, tree planting, non-commercial thinning, building 0.25 miles of road, and an amendment to change the Forest Plan management area at Elk Flats Meadow would have very little or no effect to marten or their habitat.

Alternative B

Direct/Indirect Effects - Alternative B
Approximately 25 acres of marten habitat would be affected by thinning (Unit 38). Buffers on Squaw

Creek would limit harvest to a small area. Large trees (≥ 21 inches DBH) would not be removed, so changes to habitat components important for marten would be minor. Overall modifications to old forest and connectivity throughout the project planning area could make the area less attractive for marten use.

Alternative C

Direct/Indirect Effects - Alternative C

Typical marten habitat would not be directly affected by the proposed activities, and there would be no changes to old forest stands. Changes to connective habitat could have short-term effects if marten are using the area, but to a lesser extent than in Alternative B.

Cumulative Effects (Alternatives B and C)

Past and ongoing projects such as cattle grazing, non-commercial thinning, weed treatments, and recreation activities in combination with proposed projects would have no cumulative effects to marten and their habitat. It is unlikely that marten currently occupy the area due to the small patches of existing habitat.

AFFECTED ENVIRONMENT - MIS ASSOCIATED WITH DEAD WOOD HABITAT

Dead Wood Habitat and DecAID

Dead wood includes standing dead trees or "snags" and down wood or logs. Bird and mammal species rely on dead wood for dens, nests, resting, roosting, and/or feeding on animals and organisms that use dead wood for all or parts of their life cycle. In forest environments, about 93 wildlife species utilize snags and about 86 vertebrate wildlife species are associated with down wood (Rose et al. 2001). Dead wood comes in all sizes (diameters) and goes through a decay process from hard to soft, ultimately ending up on the ground and turning into soil nutrients.

Decayed Wood Advisor (DecAid) by Mellen et al. (2006) was used to compare dead wood availability in the Cobbler area to a reference condition. DecAid is a synthesis of published scientific literature, research data, wildlife databases, forest vegetation databases, and expert judgment and experience. DecAid is not a mathematical model or wildlife/wood-decay simulator, and does not suggest snag retention levels for individual harvest units.

Snag habitat was assessed at the landscape scale using the Current Vegetation Survey (CVS) data collected in the Wenaha and Grande Ronde River watersheds. CVS inventories (Brown 2003) are permanent plots on a 1.7-mile grid that sample the vegetative condition on Forest Service land. Plots within the Cobbler snag analysis area were then compared to CVS snag data in DecAID that was collected from unharvested areas of the Blue Mountains. Although the data from unharvested areas may not accurately reflect "pre-settlement" or "natural" conditions in eastside forests due to years of fire exclusion (Mellen et al. 2006), it is comparable to other estimates of historic dead wood densities (Harrod et al. 1998, Agee 2002, Ohmann and Waddell 2002).

In dry upland forest, the amount of the landscape with 0 snags per acre is very close to reference conditions (Figures 3-5 and 3-6). In both the > 10 inch total and the > 20 inch subset, the area lacking in 0.1 to 4.0 snags per acre is balanced out by an abundance of area with densities greater than 4 snags per acre (Figure 3-6).

For moist upland forest, the disparity between reference and current conditions is greater (Figures 3-7 and 3-8). The amount of the landscape with 0 snags per acre is about double what the reference condition indicates would be there without prior harvest. Another pronounced difference is in the > 20 inch subset (Figure 3-8) for snag densities between 0.1 and 4.0 snags/acre. Five percent of the snag analysis area falls within this condition, while the reference condition shows that 36 percent of the area should have these levels.

In the years since the snag data was collected, activity by Douglas-fir beetle, fir engraver, western pine beetle, balsam wooly adelgid, larch casebearer, and tussock moth has been widespread in the area. Mortality from fir engraver has been the greatest, with scattered patches of mortality occurring over approximately 8,000 acres (Silviculture report). Because of this, snag densities are likely much higher in the moist upland forest than shown by CVS data.

Figure 3-5 Distribution of Snags > 10" DBH in Dry Upland Forest

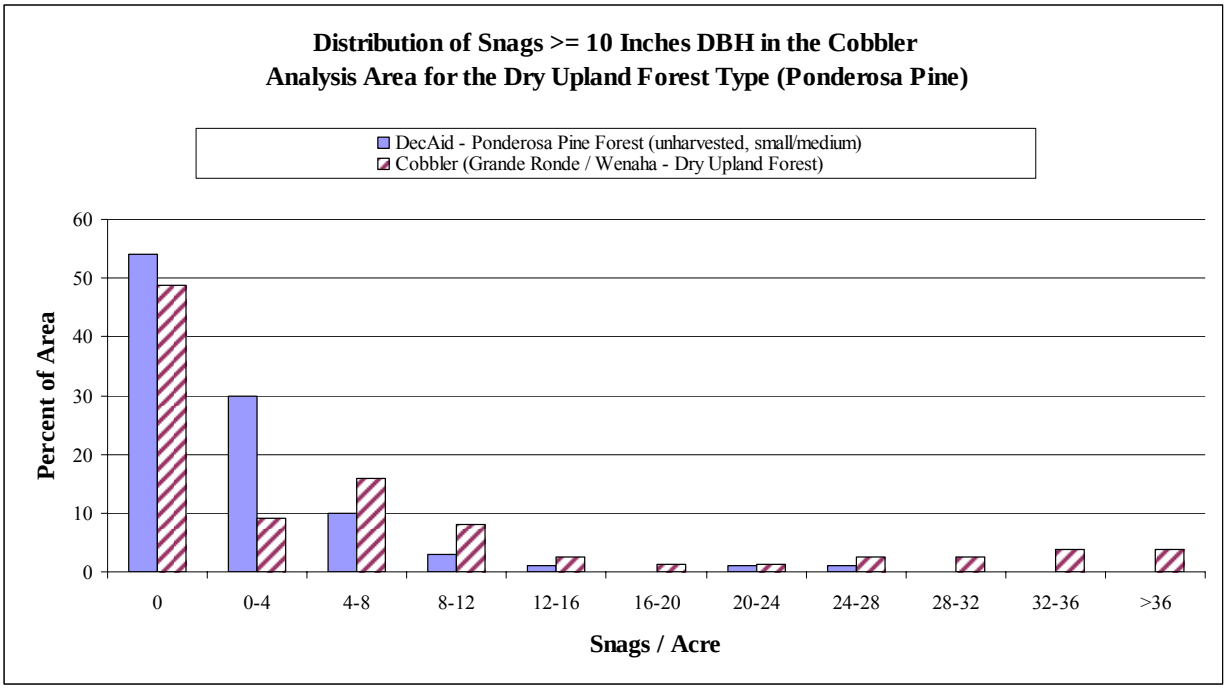


Figure 3-6 Distribution of Snags > 20" DBH in Dry Upland Forest

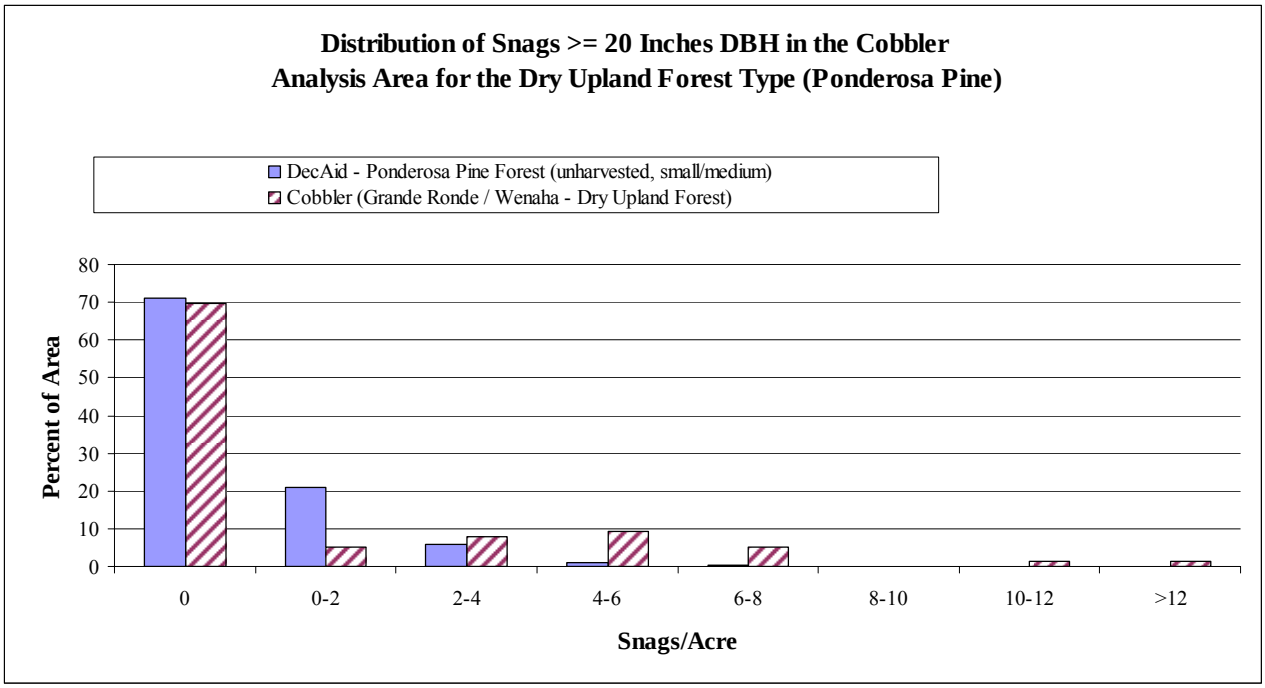


Figure 3-7 Distribution of Snags > 10" DBH in Moist Upland Forest

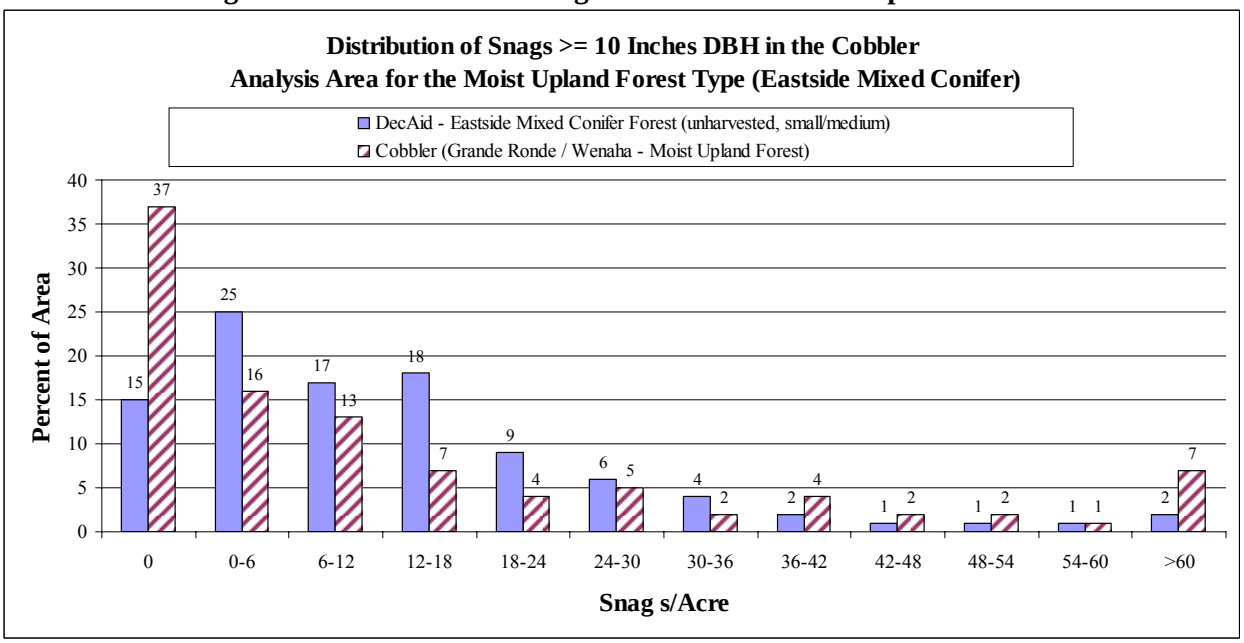
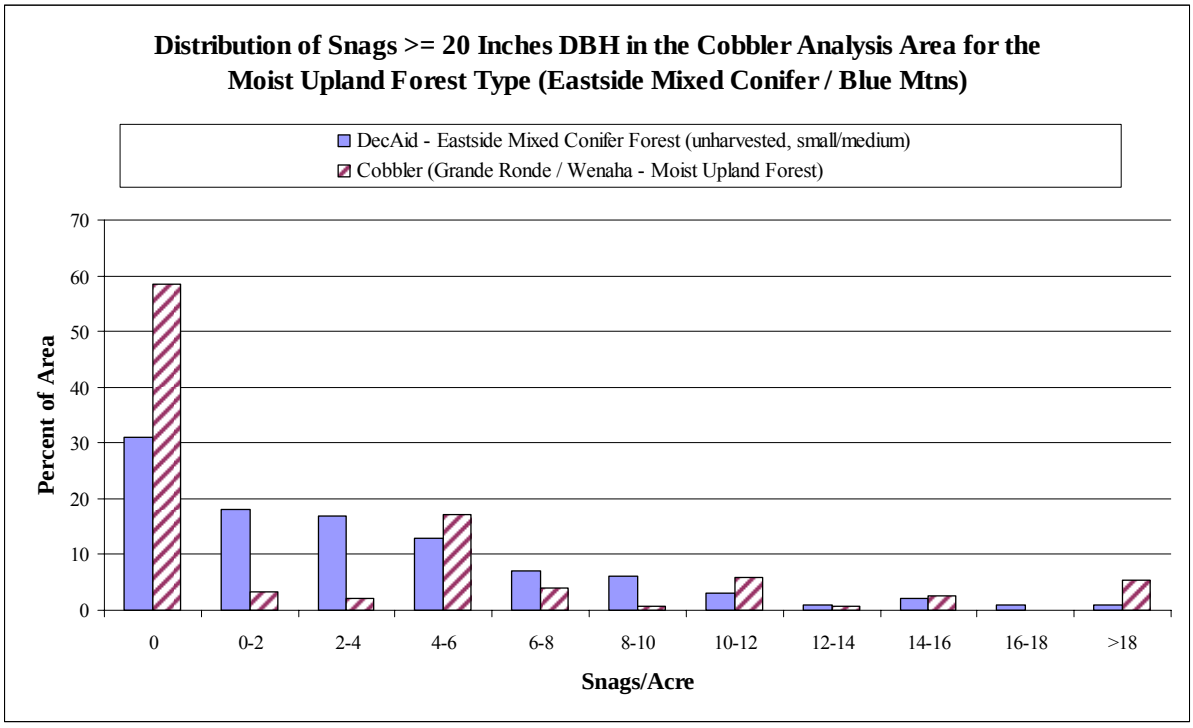


Figure 3-8 Distribution of Snags > 20" DBH in Moist Upland Forest



Northern Three-toed Woodpecker

The northern three-toed woodpecker was selected as an indicator species in the Forest Plan to represent dead and down tree habitat in mature and old growth lodgepole pine stands. They primarily eat the larvae of mountain pine beetles in lodgepole pine. Goggans et al. (1988) indicated that 500 acres of mature/overmature lodgepole pine is needed per pair of birds. There are about 1,500 acres of potential foraging area for three-toed woodpeckers, but reproductive habitat appears limited. Nests are preferentially created in mature trees with heart rot, and most of the lodgepole in this area is in a young forest or stem exclusion structural stage. About 400 acres of lodgepole pine and Engelmann spruce may have larger trees (20-30 inches DBH) for nesting.

Pileated woodpecker

Pileated woodpecker was selected as an indicator species in the Forest Plan to represent dead and down tree habitat in mature and old growth mixed conifer stands. The large holes they create in trees provide nests for many of the larger secondary cavity nesters. Of the woodpeckers, the pileated is the most likely to be affected by timber management practices due to its large size and resultant need for large dead trees for nesting, roosting, and foraging. Approximately 90 percent of the diet of these birds consists of carpenter ants, which are associated with large standing and downed wood. Preferred habitat consists of large blocks of grand fir and mixed conifer stands in multi-story forest with large diameter snags and down wood (Bull and Holthausen 1993). Pileated woodpeckers nested preferentially in ponderosa pine and western larch in a nearby study (Nielsen-Pincus and Garton 2007).

Pileated woodpeckers have been observed in the Cobbler project planning area, but no formal surveys have been done. There are about 15,000 acres of pileated woodpecker habitat, distributed throughout the project planning area, and about 2,000 acres of primary nesting habitat.

Other Primary Cavity Excavators

The primary cavity excavator guild was selected as an indicator species in the Forest Plan to represent a vast array of vertebrate species that depend upon dead standing trees and down logs for reproduction and/or foraging. Primary cavity excavators include 15 bird species that create holes for nesting or roosting in live, dead or decaying trees. Secondary cavity users such as owls, bluebirds, and flying squirrels may use these cavities later for denning, roosting, and nesting.

Habitat for primary cavity excavators includes coniferous and hardwood stands in a variety of structural stages and the availability of dead trees in various size and decay classes (Thomas 1979). Primary habitat generally contains snags greater than 15 inches DBH, while smaller sizes provide secondary habitat.

Primary cavity excavators that may be present include Lewis' woodpecker, white-headed woodpecker, northern flicker, hairy woodpecker, downy woodpecker, Williamson's sapsucker, red-naped sapsucker, black-capped, chestnut, and mountain chickadees, and the red-breasted, white-breasted, and pygmy nuthatches.

There is little habitat available within the project planning area for Lewis' woodpecker, white-headed woodpecker, and pygmy nuthatch. White-headed woodpeckers are most common in extensive stands of mature ponderosa pine. Currently there are about 100 acres of old forest, single story, ponderosa pine forest in the project planning area, and an additional 300 acres of old forest, single story where ponderosa pine is a co-dominant species. Lewis' woodpecker also prefers more open pine, and is attracted to burned old forest, which are also lacking in the project planning area. These species are also discussed in the Threatened, Endangered and Sensitive wildlife section.

Habitat for other primary cavity excavators is variable with most available in areas of light or no management activities, and less in areas of intensive management. Areas with low snag densities are due to past fire prevention, timber salvage, and an inadequate number retained or loss of snags and replacements in previously harvested units. Insect and disease activity, drought, and overstory mortality due to high stand densities have likely created new snags and down wood.

ENVIRONMENTAL CONSEQUENCES - MIS ASSOCIATED WITH DEAD WOOD HABITAT

Alternative A – No Action

Direct/Indirect and Cumulative Effects:

Alternative A would provide the greatest amount of snags and large down wood for cavity dependent species. Additional snags and large down wood would be created as overstory mortality increases and dead trees eventually fall creating new foraging and nesting habitat. Population numbers would likely increase with the additional nesting and foraging habitat. Stands would continue to develop old growth habitat characteristics (large trees, large snags, down wood, multi-story canopy) in the long-term.

Ongoing and potential increases in disease and insect occurrence could improve habitat by creating foraging and nesting habitat (dead wood). There is an increased risk of uncharacteristic wildfire that could reduce nesting habitat for pileated woodpecker, but other woodpecker species would respond positively. The black-backed woodpecker and Lewis' woodpecker would benefit due to their preference

for recently burned stands. Most other woodpeckers would respond to wildfire by shifting their use to adjacent unburned or lightly burned stands.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

Fuels treatments would remove some existing dead and down wood habitat in order to reduce the fuel loading in strategic areas. Danger tree removal would also reduce standing dead trees within units and along haul routes. Harvest may decrease nesting and foraging habitat due to the reduction of dead and down wood habitat. However, most trees and snags greater than or equal to 21 inches DBH would be retained, as well as an adequate number of replacement trees for future snag development.

In order to ensure that activities would not reduce snags on the landscape beyond desired conditions, at least three large snags per acre would be retained in treatment areas (Table 2-6). If large snags are not available, snags between 10 and 19 inches can be substituted. A minimum of 3-6 down logs per acre (in the dry plant association) or 15-20 down logs per acre (in the moist plant association) would be retained to meet Forest Plan standards as amended. Green trees would be retained at the minimum levels identified in project design criteria (Table 2-6), but the majority of stands would exceed this number because most of the proposed harvest involves thinning.

The potential for loss of existing interior habitat to an uncharacteristic wildland fire would be reduced after fuels treatments are completed. In the long-term, this would benefit most cavity excavators. Proposed stand treatments would begin to repair areas affected by fire exclusion and past harvest, ultimately providing more resilient forest that will continue to provide snag habitat into the future.

Prescribed fire can cause high snag losses, especially if there has been a long fire-free period (Bagne et al. 2008). Slash from harvest within units would not be piled against snags to help reduce this effect.

Landscape prescribed burning could provide additional snags if fire creeps into timbered stringers of the canyon. Other projects (non-commercial thinning, tree planting, road work, and meadow burning) would have little effect to snag densities.

The Forest Plan amendment to change Elk Flats Meadow from management area D2 – RNA to A9-Special Interest Area would allow a few dead trees to be cut where they are intermixed with aspen. This would have a small impact because of the high density of snags in that area. Hardwood protection would benefit species such as Williamson's sapsuckers.

Alternative B

Direct/Indirect Effects - Alternative B

Snags would be presumably reduced to varying degrees on 2,500 acres of harvest, or 10 percent of the forested stands in the project planning area. Snags would also be reduced through danger tree removal along approximately 90 miles of roads.

Effects to snags would be relatively minor in dry forest because existing snag levels are close to the reference condition. Within harvest units, snags would be retained at levels required in the Forest Plan.

Harvest and fuels treatments would affect about 1,600 acres of pileated woodpecker habitat. Primary nesting habitat would decrease by 260 acres (13 percent of available nesting habitat) because stands would be opened up by thinning. Although closed canopy forests were not essential for use, pileated

woodpecker nest success was higher in home ranges with larger areas of ≥60 percent canopy closure (Bull et al. 2007).

Thinning and shelterwood type cuts in lodgepole pine would decrease habitat for northern three-toed woodpecker by about 200 acres (13 percent of available habitat). In areas that are mostly lodgepole pine (Seed Tree Cut patches) there would be 12 to 14 residual mature trees per acre left. Larger trees (≥21 inches DBH) in these stands would be removed if infected with dwarf mistletoe.

Habitat for white-headed woodpecker would increase by about 100 acres where dry old forest is thinned. Harvest may decrease nesting and foraging habitat for other cavity excavator species due to the reduction of dead and down wood habitat.

Alternative C

Direct/Indirect Effects - Alternative C

Snags would be presumably reduced to varying degrees on about 1,300 acres of harvest, or 5 percent of the forested stands in the project planning area. Snags would also be reduced through danger tree removal along approximately 80 miles of roads. Within harvest units, snags would be retained at levels required in the Forest Plan.

Primary nesting habitat for pileated woodpecker and white-headed woodpecker would not be affected because no activities are proposed in old forest. Thinning and seed tree type cuts in lodgepole pine would decrease habitat for northern three-toed woodpecker by about 150 acres (10 percent of available habitat). Larger trees (≥21 inches DBH) in these stands would be removed if infected with dwarf mistletoe. In seed tree cut patches which contain mostly lodgepole pine, there would be 12 to 14 residual mature trees per acre left. Harvest may decrease foraging habitat due to the reduction of dead and down wood habitat, but to a lesser degree than Alternative B (about half).

Cumulative Effects (Alternatives B and C)

Ongoing activities such as hardwood restoration would benefit species such as Williamson's sapsuckers. Timber harvest activities in addition to existing recreational use of the area could behaviorally disturb birds to a small degree, but not for extended periods.

Personal firewood collection and roadside danger tree removal would contribute to snag reductions, however the overall effects on snag dependent wildlife would be small because removal typically occurs only within 150 feet of open roads. Other ongoing activities such as non-commercial thinning and weed treatments would have no cumulative effect to dead wood habitat.

AFFECTED ENVIRONMENT- THREATENED, ENDANGERED AND SENSITIVE WILDLIFE SPECIES (TES)

An endangered species is an animal or plant species listed under the Endangered Species Act (ESA) that is in danger of extinction throughout all, or a significant portion, of its range. A threatened species is an animal or plant species listed under the ESA that is likely to become endangered within the foreseeable future throughout all or a significant portion of, its range. A sensitive species is an animal or plant species identified by the Forest Service Regional Forester for which species viability is a concern either a) because of significant current or predicted downward trend in population numbers or density, or b)

because of significant current or predicted downward trends in habitat capability that would reduce a species existing distribution.

The Forest Service, Region 6, sensitive animal list (USFS 2008) and the federal endangered species list were reviewed for species that may be present. Based on District records, surveys, and monitoring, as well as published literature about distribution and habitat utilization, species that might occur in or near the project planning area include: Canada lynx, gray wolf, California wolverine, Townsend's big-eared bat, northern bald eagle, Lewis' woodpecker, white-headed woodpecker, Columbia spotted frog, and inland tailed frog.

The peregrine falcon, upland sandpiper, northern leopard frog, and painted turtle are not expected to occur in the project planning area. These four species and their habitat would not be affected by the proposed activities; therefore, no further discussion is necessary.

AFFECTED ENVIRONMENT - CANADA LYNX (THREATENED)

Cobbler project planning area currently provides about 3,300 acres of suitable foraging and/or denning habitat for Canada lynx. Lynx habitat in this area is primarily subalpine fir habitat types where lodgepole pine is a major seral species, generally between 4,100-6,600 feet in elevation.

Umatilla National Forest is currently considered "unoccupied" by Canada lynx (USFS 2006). Based on the lack of reproduction records, limited verified records of lynx, low frequency of occurrences, and correlations with cyclic highs with populations in Canada, the U.S. Fish and Wildlife Service concluded that lynx could occur in Oregon as dispersers that have never maintained resident populations (USFWS 2003).

ENVIRONMENTAL CONSEQUENCES - CANADA LYNX (THREATENED)

Alternative A – No Action

Direct/Indirect and Cumulative Effects:

There would be no direct effect to individuals if proposed actions were not implemented. The condition of habitat would not change in the short-term. Natural processes over the long-term would typically mean continued growth in vegetation, leading to an increase of lynx foraging and denning habitat.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

No direct effects to Canada lynx are expected to occur because the project does not propose any activities identified as mortality risk factors such as trapping or highway expansions. Implementation of proposed activities should not directly affect Canada lynx. They are not believed to inhabit the area. If a lynx moved into or traveled through the project planning area, human presence, noise, and traffic could cause temporary avoidance of the area. Habitats would not be modified to the point that the project planning area would be rendered uninhabitable.

Non-commercial thinning would not affect suitable habitat. The proposed Forest Plan amendment to change management area allocations would allow aspen protection at Elk Flats Meadow. This would be beneficial to lynx because it would maintain or create habitat for key lynx prey species such as snowshoe hare and grouse.

Alternative B

Direct/Indirect Effects - Alternative B
Suitable lynx habitat would be reduced by 240 acres. Mechanical harvest, low intensity burning, and mastication of slash would remove vegetation and change stand structure in seven harvest units, rendering them unsuitable for lynx and their prey in the short-term. This is a small effect in relation to total lynx habitat in the larger area. Over 3,000 acres of suitable lynx habitat would remain within the project planning area. Since lynx are not known to occupy the area, there would be no effect to the lynx population.

Alternative C

Direct/Indirect Effects - Alternative C
Suitable lynx habitat would be reduced by 85 acres. Mechanical harvest, low intensity burning, and mastication of slash would remove vegetation and change stand structure in two harvest units, rendering them unsuitable for lynx and their prey in the short-term. This is a small effect in relation to total lynx habitat in the larger area. Over 3,200 acres of suitable lynx habitat would remain within the project planning area. Since lynx are not known to occupy the area, there would be no effect to the lynx population.

Cumulative Effects (Alternatives B and C)
Ongoing non-commercial thinning would not occur in suitable lynx habitat. No other past, ongoing, or future foreseeable projects would cause cumulative effects to lynx. Overall, there would be no effect to Canada lynx, because the Blue Mountains are considered 'unoccupied' by resident lynx (USFS 2006), and a small reduction of suitable habitat on the fringe of lynx range is not expected to have any impact on the lynx population.

AFFECTED ENVIRONMENT – GRAY WOLF (ENDANGERED)

The U.S. Fish and Wildlife Service recently removed the gray wolf from the Endangered Species List (USFWS 2008). However, this decision has been enjoined pending further review. Guidance for wolves in Oregon is outlined in the state's Wolf Conservation and Management Plan (ODFW 2005).

Gray wolf is a habitat generalist inhabiting a variety of plant communities typically containing a mix of forested and open areas with a variety of topographic features. Both dens and rendezvous sites are often characterized as having nearby forested cover and being remote from human disturbance.

Wolves have been documented in Cobbler project planning area this past year. A pack may have formed nearby, but not within the project planning area. No denning or rendezvous sites are known within the project planning area. Wolves dispersing from the Idaho population will likely continue to find their way into the Blue Mountains and particularly into the Wenaha-Tucannon Wilderness.

ENVIRONMENTAL CONSEQUENCES – GRAY WOLF (ENDANGERED)

Alternative A – No Action

Direct/Indirect and Cumulative Effects
There would be no direct effect to individuals if proposed actions were not implemented. The number of prey and the condition of habitat would not change in the short-term.

Effects Common to All Action Alternatives

Direct/Indirect and Cumulative Effects (Alternatives B and C)
Proposed activities would have no effect to gray wolf because no denning or rendezvous sites are known within the project planning area. If such areas are identified prior to or during project activities, steps would be taken to limit disturbance. The open road density in the planning area would remain low, and prey species should remain abundant.

AFFECTED ENVIRONMENT-SENSITIVE SPECIES

California wolverine (Sensitive)
Wolverines typically inhabit high elevation conifer forest where sufficient food is available and human activity is low. Denning habitat is usually open rocky talus slopes where snow depths remain over 3 feet into spring. They tend to forage over large areas and travel long distances. The majority of Cobbler project planning area is suitable for wolverine foraging, but no potential denning areas are known. There are no indications that wolverine do more than pass through on a rare occasion.

Townsend's big-eared bat (Sensitive)
The big-eared bat occurs in a wide variety of habitats including coniferous forests (Norwak 1994). Bat occurrence is strongly correlated with the availability of caves or cave-like roosting habitat such as mine adits, and buildings (Perkins and Schommer 1992). These sites are highly sensitive to disturbance and human interference. Individuals or small groups (3-5 individuals) of bats may day roost in hollow and creviced trees and snags for a limited time, but tend to stay within a few miles of colonial roosts (Perkins and Schommer 1992).

This bat species is not known to occur in the project planning area, and no suspected roost habitat has been identified. Potential habitat in the watershed includes out buildings, rocky areas with deep crevices, hollow trees, and snags near water. Suitable habitat would most likely occur along the Grande Ronde River and major tributaries.

Bald eagle (Sensitive)
Bald eagles are occasionally seen along the Grande Ronde and Wenaha Rivers, but no nests are suspected near the project planning area. The nearest known nest is about eight miles south of the Cobbler project planning area, and it has been inactive.

Columbia spotted frog -Great Basin population (Sensitive)
Recent research indicates that Columbia spotted frogs in northeast Oregon are part of the Northern population, which ranges from British Columbia southeast into Washington, northeast Oregon, northern Idaho, and Montana (Funk et al. In press). The Northern population is not considered imperiled, and is not listed as sensitive by the Regional Forester. Since the study did not include frogs from the Umatilla National Forest, we cannot say with 100 percent certainty that no Great Basin frogs occur here. Overlap between the Great Basin and Northern spotted frog populations does occur in southeastern Oregon (Funk et al. In press, Tait 2007).

Spotted frogs may be present in the project planning area in streams, ponds, and marshy areas with abundant aquatic vegetation. Ponds and streams have been checked in a few areas and no spotted frogs have been observed.

Inland tailed frog (Sensitive)
A few records indicate the presence of tailed frogs on the Umatilla National Forest. They inhabit cold water streams and are difficult to spot. There is a good chance that tailed frogs might inhabit some creeks in the project planning area.

White–headed woodpecker (Sensitive)
White-headed woodpeckers have been recently observed just outside of the project planning area. Preferred habitat is open ponderosa pine with large trees and snags. Currently there are about 100 acres of old forest, single story, ponderosa pine forest in the project planning area, and an additional 300 acres of old forest, single story where ponderosa pine is a co-dominant species.

Lewis woodpecker (Sensitive)
Lewis woodpeckers may occur, but there are no records for this part of the District. Lewis woodpeckers tend to use open ponderosa pine forest, open riparian woodland dominated by cottonwood, and burned pine forest (Tobalske 1997). Only small pockets of this type of habitat occur in the Cobbler project planning area (<100 acres).

ENVIRONMENTAL CONSEQUENCES – SENSITIVE SPECIES

Alternative A

Direct/Indirect and Cumulative Effects
There would be no direct effect to individuals of these species if proposed actions were not implemented. The condition of habitats for listed and sensitive wildlife species would not change in the short-term. In the long-term habitat would not change other than through natural processes. Growth in vegetation throughout would eventually result in an increase of foraging and security habitat for species such as wolverine and lynx.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternative B and C)
If any of these species happen to be in the area, the increased traffic, equipment noise, and human presence could cause them to temporarily avoid the area. No long-term effects are expected because habitats would not be modified to the point that the project planning area would be rendered uninhabitable by these species.

Wolverines are not documented in this area, but may pass through undetected and/or stay for short periods. Proposed activities could have short-term effects, but the risk of disturbance to wolverines is considered very low. None of the treatment areas are near wolverine denning habitat. Activities proposed would not alter prey availability or use of the area by wolverine; therefore, this project would not cause a trend toward federal listing and there would be no impact to wolverine.

Proposed activities would not affect caves, buildings, or mine adits that attract big-eared bats. Since there are no historical or recent records of this species in the project planning area, and no nearby roosting sites known, there would be no impact to big-eared bat.

Use of the area by bald eagles is sporadic and roosting and foraging habitat near the river would not be affected by the project. If this species were in the area during project activities, increased human presence and noise could cause it to move elsewhere. The effects would be limited and spread out in time

and space, and it is not likely that eagles would be present. Therefore, there would be no impacts to bald eagle.

Wet areas which may have spotted frog or tailed frogs are generally within Riparian Habitat Conservation Areas, and are not impacted by forest management activities, therefore, there would be no impacts to these species.

Stand thinning may impact white-headed woodpecker and Lewis' woodpecker. Alternative B proposes thinning approximately 100 acres of old forest where ponderosa pine is dominant or co-dominant. Large trees (≥21 inches DBH) would be retained in units. This would immediately create the type of habitat that these woodpeckers are associated with. An additional 225 acres of younger stands dominated by ponderosa pine would be thinned, which would eventually provide more habitat for white-headed woodpecker as remaining trees grow larger. Alternative C does not propose thinning in old forest, therefore no improvements to potential white-headed woodpecker would occur in the short-term. An additional 60 acres of younger stands dominated by ponderosa pine would be thinned, which would eventually provide more habitat for white-headed and Lewis' woodpecker as remaining trees grow larger. Landscape prescribed burning could also increase habitat for Lewis' woodpecker. Fire in the canyon may creep into forested stringers which contain large trees. Since habitat would be increased, and no nesting is currently known, the proposed projects may impact white-headed and Lewis' woodpecker, but will not likely cause a trend toward federal listing.

Cumulative Effects (Alternatives B and C)

Ongoing activities such as public recreation, cattle grazing, and non-commercial thinning would not cause additional, cumulative effects to any TES species. Effects from the recent harvest in the adjacent Lower Sheep project planning area was considered in the existing condition.

See the following table for a summary of biological determinations for TES terrestrial wildlife species.

Table 3-53 Summary of Effects to Threatened, Endangered, and Sensitive Wildlife Species by Alternative

Species	Status	Species Occurrence and Habitat Suitability	Biological Determination		
			Alt. A	Alt. B	Alt. C
Canada lynx *Lynx canadensis*	Threatened	Potential	NE	NE	NE
Gray wolf *Canis lupus*	Endangered	Documented	NE	NE	NE
California Wolverine *Gulo gulo*	Sensitive	Potential	NI	NI	NI
Townsend's big-eared bat *Corynorhinus townsendii*	Sensitive	No Habitat	NI	NI	NI
Bald eagle *Haliaeetus leucocephalus*	Sensitive	Potential	NI	NI	NI
Peregrine falcon *Falco peregrinus*	Sensitive	No Habitat	NI	NI	NI
White-headed woodpecker *Picoides albolarvatus*	Sensitive	Documented	NI	MI	MI

Species	Status	Species Occurrence and Habitat Suitability	Biological Determination		
			Alt. A	Alt. B	Alt. C
Lewis woodpecker *Melanerpes lewis*	Sensitive	Potential	NI	MI	MI
Upland sandpiper *Bartramia longicauda*	Sensitive	No Habitat	NI	NI	NI
Columbia spotted frog *Rana luteiventris*	Sensitive	Potential	NI	NI	NI
Inland tailed frog *Ascaphus montanus*	Sensitive	Potential	NI	NI	NI
Northern leopard frog *Rana pipiens*	Sensitive	No Habitat	NI	NI	NI
Painted turtle *Chrysemys picta*	Sensitive	No Habitat	NI	NI	NI

NE No effect on a proposed or listed species or critical habitat.
NI No Impact to R6 sensitive species individuals, populations, or their habitat.
MI May impact sensitive species, but will not likely cause a trend toward federal listing.

AFFECTED ENVIRONMENT-NORTHERN GOSHAWK

Past timber harvest has fragmented dense coniferous forest in the project planning area and reduced the amount of goshawk nesting habitat. No goshawk nest sites are known in the project planning area, although it is possible that some exist. Goshawk surveys are ongoing. The Forest Plan, as amended by the "Eastside Screens" provides protections for goshawk nesting territories. If active nests are found at any time, they would be protected in accordance with the amendment's guidelines.

Important goshawk habitat components include large diameter live trees, large diameter snags and logs, multiple canopy layers, and contiguous forested habitat with low fragmentation. Nesting sites typically consist of a dense cluster of large trees, surrounded by a similar forest type with a more open overstory. Foraging habitat consists of a variety of structural stages with structural complexity and high canopy closure in general.

ENVIRONMENTAL CONSEQUENCES – NORTHERN GOSHAWK

Alternative A – No Action

Direct/Indirect and Cumulative Effects:
No changes in existing habitat would occur. If nesting territories exist in the project planning area, habitat quality and levels of disturbance to nesting birds would remain the same. Over time, some stands would develop into nesting habitat for goshawk, but foraging areas with open understory would decline.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)
Landscape prescribed fire, meadow burning, tree planting, non-commercial thinning, and road building would have very little or no effect to northern goshawk or their habitat. Amending the Forest Plan would allow management of aspen in the Elk Flats Meadow area. Protection and enhancement of the aspen in this area would increase habitat for goshawk prey species.

Alternative B

Direct/Indirect Effects - Alternative B
The distribution of goshawk nesting and foraging habitat would change. Thinning about 485 acres of old forest habitat would open-up mature, closed canopy stands. Since all trees ≥ 21 inches DBH would be retained in the stand, these areas could remain suitable if clusters of large trees remain.

Proposed silviculture treatments would reduce canopy closure and structural complexity on about 2,000 acres outside of old forest. This could affect goshawk prey species and reduce goshawk nest success. Since nesting by goshawk in the area is unknown at this time, the degree of effect is unknown.

Alternative C

Direct/Indirect Effects - Alternative C
Harvest and fuels reduction would not likely affect nesting habitat for northern goshawk, since no old forest would be treated. Harvesting in all stands includes retention of all trees ≥ 21 inches DBH, which would preserve future nesting trees.

Proposed silviculture treatments would reduce canopy closure and structural complexity on about 1,270 acres outside of old forest. Effects to goshawk foraging habitat and prey species would be less than Alternative B. Since the number of goshawk in the area is unknown at this time, the degree of effect is unknown, but it would be less than Alternative B.

Cumulative Effects (Alternatives B and C)
Past and ongoing projects such as cattle grazing, non-commercial thinning, and recreation activities in combination with proposed projects would not cause cumulative effects to northern goshawk. If active nests are found at any time, they would be protected in accordance with the Forest Plan as amended by the Eastside Screens.

AFFECTED ENVIRONMENT-LANDBIRDS

Neotropical migratory birds are those that breed in the U.S. and winter south of the border in Central and South America. Continental and local declines in population trends for migratory and resident landbirds have developed into an international concern. Roughly one half of all birds occurring on the forest are Neotropical migrants. Many of these species are associated with old forest, riparian areas, or unique features such as aspen, shrubs, and meadows.

Partners in Flight (PIF) led an effort to complete a series of Bird Conservation Plans for the entire continental United States to address declining population trends in migratory landbirds. These plans are

used to address the requirements contained in Executive Order (EO) 13186 (January 10, 2001), *Responsibilities of Federal Agencies to Protect Migratory Birds*.

The Conservation Strategy for Landbirds in the Northern Rocky Mountains of Eastern Oregon and Washington (Altman 2000) identifies the following priority habitat types: Dry Forest, Late Successional Mesic Mixed Conifer, Riparian Woodland and Shrub, and several "unique" habitats.

Dry Forest Habitat

The dry forest habitat type includes coniferous forest composed exclusively of ponderosa pine, or dry stands co-dominated by ponderosa pine and Douglas-fir or grand fir (Altman 2000). Bird species associated with dry forest have shown the greatest population declines and range retractions in the northern Rocky Mountain province (Altman 2000). In particular, bird species highly associated with snags and old-forest conditions have declined. These species include white-headed woodpecker, flammulated owl, white-breasted nuthatch, pygmy nuthatch, Williamson's sapsucker, and Lewis' woodpecker.

Old forest, single-story ponderosa pine habitat has declined by 96 percent in the Blue Mountains Ecological Reporting Units (ERUs) of the Interior Columbia Basin, mainly a result of timber harvest and fire suppression (Wisdom et al. 2000). Habitat restoration is the primary strategy for conservation of landbirds associated with this habitat type.

Currently there are about 100 acres of old forest, single story, ponderosa pine forest in the project planning area, and an additional 300 acres of old forest, single story where ponderosa pine is a co-dominant species.

Habitat for white-headed woodpecker, flammulated owl, and Lewis' woodpecker is currently very limited in the project planning area.

Mesic Mixed Conifer Habitat

Mesic mixed conifer habitats are primarily cool Douglas-fir, grand fir sites and larch sites. The desired condition is a multi-layered old forest with a diversity of structural elements. Conservation focal species and habitat conditions include: Vaux's swift for large snags; Townsend's warbler for overstory canopy closure, varied thrush for structural diversity and multiple layers; MacGillivray's warbler for a dense shrub layer in forest openings or understory; and olive-sided flycatcher for edges and openings created by fire.

There are about 5,000 acres of mesic mixed conifer habitat in a multi layered condition in the project planning area. Dense shrub layers occur in patches. Edges and openings created by fire are lacking.

Riparian Woodland and Shrub Habitat

Riparian vegetation is particularly important to Neotropical migratory songbirds (Sallabanks et al. 2001:217). This habitat type includes riparian communities dominated by shrubs (willow, alder, etc.) that occur along bodies of water or in association with wet meadows and wetlands (Altman 2000). The desired condition is a structurally diverse vegetative community of native species that occur in natural patterns relative to hydrological influences. Focal species and habitat conditions include: Lewis' woodpecker for large snags; red-eyed vireo for canopy foliage and structure; veery for understory foliage and structure; and willow flycatcher for willow/alder shrub patches.

In general, the project planning area contains the riparian shrub habitat criteria described above. Along streams and creeks in the project planning area, shrub cover occurs in scattered clumps. Wet areas such as seeps, bogs, and springs also provide small patches of riparian habitat. Willow, alder, mountain maple, and hawthorn are common. Willow flycatchers have been observed near the project planning area. Red-eyed vireo may use the scattered cottonwood trees in the area.

Subalpine Forest

This habitat type is the coolest and wettest forest zone, dominated by subalpine fir, Engelmann spruce, lodgepole pine, and huckleberry. Important features of the subalpine forest are a multi-layered structure and dense understory of shrubs (Altman 2000), and the focal species is the hermit thrush.

Subalpine forest habitat coincides with the cold upland forest potential vegetation group. There are only 137 acres of this forest type in the project planning area.

Montane Meadow

This habitat type includes wet and dry meadows dominated by herbaceous vegetation and grass at moderate and high elevations. These meadows are generally associated with streams and springs. The upland sandpiper is the focal species, but is not known to occur in the project planning area. Other species that benefit from conservation of this habitat are sandhill crane, long-billed curlew, Wilson's phalarope, common snipe, and savanna sparrow. Most meadows in the project planning area (for example, the ones slated for burning) are essentially dry. There are no wet meadows of substantial size except for Elk Flats Meadow Meadow and Round Meadow which are seasonally wet.

Steppe-Shrubland

Steppe-shrublands occur in a wide range of habitat types, including grassland, sagebrush, montane meadows, fallow fields, juniper-steppe, and dry open woodlands and openings in forested habitats (Altman 2000). Habitat criteria (objectives) for the steppe-shrubland habitat type include maintaining a mosaic of steppe and shrubland habitats with < 10 percent tree cover. Associated bird species include vesper sparrow, lark sparrow, Brewer's sparrow, and long-billed curlew.

There are at least 4,000 acres of steppe-shrublands in the project planning area, with the majority in the canyon slopes above Bear and Alder Creeks and the Grande Ronde River. Lark sparrows have been observed near Alder Creek.

Aspen

Associated bird species include the red-naped sapsucker, Williamson sapsucker, tree swallow, northern pygmy owl, western screech owl, and others. Aspen stands have declined throughout the Blue Mountains, due to a combination of factors including fire suppression, competition with invading shade-tolerant species, overgrazing (livestock and wild ungulates), and drought have contributed to their decline.

Aspen stands are present, but most are small in size (less than 1 acre), spatially discontinuous, and have a deteriorating overstory. There are at least 15 individual stands in the project planning area. The largest stands are located at Elk Flats Meadow. In other areas, single trees or very small clumps are all that remain of historical clones. Several stands have been fenced to protect young aspen sprouts from grazing ungulates. Restoration of aspen habitats is important, but is often hindered by a lack of funding.

ENVIRONMENTAL CONSEQUENCES - LANDBIRDS

Alternative A – No Action

Direct/Indirect and Cumulative Effects

The current condition of habitats for landbirds in the project planning area would not change in the short-term. Bird species that rely on multiple tree layers and high canopy closure would likely remain static. Dry forest could continue to fill in with fir due to continued fire suppression, which could further reduce open, single-story, old forest habitat. Insect and disease damage would continue to affect tree species compositions. Aspen habitat would continue to decline. Snags would likely increase in number, benefiting many snag associated species.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

Amending the Forest Plan would allow management of aspen in the Elk Flats Meadow area. These stands are deteriorating quickly and are in need of fencing and conifer felling to encourage aspen sprouting and growth. Protection and enhancement of the aspen in this area would insure the continued existence of an important habitat for many bird species.

Reduction of crown and ladder fuels would reduce habitat for some birds, but it would also reduce the chances that a large scale uncharacteristic wildfire would eliminate large areas of forest habitat. Timber harvest in the area would improve stand health and resiliency by reducing overstocking, disease, and fuels, and subsequently restore a diversity of tree species. Retention of most trees $\geq$ 21 inches DBH would reduce the extent of effects to most birds of concern.

Landscape prescribed fire and post-harvest fuels treatments (mastication, underburning, etc) would remove some shrubs, grasses, and seedlings from the understory, temporarily reducing cover and decreasing foraging habitat for some birds. If activities occur during springtime, ground nesting birds could be temporarily disrupted.

Some existing snag habitat would decrease within harvest and fuels reduction units, and removal of danger trees also along haul routes. Snags would be left in units at levels identified in the design features and management requirements outlined in Table 2-6. Additional trees would likely die as a result of broadcast burning in some areas after harvest and thus bolster the number of snags.

Road building constitutes a removal of habitat, be it forested, shrub, grass or lithosol. It also creates a situation in which nearby snags become a danger to people using the roads and must be removed. Proposed new road construction is only 0.25 miles occurring in a previously impacted area. A minor amount of bird habitat would be affected.

Non-commercial thinning outside of harvest units would have little to no effects to landbirds of conservation concern. This small tree thinning would eventually lead to larger diameter trees and provide future habitat for birds associated with older forests.

Alternative B

Direct/Indirect Effects - Alternative B
Timber harvest and fuels reduction treatments would reduce canopy closure and structural complexity on approximately 2,500 acres, but the amount of old forest in the area would remain within the historical range of variability. Harvest is proposed in about 485 acres in old forest multi story (OFMS) and in 300 acres of old forest connective habitat

Harvest would not cause reductions in the overall amount of old forest. Rather, OFMS would be converted to old forest single story (OFSS). This represents a positive effect for some bird species and a negative effect for others. Species that may benefit from a conversion of OFMS to OFSS include pygmy nuthatches, flammulated owl, and white-headed woodpecker. Thinning 120 acres in dry upland forest would slightly increase the amount of OFSS, which is deficient in the area.

Regeneration type harvest of about 300 acres would reduce understory and closed canopy habitat for birds such as the hermit thrush and varied thrush. These areas are primarily lodgepole pine and other stands with heavy disease and mortality. Harvest treatments to remove diseased trees and replace them with more resilient species would eventually lead to more and better bird habitat.

Alternative C

Direct/Indirect Effects - Alternative C
No timber harvest would occur in old forest stands. Since no OFMS would be converted to OFSS, the amount of OFSS in dry forest would remain well below the historical range of variability. Species that use more open old forest would have limited habitat available. Fuels would continue to build in these areas where fir is encroaching into dry stands, increasing the likelihood of a large-scale habitat loss if a wildfire occurs.

Effects to bird species that show a preference for higher canopy closure and generally more complex stands would be about 50 percent less than in Alternative B. In the long-term these stands would be healthier and able to grow into old forest structure sooner than if not thinned. About 225 acres of thinning in younger stands of dry upland forest would accelerate growth towards the OFSS condition.

This alternative leaves more closed canopy cover in the project planning area in the short-term as compared to Alternative B.

Cumulative Effects (Alternatives B and C)
Ongoing activities such as cattle grazing and recreational uses have little cumulative effect on birds of concern in this area due to the limited duration, intensity, and location of activities.

FINDING OF CONSISTENCY

All alternatives would be consistent with Forest Plan standards and guidelines, because they would meet design criteria set for the project, meet standards and guidelines for affected land management allocations, and provide for viable populations of wildlife species. All alternatives would provide for diversity of plant and animal communities in the project planning area, based on the suitability and capability of the project planning area.

A biological evaluation (BE) was completed for federally listed and proposed endangered and threatened species, and for animal species currently listed as sensitive on the Regional Forester's Sensitive Species List. Determinations were made that none of the proposed project activities would adversely affect, contribute to a trend toward federal listing, nor cause a loss of viability to the listed animal populations or species. All action alternatives would be consistent with management regulations for the gray wolf because no denning areas or rendezvous sites would be disturbed.

With regards to threatened and endangered species, a determination has been made that the proposed actions will not result in irreversible or irretrievable commitment of resources that foreclose formulation or implementation of reasonable or prudent alternatives. Consultation for Canada lynx is not necessary since a determination has been made that the proposed activities will have no effect to this species.

All action alternatives are consistent with the 1918 Migratory Bird Treaty Act (MBTA) and the Migratory Bird Executive Order 13186. The Conservation Strategy for Landbirds (Altman 2000) was reviewed for effects disclosures. Design features such as retention of adequate snags and down logs, retention of live trees, and avoidance of riparian areas proposed in this project would minimize take of migratory birds and meet the intent of current management direction (Table 2-6).

Both action alternatives meet the intent of the Facilitation of Hunting Heritage and Wildlife Conservation Executive Order, specifically by proposing enhancements to elk winter range and bighorn sheep habitat, and by maintaining and restoring aspen habitat.

RANGE

SCALE OF ANALYSIS

Scale of analysis will be boundaries of the Eden Cattle and Horse (C&H) Allotment and Cobbler project planning area (approximately 34,000 acres).

Indicators for comparison purposes between alternatives are:

- Forage response
- Permittee access and livestock distribution.

AFFECTED ENVIRONMENT

There are two grazing allotments within the project planning area; Eden C&H Allotments and North End Transitory Sheep & Goat (S&G) Allotment. Eden Allotment contains approximately 23,200 acres in the planning area and North End Allotment contains 125 acres. North End Allotment has not been stocked since 2001 by choice of the permittee and no project activity is proposed within the allotment area, therefore, it will not be discussed for environmental effects analysis.

The Eden Allotment is permitted for approximately 1,894 animal unit months (AUMs). The allotment is for a cattle (cow/calf) permit for a total of 339 pair; 239 pair grazing annually from June 1 to October 20 and 100 pair graze from July 16 to October 20. There are two permit holders. Range improvements consist of approximately 8 miles of fence, 46 stock ponds, 10 water developments and 1 corral within the project area.

Eden allotment is divided into three pastures; Mosier, Hoodoo, and Elbow. The Mosier pasture is grazed annually while the Hoodoo and Elbow units are on a rest rotation grazing system where one pasture is deferred and given complete rest for one year while the other is grazed.

ENVIRONMENTAL CONSEQUENCES

Alternative A – No Action

Direct and Indirect Effects – Alternative A

Forage Response

In the short-term, forage would stay the same but in the long-term forage would decrease due to reduction of sunlight on the forest floor which would reduce forest floor vegetation.

Permittee Access and Livestock Distribution

Over time (5-15 years), as snags fall and material accumulates on the ground, implementation of this alternative would result in disrupting livestock distribution and grazing patterns. Areas that are currently open to authorized watering locations or herding access to grazing areas would be restricted.

Cumulative Effects – Alternative A

Over time snags and down material would begin to form the basis of closing-in on the growing space and delivering more shade to open ground resulting in a reduced growing space. In addition, because trees and dead stems would not be removed or thinned out, accumulations may create barriers that would physically effect grazing patterns and possibly access to previously utilized areas or infrastructure.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternative B and C)

Forage Response

Both action alternatives propose removing various amounts of trees and prescribed fuels treatments. Regeneration harvest in both alternatives would create transitory forage (340 acres in Alternative B and 300 acres in Alternative C). There would be grass and forb cover for only a short time in stands where natural regeneration of lodgepine occurs. Regeneration units on mixed conifer sites would provide increased forage until the crowns of new stands close, which may take 15-30 years. Thinnings would have little effect on forage availability. The direct effects of removing overstory would be a reduction in shade and a corresponding increase in the intensity of direct sunlight reaching the forest understory. There would also be a reduction in the amount of debris that would ultimately accumulate on the forest floor, contributing to further increase in vegetative understory productivity. The direct effect from prescribed fuel treatments could improve forage for livestock and create better management of pastures within the allotment.

The indirect effect of increased plant productivity is an increase in forage and browse that is available for grazing by permitted livestock. Forage would be more readily available over a longer time period as timber harvest would reduce the number of snags that fall and accumulate on the ground over time. The identified management treatments would also improve the distribution, access and management of livestock in the project area making it easier for permittees to locate and move livestock.

The following tables list the acreage for each pasture and acres involved for each alternative.

Table 3-54 Acreages for Each Pasture by Alternative

Pasture	Acres Alternative B	Acres Alternative C	Total Pasture Acres
Mosier	2,430	1,100	25,440
Hoodoo	600	430	10,970
Elbow	4	4	4,700

Permittee Access and Livestock Distribution

Both action alternatives would have no effect on permittee access to the Eden C&H Allotment. All action alternatives would re-close roads that would be opened for implementation of project activities. Many roads currently existing within the allotment (including some closed roads) provide permittee access. While project activities are occurring there may be very minor disruptions in accessing authorized grazing areas due to machinery or safety reasons. New road construction (0.25 miles) and temporary road construction (0.20 miles) and subsequent decommissioning would have no effect on permittee access and livestock distribution.

The effect of hardwood restoration on the grazing allotment is common to all action alternatives. Restoration would have a minimal effect on livestock distribution for the allotment. Permittees would be made aware of current restoration efforts through the annual operating plan and as added protection would place salting grounds away from areas of hardwood restoration and would encourage riders to move livestock into adjacent areas.

Mechanical removal of trees in some areas would result in the reduction in the abundance of down material, which would otherwise present physical barriers to livestock travel and result in poor livestock distribution and forage utilization.

The 8,000 acres of landscape prescribed fire would not have an adverse effect on the range program due to the scheduling of burning with the grazing schedule. Fire units would be burned in stages, breaking up the larger 8,000 acreage into smaller prescribed fire units over a ten to fifteen year period.

Meadow restoration of 275 acres, which includes removal of 6 inch or less in diameter trees and followed by prescribed fire, is scheduled to occur over multiple years and may require an electric fence to keep cattle out so enough grass is retained to carry the fire. This activity would not have a direct effect on the grazing program because of the timing of the burning with the grazing schedule. Most prescribed burning occurs prior to cattle grazing or after cattle are removed. A direct effect would be an increase in available forage.

The proposed buck and pole fence (lodgepole pine) around many isolated patches of aspen stands would not have an effect on the grazing allotment. There are a total of 62 acres that need protection to restore stand vigor over 23 sites. No water sources, such as ponds, would be restricted from future cattle watering.

The proposed action of danger tree removal along Forest Service roads would have no direct or indirect effect on cattle grazing in Eden Allotment. The amount of material removed and type would not effect grazing movement or forage production.

No direct or indirect effects to cattle grazing would occur from non-commercial thinning activities or implementation of the proposed Forest Plan amendment to change management area allocations of Elk Flats Meadow from a D2-Research Natural Area to A9-Special Interest Area.

Cumulative Effects (Alternatives B and C)

The cumulative effect of all action alternatives within Eden C&H Allotment would be an increase in forage and browse available for grazing by permitted livestock over a much longer time than the No Action alternative.

FINDING OF CONSISTENCY

Alternative A would be consistent with Forest Plan objectives to manage the range resource to maintain and improve vegetative conditions compatible with protecting and maintaining use of the Eden C&H Allotment. Over time, this trend would reverse itself as dead and dying trees would not be removed and current areas that are grazed would eventually be covered with downed material and become unavailable.

All action alternatives would be consistent with Forest Plan objectives to manage grazing resources to maintain and improve vegetative conditions compatible with protecting and maintaining use of the Eden C&H Allotment.

TRANSPORTATION SYSTEM

SCALE OF ANALYSIS

The scale of analysis is the project planning area.

Indicators for comparison purposes between alternatives are:

- Miles of new road construction
- Changes to District Motorized Access Travel Management Plan

AFFECTED ENVIRONMENT

The project planning area is accessed via Forest Road 6200 from Wallowa County Road 571 in the east and from FR 6300 in Lookingglass Creek in the west. There are 176.3 miles of roads in the project planning area. The Walla Walla District Motorized Access and Travel Management Plan designates 63.8 miles as open, 1.5 miles as seasonally open, and 111 miles as closed. Open roads are available and maintained for passenger vehicles; other roads would require high clearance vehicles.

There are 44.2 miles of native surface roads of which 0.6 miles are open, and 117 miles of aggregate surface roads. Approximately 111 miles are maintenance level 1[2]; 27.7 miles are maintenance level 2[3]; 18.7 miles are maintenance level 3[4]; and 18.9 miles are maintenance level 4[5]. Yearly maintenance occurs on level 4 roads. Many of the maintenance level 1 roads have not been used for many years and need log out, brushing, surface rock replacement, installation of cross drains, and ditches cleaned.

[2] Level 1 – closed more than one year.
[3] Level 2 – high-clearance vehicles.
[4] Level 3 – passenger vehicles-surface not smooth.
[5] Level 4 – passenger vehicles – smooth surface.

Total road density (open and closed roads) for the planning area is 3.4 miles per square mile with an open road density of 1.2 miles per square mile. Total road density for management area C4 is 3.8 miles per square mile with an open road density of 1.1 miles per square mile. The total road density of management area E2 is 3.8 miles per square mile with an open road density of 1.2 miles per square mile.

ENVIRONMENTAL CONSEQUENCES

Alternative A - No Action

Direct and Indirect Effects – Alternative A

Existing problems and degrading road conditions would continue to impact water quality. Base material would move to the surface, increasing the suspension and transport of fine sediment off the road. Surface blading would become more difficult resulting in improper drainage and rutting of the road surface. Road maintenance on closed roads, spot reconstruction, and surface rock replacement would not occur. These improvements are needed for drainage improvements, prevention of future damage, and public safety. Drainage related problems would not be corrected until an event occurs that causes a failure with associated resource damage, particularly to water quality. Damage is often discovered a month or more after the event. The cost for repairs is often higher than maintenance because more extensive repairs are needed. Public safety risks are associated with narrowing of the road and possible debris flows. The lack of maintenance and reconstruction increases the risk for detrimental damage to resources.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

Public safety would be improved by surface rock replacement, surface blading, and brushing of encroaching vegetation. The addition of surface rock would harden the road surface and allow it to weather better and reduce rutting and sediment movement. Sight distances would be improved by brush removal.

Impacts to water quality would be reduced by maintenance projects (see Hydrology section of this Chapter). Hardening the road surface or resurfacing the road reduces sediment yields. Research by Burroughs and King 1989 indicated four inches of 1.5 minus gravel can reduce sediment production by 79 percent compared with native surface. Construction of drainage dips or waterbars on closed road systems shortens the distance water moves along roads spreading drainage water over shorter distances and allowing overland flow to be filtered or absorbed into the soil. The proposed repairs or surface changes are needed to avoid the high cost of major repairs from road failures while providing a safe road for public and commercial travel. Proposed road maintenance would also improve drainage. When hauling is completed, the roads would be self-draining with additional cross drains. Replacement of surface rock and improved drainage reduces maintenance costs and potential sediment production from these non-point source sites.

The approximately 0.25 miles of new road would only slightly change road densities (increase of less than 0.01 miles per square mile) in the planning area. The proposed new road would be located behind a closed gate; FR 6200270 and would become a closed system road. There would be no measurable change in Forest-wide open road density and would not affect any component of aquatic habitat (see Fishers section of this Chapter). There are no changes proposed to the District's Motorized Access Travel Management Plan. Temporary road construction of 0.20 miles proposed in Alternative B would be decommissioned after project activity use.

Cumulative Effects (Alternatives B and C)
Timber harvest, log haul, and danger tree removal would have a short-term impact to recreationists in the project planning area. Closed roads utilized by the timber sale would remain closed to public use while the timber sale is operating and remain closed after project use. Open roads used as haul routes in the analysis area would have advisory signs alerting public traffic to log haul and associated activities. Traffic use associated with the Eden C& H allotment is minimal.

FINDING OF CONSISTENCY

All alternatives would be consistent with Forest Plan standards and guidelines for transportation (FP p. 4-11 and pp. 4-85 and 86) and Umatilla National Forest's 2004 roads analysis.

RECREATION

SCALE OF ANALYSIS
The scale of analysis is the entire project planning area.

Indicators for comparison purposes between alternatives are:
- Recreational access and use
- Dispersed hunter campsite use

AFFECTED ENVIRONMENT

Developed Recreation
There are no developed recreation sites in the planning area that are designated as Forest Plan management area A6. There are, however, three recreation sites in the project planning area that have some level of development. These three sites (Elk Flat, Cross Canyon, and Hoodoo) are all trailheads that provide access into the Wenaha-Tucannon Wilderness. Of these, only Elk Flat has any significant development (vault toilet, hitch rail, and parking area).

There is an old abandoned developed campground at Bear Creek. The Bear Creek site has not been maintained as a developed site since the early 1980's and there are no plans to resurrect this site. The only improvement still at the site is the remnants of a vault toilet. The primary use of the Bear Creek site is during hunting season.

Disbursed Recreation
The primary recreation use in the project planning area is disbursed recreation. Recreation use is mainly big game hunting and white water rafting on the Grande Ronde River. Approximately 2,200 people raft the Grande Ronde River through Umatilla National Forest each year.

Camping at primitive campsites is also a component of these activities. River rafters typically camp on flat areas close to the edge of the river. Hunter camps are typically located in small natural or manmade openings along open roads. There are approximately 69 inventoried campsites in the planning area. The disbursed campsites have been inventoried and are included on a GIS layer and can be mapped.

The Forest Plan provides direction for managing dispersed campsites (hunter camps) and requires that campsites be inventoried, evaluated, and managed. Project planning will protect established occupancy

spots (hunter camps). Sites will be rendered unusable only when not in public demand, or for a higher priority use. Occupancy sites and their surrounding area are to be managed to at least partial retention visual quality (FP p. 4-49).

Winter Recreation

Forest roads (FR) 6413 and 6415 are parts of the groomed snowmobile trail system. Roads are groomed annually from December 1 to March 31. Wheeled vehicles are prohibited by code of federal regulation (CFR) from FRs 6413 and 6415 annually from December 1 through March 31. Forest road 6200 from the junction with FR 6413 east to the Forest boundary is considered a primitive marked snowmobile trail. Forest road 6200 may be groomed intermittently in support of group snowmobile events that ride to Troy, Oregon.

Trails

There are no developed horse/hiker/motorized trails within the Cobbler project planning area, except for trails leading from Elk Flat, Cross Canyon, and Hoodoo trailheads into the Wenaha-Tucannon Wilderness.

ENVIRONMENTAL CONSEQUENCES

Alternative A – No Action

Direct/Indirect and Cumulative Effects

If Alternative A were implemented there would be no change from existing recreation activities that currently take place. There would be no effect on use levels at the trailheads. Dispersed recreation and the associated camping in dispersed sites would not be impacted by project activities.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

Dispersed campsites may experience short-term impacts during hunting season, which is the primary period of use, from timber harvest if campsites are located in a treatment unit. Some adjacent campsites would experience an increase in dust and noise during harvest and thinning activities, and by an increase of traffic along haul routes. Some recreationists could be displaced from their campsite, but the effects would be limited to a small number of sites at one time, and would cease as soon as treatment of a unit was completed (generally one to two weeks as work is occurring).

Smoke from activity and natural fuel treatments could affect some dispersed campsites and trailheads. Hunters using the area in late fall would most likely be affected. Hunters may be displaced from their favorite camping site for one season during a prescribed burning window of time.

There would also be a short-term disruption of access to certain portions of the project planning area while logging and fuels treatments are being conducted. These disruptions would be temporary in nature and would only last for the duration of the activity. There would be minimal or no effects to recreation activities from non-commercial thinning, hardwood restoration, meadow restoration, or implementation of the Forest Plan amendment to change management area allocation of Elk Flats Meadow from D2-Research Natural Area to A9-Special Interest Area.

In both action alternatives, activities associated with commercial harvest, danger tree removal, fuels treatments, and prescribed burning would present safety issues to the public. Implementation of design features identified for public safety in Table 2-6 would mitigate any potential effects.

Cumulative Effects (Alternatives B and C)
No cumulative effects to recreational use activities are anticipated.

FINDING OF CONSISTENCY:

All alternatives would be consistent with Forest-wide and management area standards and guidelines for recreation. A broad spectrum of recreation opportunities and experiences would continue to be available to forest visitors.

VISUAL RESOURCE (SCENERY)

SCALE OF ANALYSIS

The scale of analysis for visual resources is the Cobbler project planning area (34,000 acres).

Indictor for comparison purposed between alternatives is:

- Consistency with Forest Plan standards and guidelines

AFFECTED ENVIRONMENT

There are four Forest Plan management areas within the project planning area where visuals and scenery are emphasized. The areas are as follows:

- A4-Viewshed 2 – There are approximately 90 acres within the project planning area along FR 6415. No harvest or fuel treatments are proposed for this area. Approximately 45 acres is proposed for non-commercial thinning.

- A7-Wild and Scenic Rivers – The Grande Ronde Wild and Scenic River corridor is designated as management area A7. This management area is from the mean high water line of the Grande Ronde River out for ¼ mile in horizontal distance. The only proposed activity for this management area is landscape prescribed fire.

- A8-Scenic Area – This management area is from the boundary of the A7 management area to the top of the canyon. The only proposed activity for this management area is landscape prescribed fire.

- A9-Special Interest Area – Big Hole Viewpoint is in this management area. It provides views down into the Wenaha River canyon as well as across the canyon and into the Wenaha-Tucannon Wilderness. Approximately 15 acres of commercial harvest are proposed to enhance the special features of the viewpoint (see Chapter 2, Alternative B). Lookout Mountain which overlooks Alder and Bear Creek drainages is designated as A9 and is also within the project planning area. No activities are proposed for Lookout Mountain.

ENVIRONMENTAL CONSEQUENCES

Alternative A – No Action

Direct/Indirect and Cumulative Effects

The four Forest Plan management areas where visuals and scenery are emphasized would not be altered by proposed project activities. The scenic character is these management areas would be subject to cyclical natural disturbance processes such as wind, drought, insect and disease infestation, and vegetation succession. The current state of forest vegetation and its related density and species composition could contribute toward insect and disease susceptibility to a scale that would be out of proportion with a natural appearance of tree mortality. Build-up of natural fuels could also result in an uncharacteristic wildfire resulting in adverse effects. Ultimately these conditions could alter the scenic quality of these management areas.

Effects Common to All Action Alternatives

Direct and Indirect Effects (Alternatives B and C)

The desired future condition for management area A4 is to meet visual quality objectives of partial retention[6] and modification.[7] Non-commercial thinning of approximately 45 acres in this area and additional non-commercial thinning in adjacent areas would not affect the visual quality objectives of this management area.

Landscape prescribed fire would occur in management areas A7 and A8. Effects to both management areas would be the same as described below in the Wild and Scenic Rivers section below under headings Scenic Values and Scenic Quality.

Approximately 15 acres are proposed for commercial harvest in management area A9 (Big Hole Viewpoint). The Forest plan permits tree cutting and vegetation management in order to maintain or enhance the special features of the interest area or to provide for public safety (FP p. 4-133). The silivicultural prescription for this area is to remove smaller trees from around larger trees, making the stand more visually appealing and highlighting the large tree boles. The activity would enhance the special features of Big Hole Viewpoint. Harvest units along with some mechanical fuels treatment units near Big Hole Viewpoint would be visible. The harvest units are prescribed for treatments that leave fully stocked stands (commercial thinning). The resulting forest texture change would be unnoticeable in the middle-ground (one and a half miles).

The Forest Plan amendment of reallocating Elk Flats Meadow from management area D2 to management area A9 would meet the Forest Plan goal by preserving an area of significant botanical characteristics (aspen stands). The management area visual quality objective for A9 of retention[8] would not be affected by this addition.

[6] **Partial Retention –** Human activity may dominate the characteristic landscape, but must at some time follow naturally established form, line, color, and texture. It should remain visibly subordinate when viewed in foreground or middle ground.
[7] **Modification** – Human activity may dominate the characteristic landscape, but must at some time, follow naturally established form, line color, and texture. It should appear as a natural occurrence when viewed in foreground or middle ground.
[8] **Retention –** Human activities are not evident to the casual forest visitor.

Cumulative Effects (Alternatives B and C)
Past logging activities are visible in the project planning area. Past harvest visual effects would continue to moderate towards a near-natural appearance over time. The majority of acres to be harvested in both action alternatives (2,500 acres for Alternative B and 1,300 acres in Alternative C) would leave fully stocked stands and would not affect the process of moving toward a near-natural appearance.

FINDING OF CONSISTENCY

Implementation of either action alternative (B or C) would be consistent with Forest Plan standards for visual quality objectives (VQO) and management area standards and guidelines.

WILD AND SCENIC RIVERS

SCALE OF ANALYSIS
The scale of analysis is the project planning area.

Indictors for comparison purposes between alternatives are:
- Effects to outstanding and remarkable Wild and Scenic River values
- Consistency with *Wallowa and Grande Ronde Rivers Final Management Plan/EA*

AFFECTED ENVIRONMENT

Cobbler project is located in the Oregon portion of the Grande Ronde Wild and Scenic River. The Wild and Scenic River corridor is a quarter mile wide from the mean high water line on either side of the river, and is designated as management area A7 – Wild and Scenic River in the Forest Plan. Upper slopes of the canyon are designated as management area A8 – Scenic Area. There are approximately 1,000 acres of A7 and 6,300 acres of A 8 within the project planning area. This portion of the project planning area is also within the Grand Ronde IRA. Landscape prescribed fire is the only activity proposed within the Wild and Scenic River corridor and upper canyon areas that could be viewed from the river.

The *Wallowa and Grande Ronde Rivers Final Management Plan/Environmental Assessment* of December, 1993 (FMP EA) established the management direction for the Wild and Scenic River and identified the Outstanding and Remarkable Values, FMP EA pages 16 to 20; 61 to 66. The FMP EA designated this portion of the Grande Ronde as Wild. Applicable guidelines for actions include:

- For Scenery: Preserve the existing landscape within the wild section. Any change should be very low and must not attract attention.
- For Social: Maintain physical resource base necessary for the continuation of recreation-based industries.
- For Biological: Management activities within the corridor will balance flora, fauna, and physical element conditions in conformance with the vision statement. "Our vision is to protect and/or enhance the physical, biological, social, economic, cultural, and other special qualities that give the free-flowing Grande Ronde River its unique character. …"
- For Water: Resource management actions within the corridor will meet minimum water quality standards as set by Oregon Department of Environmental Quality.

- For Land: Reintroduce fire as an effective vegetative management tool through the use of prescribed burns. Eliminate or reduce to acceptable levels of fuel build-up and hazards that are a result of past management and/or natural catastrophic events, insofar as this does not conflict with the protection and enhancement of Outstanding and Remarkable Values.

ENVIRONMENTAL CONSEQUENCES

The Forest Plan states the following goal: *Manage classified wild and scenic river segments to appropriate standards as wild, scenic, or recreational river areas, as defined by the Wild and Scenic River Act;* and for A8; *Protect or enhance the unique natural characteristics of landscapes noted for their scenic beauty.*

Effects to the wild and scenic river corridor will be discussed for both the corridor and for Forest Plan management area A8 – Scenic Area above the corridor. They are connected for the recreational experience along the river because the landscape designated as A8 contains much of the canyon view that provides the primitive experience. Information from the *Wallowa and Grande Ronde Rivers Final Management Plan/Environmental Assessment* of December 1993 (FMP EA) identified the following Outstanding and Remarkable Values: Wildlife, Fisheries, Recreation, and Scenic Values.

Alternative A – No Action

Direct/Indirect and Cumulative Effects
The existing condition would continue to function with effects to wildlife, fisheries, recreation, and scenic values being unchanged. The dry forest type makes up the majority of the forested landscape within the canyon and has transitioned to complex fuel conditions. This condition would continue to place the landscape at risk for catastrophic damage within the timbered stringers and RHCAs when a wildfire occurs within the canyon. A wildfire would spread quickly through the grasslands spreading fire to multiple locations in the timber stringers. The area burned would be more extensive than that from a prescribed fire with higher levels of mortality. Wildfire is a natural occurrence on this landscape and though it would have higher visual impacts; it is something expected and would be compatible with the management and outstanding values of the wild and scenic river.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)
Following are descriptions of outstanding and remarkable values of the river and the effects of implementing Alternatives B or C.

Wildlife - Additional analysis of the effects of prescribed fire on wildlife can be found in the Wildlife section of this chapter. The wild and scenic river corridor is noted for providing winter habitat for bighorn sheep, elk, mule deer, whitetail deer, and bald eagles. This area would continue to provide habitat for these species. The use of landscape prescribed fire would improve habitat conditions by rejuvenating brush and grassland vegetation. Some snags would be burned and fall to the ground, however, green trees would also be killed and replace snags that would fall from fire damage.

Fisheries - Additional analysis can be found in the fisheries and hydrology sections of this chapter. This portion of the Grande Ronde River is mainly a migratory route for indigenous and ESA listed resident and anadromous fish. Landscape prescribed fire in this area in the fall of the year would generate immeasurable sediment into the stream and occur at a time when steelhead are not spawning. Winter and

spring flushes of the streams would occur prior to spring spawning. Anadromous fish do not spawn or rear in this section of the main Grande Ronde because of high water temperatures. The project would be consistent with the Clean Water Act because Best Management Practices and other project design features (Table 2-6) would reduce impacts to water quality. Prescribed fire would not impact fisheries values; quality fish habitat would be retained.

Recreation - Surveys from the late 1980s show that 84 percent of visitors to the river are from outside northeast Oregon and 22 percent from outside the tri-state region of Oregon, Washington, and Idaho. The primary recreational use is floating and organized concessionaire rafting mostly in the spring and early summer before the water level get too low. The river provides 2 to 5 day duration, primitive float experience for individuals and groups with beginning and moderate skill levels. The experience offers a feeling of remoteness through a pleasingly diverse landscape. There are no trails in this portion of the river and access is very arduous. The primary means of accessing the area is the river itself. Landscape prescribed fire would have a short-term, 1 to 2-year, effect on scenic values but not affect the ability to float the river. Some people may be distracted by the burn during the first year after the fire but it would not affect the long-term use of the river as a destination for floating. The proposed prescribed fire would occur in the fall when the water and use is low. Smoke may reduce the quality of the experience for the few individual floaters, but it is also short-term lasting several days. The ability to provide primitive and remote recreational experience would remain.

Scenic Values - This portion of the Grande Ronde River contains a diversity of landforms and vegetation that captures the attention of the viewer floating the river. Vegetative color is enhanced by climate change and seasons. Much of the landscape is forest stringers separated by grasslands on very seep slopes maintained by a frequent fire regime. This portion of the river offers a primitive experience within a largely untouched scenic viewshed. The only significant views into the river canyon from the canyon edge is from Road 64 near Lookout Mountain and from above Bear Creek on Road 6222. Both roads are seasonally open under the District Motorized Access and Travel Management Plan and are used during hunting seasons.

Scenic Quality - Landscape prescribed fire is the only activity that would affect vegetation within the wild and scenic corridor and the canyon lands above it. The limited timber harvest near the edge of the breaks would not be noticeable from the river because units would be thinned and the forest texture change would be unnoticeable along the rim, a quarter mile above the wild and scenic river corridor and half mile from the Grande Ronde River. The primary focus of river user is the foreground, so an activity along the rim is not likely to be noticed. Someone sitting at a camp along the river may observe the thinned stand, but it would not detract from the visual experience because it would blend with the forested landscape patterns. Past experience has indicated that thinning units are rarely seen when viewed from this angle. The fire would not impact the diversity of landforms; forestland would remain forestland and brush lands and grasslands would be regenerated. Geologic landforms would be unchanged.

Prescribed fire ignitions in the fall of the year would occur primarily in the grasslands and brush fields outside of RHCAs and allowed to back into the RHCAs. In timber stringers, outside the RHCAs, ignitions would produce a patch mortality effect caused by spot ignitions of fuel concentrations. Where light fuel loads occur, strip ignitions would be utilized. Vegetative impacts from the prescribed fire would be short-term (one year at most two years) until grasses, brush, and herbaceous species recover the landscape. Dead trees, particularly small trees (saplings to poles) would be evident over a 5 to 10-year period. Few overstory trees are expected to be killed. Portions of the landscape within the wild and scenic corridor would have a blackened appearance during the winter and early spring. By the time users are on the river, the burned grass areas would be sprouting brighter green than unburned areas because of nutrients released by the burn. Brush fields would be evident by the relic dead, blackened wood, but

sprouts would be greening the area and by mid-summer much of the blackened area would show recovery. The burn would be evident as the recovering vegetation reduces the visual effects the first year and would become less evidence in following years.

Since ignitions would be outside RHCAs the foreground near the river would be nearly unchanged; only the occasional backing fire would burn into the 300-foot wide RHCA. River-edge vegetation would still be present to screen much of the burned area. Burned areas would likely be more noticeable along the face of the canyon, but would not be a dominant landscape feature by mid-summer the year after the burn.

Vegetation that brings seasonal changes to color and texture would still be present. The diversity of vegetation would remain. Western larch would still be seen along the upper rim of the canyon. Even though brush fields would be burned, the renewed growth and vigor of the sprouts would provide fall color. Hardwoods along the river and within RHCAs would also be present. By the end of the second year the evidence of the burn would likely be gone.

Fire is a natural occurrence on this landscape. Even though a prescribed fire is a management action the landscape within the wild and scenic corridor and in the viewshed above would still have an untouched appearance. The landscape would have a burned appearance but not as severe as a wildfire under current fuel conditions. The canyon area is transitioning to more complex fuel conditions and a wildfire would cause severe visual impacts due to mortality in the small to large tree size classes. Prescribed fire would reduce the intensity and severity of a wildfire such that the landscape would be more resilient and better able to maintain the forest-grassland mosaic appearance.

Cumulative Effects (Alternatives B and C)

Past logging activities are visible but distant from the viewer along the river and since past logging occurred along the canyon break they are not visually apparent. The few older clearcuts that come over the edge have become plantations and are visually subordinate on the landscape. All harvest activities, including the proposed harvest, are distant to the river, from a half to a mile. Past harvest would not have any visual cumulative effects with the proposed harvest. All past and proposed harvest would blend into the background landscape.

Past activities to the north of the planning area and within the wild and scenic corridor include wildlife prescribed fire in Bear Creek to Elbow Creek used to rejuvenate forage. Above the canyon rim commercial thinning east of Elbow Creek was used to restore open ponderosa pine communities. Over the next few years there would also be prescribed fire used within the canyon east of Elbow Creek. The thinning is not noticeable from the river and the wildlife burn from the mid 1990s has healed over and is no longer seen. In the late 1980s there was a wildfire east of the project planning area that burned along the canyon face onto Eden bench. This fire was visible for many years because it killed several thousand acres of forest. It is no longer a dominant feature on the landscape because snags have fallen and vegetation has become established, greening the slope. Past prescribed burning indicates that effects are short lived and that wildfire affects to visuals can last up to ten years shifting from a blackened landscape to a relic of dead standing trees. New ignitions in the project planning area would not cover the whole landscape in a single burn and would likely take two to four burn entries. This would reduce the visual impacts, and since past burns outside the planning area have already recovered, there would be no cumulative effects to visuals along the length of the wild and scenic river.

FINDING OF CONSISTENCY

All alternatives would be consistent with Forest Plan standards and guidelines. There is no timber harvest proposed within the wild and scenic river corridor; prescribed fire is the only management activity being

proposed within the corridor. Proposed prescribed fire uses a natural landscape process that would be compatible with the goals to preserve natural, wild and primitive conditions.

Consistency with the Wallowa and Grande Ronde Rivers Final Management Plan
Proposed project activities are consistent with the Final Management Plan and the Wild and Scenic River Act. Prescribed fire was identified as a compatible activity within the wild and scenic river corridor. Outstanding and Remarkable values are being preserved. Although burning would impact visual quality it would last a short time and is of a nature that would be expected on the landscape. The method of ignitions would reduce the amount of mortality to small and large tree size classes. Patch kills would likely be less than 5 acres in size with occasional openings up to 10 acres. Reduced fuel loads and reduction of small (sapling size) trees is consistent with the vision to protect and/or enhance the physical, biological, and other special qualities that give the free-flowing Grande Ronde River its unique character by increasing landscape resilience to wildfires and increasing forage quality for big game.

Consistency with Oregon State Scenic Waterways Program
The Oregon Scenic Waterway Act was established by ballot initiative in 1970. The scenic waterways program promotes cooperative protection and wise use of rivers in the system by all agencies, individual property owners, and recreation users. Program goals include:

- To protect the free-flowing character of designated rivers for fish, wildlife, and recreation.
- To protect and enhance scenic, aesthetic, natural recreation, scientific, and fish and wildlife values along scenic waterways.
- To encourage other local, state, and federal agencies to act consistently with the goals of the program.

Oregon State Parks reviews plans and decisions made by other agencies to ensure consistency with the scenic waterways program. The District has notified the State about the proposed project. Oregon Administrative Rules determined the management direction for this portion of the Grande Ronde River. OAR 736-40-040, Classification of Scenic Waterways and Segments has classified this portion of the Grande Ronde as a Natural River Area. "Natural River Areas will be administered to preserve their natural, wild and primitive condition, essentially unaltered by the effects of man, while allowing compatible recreation uses, other compatible existing uses, and protection of fish and wildlife habitat." Management activities within the Wild and Scenic River Corridor are guided by direction in OAR 736-40-035, Oregon State Scenic Waterway Rules of Land Management. This rule talks about timber harvest and improvements associated with development of lands. FMP EA pages 80 to 89; 223 to 227.

Consistency with the Oregon Scenic River Program
There is no timber harvest proposed within the wild and scenic river corridor; prescribed fire is the only management activity being proposed within the corridor. Proposed prescribed fire uses a natural landscape process that would be compatible with the goals to preserve natural, wild and primitive conditions. It would maintain vegetation and forest resilience, improve big game forage, and be observable as middle ground for 1 to 3 years depending on vegetation type (grasses, brush, or forestlands) and how long it takes trees to die and lose their needles. Upon completion the area would be a mosaic of unburned, lightly burned, moderately burned and intensely burned patches. The proposed prescribed fire would be consistent with the Oregon Scenic River Program.

INVENTORIED ROADLESS AREA (IRA)

SCALE OF ANALYSIS

The scale of analysis is the project planning area.

Indictors for comparison purposes between alternatives are:

- Landscape Character and Scenic Integrity
- Primitive Experience
- Habitat for Threatened and Endangered Species

AFFECTED ENVIRONMENT

The Grande Ronde Roadless Area was inventoried as a potential wilderness during the Rare II process. Approximately 7,700 acres of the 17,750 acre Grande Ronde Inventoried Roadless Area (IRA) is within the Cobbler project planning area. The majority of acres proposed for landscape prescribed fire (8,000 acres) would occur in this IRA, and approximately 0.30 acres of hardwood restoration would occur. The Forest Plan, Appendix C, pages C-100 to C–111, identifies the following roadless characteristics:

Landscape Character and Scenic Integrity
The Grande Ronde IRA is a deep, rugged, sparsely vegetated canyon cut into a plateau covered in conifers. Distinguishing features are steep slopes covered with grass or a mosaic of grass and conifers interspersed with basalt outcrops. Human influences have had little impact on the natural appearance or ecology of the area. Fire has been, and mostly likely will continue to be, the factor with the most potential to impact the quality of the area. Nearly all human activity takes place near the canyon bottom, all fuels are upslope and have a high rate of spread and the steep, rocky slopes make control difficult. Fire has been the key to the long-term ecological changes and vegetative succession of the area. Fires which have occurred have helped to maintain the ecosystems present.

Primitive Experience
The primary attractions of the Grande Ronde area are the recreation opportunities associated with the river or accessed by the river. There are no trails into this portion of the canyon. River users are able to drift by boat or raft, experience three gentle gradient rapids, view steep canyon walls, occasionally encounter other persons, and hear only the river, making it a unique experience in northern Oregon. A float trip provides a sense of solitude. Screening vegetation and the abrupt rise of the banks away from the river make the upper canyon slopes difficult to view from most campsites along the river.

Habitat for Threatened, Endangered and Sensitive Species
Bald eagles (Sensitive) use the area as a winter migrant. Four stocks, including three species, of fish that use the Grande Ronde River adjacent to the Grande Ronde Inventoried Roadless Area are listed as Threatened under the Endangered Species Act: Spring/summer Chinook salmon *(Oncorhynchus tshawytscha)*, fall Chinook salmon (also *O. tshawytscha)*, Snake River steelhead trout *(Oncorhynchus mykiss)*, and Columbia River bull trout (*Salvelinus confluentus).*

- Steelhead trout spawning in the Grande Ronde subbasin enter the Grande Ronde River in two distinct migrations, one peaking in September and the other in March and April. Adults arriving in September hold in the Grande Ronde through the winter. Some of these undoubtedly hold in

parts of the river adjacent to the IRA. Steelhead spawn in tributaries here from March through May with the peak spawning activity occurring throughout the subbasin in late April and May.

- Spring/summer Chinook salmon migrate into the Wenaha River and other Grande Ronde tributaries in this area on the high flows of spring runoff. They seek cool water refuges where they hold until spawning in mid-August or early September. Most of the Grande Ronde River immediately adjacent to the Grande Ronde IRA is probably presently too warm in summer for Chinook holding or spawning. Because of the small size of Sheep, Meadow, Alder and Bear Creeks, Chinook would not have used them for spawning, although they might have been used for rearing or as cool water refuge for juveniles spawned in Lookingglass Creek or the Wenaha River. Additionally, depending on the size and timing of spring runoff flows and timing of fry emergence from the gravel, fish spawned farther upstream in the Grande Ronde River might be flushed downstream to these reaches. As water temperatures increased in the summer, these fish would seek the cooler water of these tributaries. Larry Boe (USFS) observed juvenile Chinook in Bear Creek during the 1996 aquatic habitat inventory. It may be reasonably assumed that they would similarly use Meadow and Alder Creeks.

- In the Grande Ronde River system, fall Chinook salmon spawn from the Grande Ronde's confluence with the Snake River upstream to the Wildcat Creek bridge, about six river miles upstream of Troy, Oregon (Don Hubner, pers. Comm., 2005). This would be about eleven river miles downstream of the project area and about nine miles downstream of the easternmost boundary of the IRA. There have also been reports of a few fall Chinook spawning much farther upstream in Joseph Creek, but this appears to have been only one year, and very few fish. Numbers of fall Chinook salmon spawning in the Grande Ronde River have varied from a few to around 200 per year, and there seems to be an upward trend, although trends in the Grande Ronde do not seem to be correlated to trends elsewhere in the Snake River system. Fall Chinook spawning in the Grande Ronde River begins in mid October and runs through late November, or in a few cases, early December. Because of their distance downstream from the project area, fall Chinook salmon would probably not have used any tributary streams in the roadless area, although they would be in a position to be potentially affected by activities in the project area.

- Migratory bull trout use the Grande Ronde River in the area adjacent to the Grande Ronde Inventoried Roadless area seasonaly. A few bull trout have also been observed in lower Bear Creek, inside of the Grande Ronde Inventoried Roadless Area. Bull trout have among the lowest upper thermal limits and growth optima of North American salmonids. In other words, they require very cold water. Larger bull trout often migrate downstream during the cooler times of the year to forage in habitats such as the Grande Ronde River adjacent to the roadless area that would be too warm for them during the summer. As waters warm in the spring, these larger fish move back upstream, or perhaps downstream, returning to their natal habitats, i.e., Lookingglass Creek or the Wenaha River, to spawn. There is probably very little steelhead spawning in the Grande Ronde River adjacent to inventoried roadless area but some of the Grande Ronde tributaries in the roadless area (Meadow, Alder and Bear Creeks) may occasionally have a few redds (≤3 per year) (Brad Smith, ODFW, personal communication 2004). Adult steelhead may be present in streams within or adjacent to the roadless area anytime from September till June.

ENVIRONMENTAL CONSEQUENCES

Alternative A - No Action

Direct/Indirect and Cumulative Effects

There would be no change to the landscape character, scenic integrity, and primitive experience. The landscape would continue developing complex fuel loads. The timbered stringers with the grass/tree mosaic are at risk to catastrophic damage under a wildfire scenario. A wildfire would have a more extensive burn and kill more trees. There would be higher impacts to visual quality caused by a wildfire compared to a prescribed fire however it would be a natural occurrence and expected condition of the landscape. The general landscape character would be unchanged; it would still be able to provide a primitive experience. A wildfire would likely produce higher quantities of sediment into the Grande Ronde because of hotter burns within RHCAs but would not have a measurable impact on the survival of ESA listed fish species because this area is used primarily as a migratory route. Spawning and rearing habitat is limited in this section of the river because of warm waters.

Effects Common to All Action Alternatives

Direct/Indirect Effects (Alternatives B and C)

Landscape Character and Scenic Integrity

The proposed landscape prescribed fire would have little to no impact on landscape character and a short-term (one to two year) impact to visual quality and up to ten years for trees killed by the fire to fall to the ground. The steep slopes covered with grass or mosaic of grass and conifers interspersed with basalt outcrops would remain the landscape features of the canyon. The fall burn would occur at a time when use of the river is low. The fire would blacken grasslands and brush however the grasslands would green by spring. Brush fields would take longer, two to three years, to show recovery because relic dead wood would take longer to be covered by the regrowth of the vegetation. By the end of the first year the landscape would have a general vegetated appearance with patches of dead brush and trees visible on the landscape. These patches of dead would be middleground along the face of the canyon and generally not noticed from the river. The burned landscape would fit with expected ecological disturbances typical for the canyon ecosystems only it would not be as extensive or severe as what would occur with a summer wildfire.

Hardwood restoration of two stands would minimally affect the landscape character and scenic integrity with buck and pole fences used to protect the aspen sites. Competing conifers would be cut and left on site and there would be no vehicle traffic (including ATVs) in the area during restoration.

Primitive Experience

The landscape prescribed fire proposed by Cobbler project would not impact the primitive experience of river users. Fire is a part of the natural disturbance processes in the canyon and would be subordinate to the landscape features within five years. Other than impacts related to fire severity, it would be hard to tell the difference between the human ignited fire and a wildfire. There are no new trails, timber harvest, or roads proposed within the roadless area so the opportunity for a primitive experience would be retained. There would be no change in the ability of a float trip to provide a sense of solitude and a feeling of remoteness in a landscape where evidence of human management actions are subordinate to landscape features.

Habitat for Threatened, Endangered and Sensitive Species
The landscape prescribed fire would not impact the use of the river by or bald eagles. Bald eagles would also be able to continue winter use of the river without impacts; the prescribed fire would create roost trees and not impact available winter forage species. Because there would be prescribed fire in the IRA there is some slight risk of additional stream sedimentation from that activity, which cannot be entirely avoided, but even if this sedimentation occurred it is not likely to be of sufficient intensity or duration to cause adverse effects to aquatic organisms or their habitat. Therefore, no adverse effects to fish or aquatic habitat are expected from either Alternative B or C.

Wilderness Potential
Proposed activities in and adjacent to Grande Ronde IRA would not affect the factors and or criteria used for future evaluation of the area as a potential wilderness. Capability[9] criteria of (1) natural and environmental elements; (2) undeveloped challenge and adventure; (3) opportunities for solitude or primitive outdoor recreation; (4) special feature; and (5) manageable boundaries would be affected as discussed above.

FINDING OF CONSISTENCY

Implementation of any alternative would be consistent with Forest Plan standards and guidelines. Proposed activities in the Grand Ronde IRA would not change the roadless area character of the IRA. All proposed activities would not affect the principle wilderness characteristics, as identified in the Wilderness Act (see FSH 1909.12, Chapter 70 – Wilderness Evaluation).

ECONOMIC ANALYSIS

SCALE OF ANALYSIS

The affected economic area or impact zone for the Umatilla National Forest consists of Grant, Morrow, Umatilla, Union, Wallowa, and Wheeler counties in Oregon, and Asotin, Garfield, Columbia, and Walla Walla counties in Washington. These counties are encompassed within the Pendleton and Spokane Bureau of Economic Analysis regions.

Indicators for comparison between alternatives are:
- Alternative efficiency – present net value (PNV)
- Benefits to regional economy – number of jobs
- Sale viability – value of above base rates

AFFECTED ENVIRONMENT

Agriculture, manufacturing (particularly wood products), and food processing are important sources of employment and income in this region. Refer to the Umatilla National Forest, Land and Resource Management Plan, Final Environmental Impact Statement, Appendix B, for further detailed description of the main social and economic characteristics of the area (USDA 1990).

[9] Capability – the degree to which the area contains the basic characteristics that make it suitable for wilderness recommendation without regard to its availability for or need as a wilderness

Many communities in this region are closely tied to the forest in both work activities and recreation. Annual timber-related employment supported by timber harvested from Umatilla National Forest for the years 1995 to 1997 averaged 394 jobs.

Cobbler Timber Sale and Fuels Reduction Project is located in Wallowa and Union Counties, Oregon. The estimated population of Wallowa and Union Counties in 2005 was 7,150 and 24,540, respectively.

Agriculture, forestry and fishing account for approximately 23 percent of the total employment and wood products account for approximately 7 percent of the total employment in Wallowa County (2008 City-Data.com).

Wallowa County unemployment rate is at 9.1 percent and Union County unemployment rate is at 4.6 (2005 City-Data.com)

ENVIRONMENTAL CONSEQUENCES

The economic analysis for this project measures three aspect of the project's economic merit. They are alternative efficiency, benefits to the regional economy, and sale viability.

Alternative efficiency is derived from an analysis of the discounted cash flows. It is expressed as present net value. Additional information can by gained by breaking out cost into associated pools. Alternative efficiency compares alternatives by analyzing the cash flows associated with all vegetation management activities. Monetary costs and benefits are discounted at a real rate of 4 percent. Details of the analysis are located in the project file. Present net value (PNV) is the discounted benefits less the discounted costs. A positive PNV indicates that the project has a real rate of return greater than 4 percent. A negative PNV indicates that the rate of return is less than 4 percent or that the project has a negative rate of return. However, a project with a negative PNV may still have merit. Other benefits may be derived that cannot be quantified or would not be appropriate to compare directly in cash flow analysis. In this case discounted cost per acre would be an appropriate measure to compare alternatives.

While this analysis is for alternative comparison purpose only, and should not be used for budgetary planning, a comparison of cost pools is useful to the decision maker. Cost pools addressed in this analysis are administrative, appropriated, and trust fund. For the purpose of this analysis, administrative costs are those associated commercial harvest and include sale preparation and sale administration. The appropriated pool is costs associated with vegetation management activities that are expected to need appropriated funds to accomplish. Since receipt of these funds cannot be assured, a higher value in this cost pool relates to a higher uncertainty in the Forest's ability to accomplish these activities. The trust fund cost pool is associated with activities that are expected to be funded with trust fund money (either KV or BD) generated from the sale of commercial products. Since only essential KV activities were considered, funding for these costs is assured if the commercial harvest is accomplished.

Benefits to the regional economy are measured in direct, indirect, induced jobs and income that are derived from the sale of timber. Sale viability is express as the anticipated value above base rates and measures the likelihood that potential purchasers would be willing to purchaser the proposed timber sale. Benefits to the regional economy are measured in direct, indirect, induced jobs and income that are derived from the sale of timber. Direct income and jobs are associated with harvesting and processing of wood products. Indirect benefits are associated with industries that supply materials, equipment and services to logging and wood processing businesses. Induced benefits are attributed to personal spending by business owners, employees, and related industries. Development of these benefits is detailed in the project file. The original coefficients were derived from the IMPLAN model.

Sale viability is a measure of the probability of receiving bids for any commercial products offered for sale. Base rates are the lowest rates that commercial timber can be offered for sale. They are either the minimum rate or essential KV expressed in dollars/hundred cubic feet (ccf) whichever is higher. The higher the anticipated value above base rates a potential sale has the more likely that it is that the sale would sell. A sale with a negative value would be considered deficit and unlikely to sell.

Alternative A – No Action

Direct and Indirect Effects – Alternative A

This alternative proposes no action. No costs or benefits are derived from this alternative and no detailed analysis was calculated for it. However, selection of this alternative could lead to costs in the future. These costs would be associated with increased fire suppression costs, loss of private property, and other costs associated with failure to treat the vegetation in this area.

Alternative B

Direct and Indirect Effects – Alternative B

This alternative proposes a variety of activities. The PNV for this alternative is negative and the highest of the two action alternatives. This alternative has the least cost per acre of the two action alternatives. Since this alternative has the highest amount of commercial harvest it maximizes the benefits to the regional economy and jobs. Trust funds can be expected to fund more vegetative treatment under this alternative. The anticipated value above base rates is positive, so the sale of commercial products is assumed to be viable.

Alternative C

Direct and Indirect Effects – Alternative C

This alternative proposes fewer acres of commercial harvest. The PNV for this alternative is also negative but of a lesser amount than Alternative B. The cost per acre for treatment is the highest. Since this alternative has the least amount of commercial harvest it has the least amount of benefit to the regional economy and jobs. Trust funds can be expected to fund less work for vegetative treatments and rely on more days funded with appropriated monies; this alternative has the highest risk of not being funded. This alternative also has an anticipated value above base rates (although less), so the sale of commercial products is assumed to be viable.

The following table is an economic analysis comparison by alternative.

Table 3-55 Economic Comparison by Alternative

	Alternative A- No Action	Alternative B	Alternative C
Commercial Unit Area (acres)	0	2,500	1,300
Total Commercial Volume (ccf)	0	14,140	7,600
Total Timber Value at Predicted High Bid Rate	0	$676,250	$349,600
Value/ccf above base rates	0	$48.00	$46.00
Local Employment (jobs)	0	67	36
Total Potential Income	0	$1,894,850	$1,016,600

	Alternative A- No Action	Alternative B	Alternative C
Discounted Revenue	0	$622,800	$321,950
Discounted Costs	0	$1,030,000	$554,500
Present Net Value	0	($407,200)	($232,550)
Present Net Value per Acre	0	($164)	($183)
Present Value Trust Fund Costs	0	($247,909)	($129,630)

FINDING OF CONSISTENCY

All alternatives would be consistent with Forest Plan standards and guidelines. The analysis is in accordance with Forest Service manual and handbook guidance to complete a financial analysis for timber sales (FSH 2409.18). It documents the financial monetary measures for timber and the financial costs of removing the timber.

SPECIFICALLY REQUIRED DISCLOSURES

This section describes how the action alternatives comply with applicable State and Federal laws, regulations, and policies.

National Historic Preservation Act –Heritage surveys have been completed. State Historic Preservation Office consultation will be conducted under the Programmatic Agreement among the United States Department of Agriculture, Forest Service, Pacific Northwest Region (Region 6), the Advisory Council on Historic Preservation, and Washington State Historic Preservation Officer regarding Cultural Resource Management on National Forests dated April 1997. Identified sites and any newly recorded sites will be protected from all project activities associated with Cobbler Timber Sale and Fuels Reduction Project (Table 2-6). Because heritage resources would not be affected by proposed activities under any action alternative, there would be no effect to any historic property listed in or eligible to the National Register of Historic Places.

Endangered Species Act and Regional Forester's Sensitive Species - The Endangered Species Act requires protection of all species listed as "Threatened" or "Endangered" by Federal regulating agencies (Fish and Wildlife Service and National Marine Fisheries Service). The Forest Service also maintains through the Federal Register a list of species which are proposed for classification and official listing under the Endangered Species Act, species which appear on an official State list, or that are recognized b the Regional Forester as needing special management to prevent their being placed on Federal or State lists. Biological Evaluations and Assessments have been completed for all TE&S plant, aquatic and terrestrial wildlife. Determinations were made that none of the proposed actions would adversely affect, contribute to a trend toward federal listing, nor cause a loss of viability to listed plant, fish, and animal populations or species. Details are found in the Fisheries (pages 3-40 and 41), TE&S Plants (page 3-82), and Wildlife (pages 3-105 and 106) sections of this document.

Consultation will be completed prior to signing of the Decision Notice. Agreement of findings will include Chinook Salmon Essential Fish Habitat (EFH), which satisfies requirements under the Mangnuson-Stevens Act.

Clean Air Act - All proposed prescribed burning would be conducted in compliance with National Ambient Air Quality Standards and Oregon Department of Environmental Quality (ODEQ) regulations and restrictions contained in the Oregon Smoke Management Plan (ODEQ Directive 1-4-1-601). Fuel treatments can be timed to minimize the impacts of smoke on forest users and local communities. An operator's burn plan is developed prior to ignition. On site weather conditions are monitored before, during, and after an ignition. Ocular smoke observations are made throughout the ignition phase. Residual smoke is monitored for dispersion and direction. No ignitions will occur if there is an air stagnation advisory in place within the northeast Oregon geographic area. No ignitions will occur if existing or forecast conditions would transport measurable smoke into down wind communities. The removal and direct treatment of biomass would reduce emissions should a wildfire occur. The effect of smoke under any action alternative would be short term and restricted to dispersed campgrounds. Particulate matter is not expected to exceed standards in the communities of concern (Elgin, Troy and Eden Bench area). See Air Quality analysis and impacts within the Grande Ronde Wild and Scenic River Corridor (pages 3-72 and 73).

Clean Water Act – See Hydrology section, pages 3-21 and 22.

Prime Farmland, Range Land and Forest Land - No adverse effects on any prime farmland, range land and forest land not already identified in the Final FEIS for the Forest Plan would be expected to result from implementation of any alternative.

Civil Rights, Women and Minorities - No adverse effects on civil rights, women, and minorities not already identified in the FEIS for the Forest Plan would be expected to result from implementation of any alternative. Alternatives B and C would be governed by Forest Service contracts, which are awarded to qualified contractors and/or purchasers regardless of race, color, sex, religion, etc. Such contracts also contain nondiscrimination requirements.

National Forest Management Act Compliance – The Cobbler Timber Sale and Fuels Reduction Project is consistent with the National Forest Management Act (NFMA) (36 CFR 219.8(e)).

1. All proposed commercial, non-commercial, and mechanical fuels treatment units are planned on suitable land where soil, slope, or other watershed conditions would not be irreversibly damaged (soil and hydrology report). Design features have been identified to protect site productivity, soils, and water quality.

2. All areas harvested will be adequately stocked after treatment is complete (FSM 1921.12g).

3. Streams, streambanks, wetlands, and other bodies of water are protected from detrimental changes in water temperatures, blockages of water courses, and deposits of sediment where harvests are likely to seriously and adversely affect water conditions or fish habitat. Project design features (Table 2-6) and BMPs (Appendix D) have been identified that would protect water resources.

4. The harvesting systems selected were based on soil type, slope, and the size of material to be removed.

Proposed activities are designed to accelerate development of forest habitats that are currently deficient within the analysis area, enhancing the diversity of plant and animal communities in the long-term. This

project would comply with NFMA and the four requirements associated with vegetation management (FSM 1921.12a). Also see Findings of Consistency, pages 3-56 and 57.

Treaty Trust Responsibilities - In this analysis, the primary focus of the federal government trust responsibility is the protection of the treaty rights and interests that tribes reserve on land included in this project. Both the Nez Perce Tribe and the Confederated Tribes of the Umatilla Indian Reservation have treaty rights and interests in the Cobbler project planning area. Members of the Tribes identified the rights they believed most at risk in the proposal. Of major concern are the potential effects on fish habitat and populations and water quality, which are key components of aquatic habitat, and the protection of archaeological sites and traditional cultural properties.

Floodplains and Wetlands - Executive Orders 11988 and 11990 - Executive Order (EO) 11988 requires the Forest Service to avoid "to the extent possible the long and short term adverse impacts associated with the occupation or modification of floodplains…" Alternatives B and C would avoid all floodplains and affects to floodplains, and are consistent with this EO.

Executive Order (EO) 11990 requires the Forest Service to "avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands." Alternatives B and C would avoid all wetlands and affects to wetlands, and are consistent with this EO.

Municipal Watersheds - There is no de-facto or designated municipal watershed in the Cobbler project planning area.

Energy Requirements - No adverse effects on energy requirements would be expected to result from implementation of any alternative.

Public Health and Safety - Public health and safety would be improved with Alternatives B and C removing danger trees along haul routes and trailheads within Cobbler project planning area.

Environmental Justice - Executive Order 12898 requires that federal agencies adopt strategies to address environmental justice concerns within the context of agency operations. With implementation of any alternative, there would be no disproportionately high and adverse human health or environmental effects on minority or low-income populations. Smoke management would keep particulate matter within standards. The actions would occur in a remote area and nearby communities would mainly be affected by economic impacts related to contractors implementing harvest, non-commercial thinning, planting, fuels treatment, and burning activities. Racial and cultural minority groups could be prevalent in the work forces that implement these activities. Contracts contain clauses, which address worker safety.

Other Jurisdictions - There are a number of other agencies responsible for management of resources within the Cobbler project planning area. The Oregon Department of Fish and Wildlife is responsible for management of fish and wildlife populations, whereas, the Forest Service manages the habitat for these animals. The Oregon Department of Fish and Wildlife has been contacted regarding this analysis.
The Environmental Protection Agency (EPA) is responsible for enforcement of environmental quality standards, such as those established for water resources, while the Oregon Department of Environmental Quality sets standards, identifies non-point sources of water pollution, and determines which waters do not meet the goals of the Clean Water Act. The EPA has certified the Oregon Forest Practices Act as Best Management Practices. Oregon State compared Forest Service practices used to control or prevent non-point sources of water pollution with the Oregon Forest Practices Act and concluded that Forest Service practices meet or exceed State requirements. These are periodically reviewed as practices

change. The Forest Service and Oregon Department of Environmental Quality have signed a Memorandum of Understanding (2/12/79 and 12/7/82) outlining this.

Oregon Department of Environmental Quality (DEQ) and the Oregon Department of Forestry are responsible for regulating all prescribed burning operations. The USDA Forest Service, Region 6, has a Memorandum of Understanding with Oregon Department of Environmental Quality, Oregon Department of Forestry, and the USDI Bureau of Land Management regarding limits on emissions, as well as reporting procedures. All burning would comply with the State of Oregon's Smoke Management Implementation Plan and, for greater specificity, the memorandum of understanding mentioned above.

Special Use Permits - There are no special use permits issued in the project planning area with the exception of temporary (short-term) special use permits for outfitters and guides. Outfitter and guide permits are issued for both big game hunting and whitewater rafting on the Grande Ronde River. Outfitters and guides with special use permits for the Wenaha-Tucannon Wilderness may access their permit areas by way of trailheads in the project planning area.

OTHER RESOURCE CONCERNS AND OPPORTUNITIES

Probable Adverse Environmental Effects that Cannot be Avoided - There are no unavoidable adverse effects associated with implementing any of the alternatives that are not already identified in the FEIS for the Forest Plan (Chapter 4 pages IV 1- 15).

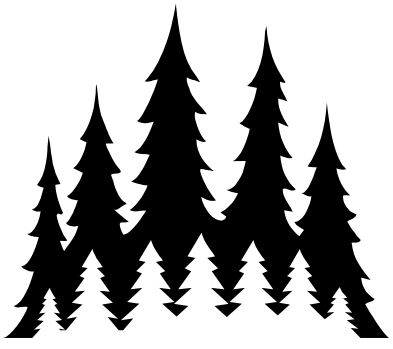
Relationship Between Short-Term Use and Long-Term Productivity - Maintenance of healthy soils in terms of organic matter and structure is a key prerequisite to maintaining healthy ecosystems. Long-term productivity depends on maintaining the basic ecosystem resources and their function. For this project, implementation of standards and guidelines as outlined in the FEIS for the Forest Plan are designed to provide for continued long-term site productivity. However, there would be some short-term effects related to the implementation of any of the action alternatives.

Irreversible and Irretrievable Commitment of Resources – Irreversible commitment of resources refers to a loss of future options with nonrenewable resources. Irretrievable commitment of resources refers to a loss of production of renewable resources.

No irreversible or irretrievable effects are anticipated from any of the alternatives. No irreversible commitments of land would occur. No unavoidable adverse effects over and above those addressed in the Forest Plan FEIS (Chapter 4, pages IV-231-233) have been identified.

CHAPTER 4

AGENCIES AND PERSONS CONSULTED
LIST OF PREPARERS



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Chapter 4

Agencies and Persons Consulted
List of Preparers

CONSULTATION AND COORDINATION

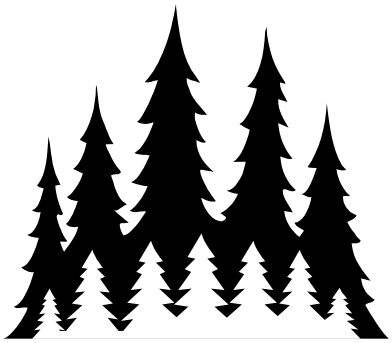
SCOPING and 30-DAY COMMENT LETTERS

Scoping letters and 30-day comment letters were sent to the mailing list of interested parties maintained at the Umatilla National Forest Supervisor's Office. They included federal, state and local agencies, Confederated Tribes of the Umatilla Indian Reservation, Nez Perce Indian Tribe, various environmental organizations, and interested individuals (see project file for mailing list).

INTERDISCIPLINARY TEAM MEMBERS:

Betsy Kaiser	Project Team Leader/Silvicuturist/Invasive Plants Coordinator
Holly Harris	Wildlife Biologist
Amber Mahoney	Fuels Technician
Stacia Peterson	Hydrologist
Dave Crabtree	Fish Biologist
Steve Anderson	Road/Trail Manager
Jeff Bloom	Recreation Specialist
Angela Whittaker	Range Technician
Craig Busskohl	Soil Scientist
Joan Frazee	Botanist
Robin Harris	GIS/Maps
Terri Jeffreys	NEPA/Writer/Editor
Eric Tonn	Timber Staff/Economics
Jill Bassett	Archeologist

LITERATURE CITATIONS



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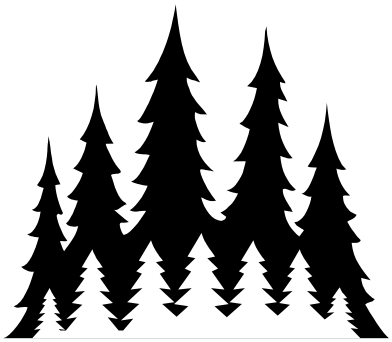
APPENDIX A

MAPS



Cobbler Project Planning Area Management Areas

Legend

- Cobbler Project Planning Area
- Walla Walla Ranger District Boundary
- Grande Ronde Inventoried Roadless Area
- Wenaha-Tucannon Wilderness

MAS

- A4 Viewshed 2
- A7 Wild and Scenic River
- A8 Scenic Area
- A9 Special Interest Area
- C1 Dedicated Old Growth Forest Habitat
- C4 Wildlife Habitat
- C5 Riparian and Wildlife
- D2 Elk Flats Meadow Research Natural Area Candidate
- E2 Timber/Big Game

Alternative B Haul Route

- Open
- Closed

Fish Distribution

- Steelhead/Redband Trout
- Steelhead/Redband and Bull Trout
- Steelhead/Redband, Chinook and Bulltrout
- Steelhead/Redband presumed, not confirmed

1:74,000

1 0.5 0 1 Miles

R. 40 E R. 41 E R. 42 E

T. 6 N T. 5 N T. 4 N

Wenaha River Bear Creek Grande Ronde River Grande Ronde River Bear Creek Grande Ronde River

6200 6217 6214 6219 6222 6200

E2 E2 E2 C4 C4 C4 C4 A8 A8 A8

Cobbler Project Planning Area Subwatershed Area Map

Legend

- Cobbler Project Planning Area
- Walla Walla Ranger District Boundary
- Wenaha-Tucannon Wilderness
- Grande Ronde Inventoried Roadless Area
- Subwatershed

Fish Distribution

- Steelhead/Redband Trout
- Steelhead/Redband and Bull Trout
- Steelhead/Redband, Chinook and Bulltrout
- Steelhead/Redband presumed, not confirmed

Alternative B Haul Route

- Open
- Closed

1:74,000

1 0.5 0 1 Miles

R. 40 E
R. 41 E
R. 42 E
T. 6 N
T. 5 N
T. 4 N

Lower Butte Creek
Wenaha River-Cross Canyon
Bear Creek-Hunt Spring
Wenaha River-Rock Creek
Wenaha River
Lower Wenaha River
Elbow Creek
Lower South Fork Wenaha River
Grande Ronde River-Slickfoot Creek
Upper South Fork Wenaha River
Jarboe Creek
Sheep Creek
Little Lookingglass Creek
Grande Ronde-Clear Creek
Bear Creek
Elbow Creek
Grande Ronde River
Grande Ronde-Bear Creek
Alder Creek
Grossman Creek
Wildcat Creek

6200
6214
6217
6219
6222
6209

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Cobbler Project Planning Area
Alternative B

Silvicultural Prescriptions and Harvest Methods

Legend

- Cobbler Project Planning Area
- Walla Walla Ranger District Boundary
- Grande Ronde Inventoried Roadless Area
- Wenaha-Tucannon Wilderness
- Trailhead

Fish Distribution

- Steelhead/Redband Trout
- Steelhead/Redband and Bull Trout
- Steelhead/Redband, Chinook and Bulltrout
- Steelhead/Redband presumed, not confirmed

Silvicultural Prescription, Harvest Method

- Commercial Thinning
- Commercial Thinning with Seed-tree Cut
- Commercial Thinning with Noncommercial Thinning
- Shelterwood with Commercial Thinning
- Shelterwood and/or Seed-tree Cut
- Noncommercial Thinning

Logging System

- Forwarder
- None
- Skyline
- Tractor

Haul Route

- Open
- Closed

Road Modification

- Resurfacing
- New Construction
- Temporary Road

1:74,000

1 0.5 0 1 Miles

R. 40 E

R. 41 E

R. 42 E

T. 6 N

T. 5 N

T. 4 N

6200

6217

6214

6219

6222

Wenaha River

Bear Creek

Elbow Creek

Grande Ronde River

Alder Cr

Cobbler Project Planning Area
Alternative B
Fuel Treatments

Legend

- Cobbler Project Planning Area
- Walla Walla Ranger District Boundary
- Grande Ronde Inventoried Roadless Area
- Wenaha-Tucannon Wilderness

Prescribed Natural Fuels Treatment

- Material removal and mastication - 3-9" DBH material
- Material removal and prescibed fire - 3-9" DBH material
- Mastication or grapple pile
- Mastication or grapple pile and/or prescribed fire
- Burn piles on landings
- Hand pile burning in units
- Landscape Prescribed Fire

Fish Distribution

- Steelhead/Redband Trout
- Steelhead/Redband and bull trout
- Steelhead/Redband, Chinook and bull trout
- Steelhead/Redband presumed, not confirmed

Haul Route

- Open
- Closed
- F Trailhead

1:74,000

1 0.5 0 1 Miles

R. 40 E R. 41 E R. 42 E

T. 6 N T. 5 N T. 4 N

Wenaha River Bear Creek Elbow Creek Grande Ronde River Alder Creek

6200 6217 6214 6219 6222 14

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Cobbler Project Planning Area
Alternative C

Silvicultural Prescriptions and Harvest Methods

Legend

- Cobbler Project Planning Area
- Walla Walla Ranger District Boundary
- Grande Ronde Inventoried Roadless Area
- Wenaha-Tucannon Wilderness
- F Trailhead

Fish Distribution

- Steelhead/Redband Trout
- Steelhead/Redband and Bull Trout
- Steelhead/Redband, Chinook and Bulltrout
- Steelhead/Redband presumed, not confirmed

Silvicultural Prescription, Harvest Method

- Commercial Thinning
- Commercial Thinning with Seed-tree Cut
- Commercial Thinning with Noncommercial Thinning
- Shelterwood with Commercial Thinning
- Shelterwood and/or Seed-tree Cut
- Noncommercial Thinning

Logging System

- Forwarder
- None
- Skyline
- Tractor

Haul Route

- Open
- Closed

Road Modification

- Resurfacing
- New Construction

1:74,000

1 0.5 0 1 Miles

R. 40 E R. 41 E R. 42 E

T. 6 N T. 5 N T. 4 N

F

6217 6214 6200 6219 6222 6200 6200

Wenaha River Bear Creek Elbow Creek Grande Ronde River Grande Ronde River Alder Cr

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Cobbler Project Planning Area
Alternative C
Fuel Treatments

Legend

- Cobbler Project Planning Area
- Walla Walla Ranger District Boundary
- Grande Ronde Inventoried Roadless Area
- Wenaha-Tucannon Wilderness

Prescribed Natural Fuels Treatment

- Material removal and mastication - 3-9" DBH material
- Material removal and prescibed fire - 3-9" DBH material
- Mastication or grapple pile
- Mastication or grapple pile and/or prescribed fire
- Burn piles on landings
- Hand pile burning in units
- Landscape Prescribed Fire

Fish Distribution

- Steelhead/Redband Trout
- Steelhead/Redband and bull trout
- Steelhead/Redband, Chinook and bull trout
- Steelhead/Redband presumed, not confirmed

Haul Route

- Open
- Closed
- F Trailhead

1:74,000

1 0.5 0 1 Miles

R. 40 E

R. 41 E

R. 42 E

T. 6 N

T. 5 N

T. 4 N

Wenaha River

Bear Creek

Elbow Creek

Grande Ronde River

Grande Ronde River

Alder Creek

6200

6217

6214

6200

6219

6222

6200

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Cobbler Project Planning Area
Other Activities Common to both Alternatives

Legend

- Cobbler Project Planning Area
- Walla Walla Ranger District Boundary
- Wenaha-Tucannon Wilderness
- Grande Ronde Inventoried Roadless Area

Alternative B Haul Route

- Open
- Closed
- F Trailhead

Fish Distribution

- Steelhead/Redband Trout
- Steelhead/Redband and Bull Trout
- Steelhead/Redband, Chinook and Bulltrout
- Steelhead/Redband presumed, not confirmed

- Quaking Aspen Restoration
- Pole Cutting Areas
- Black Cottonwood Restoration
- Dry Meadow Burning
- Mountain Mahogany Restoration
- D2 to A9
- D2 to E2
- E2 to A9

1:74,000

1 0.5 0 1 Miles

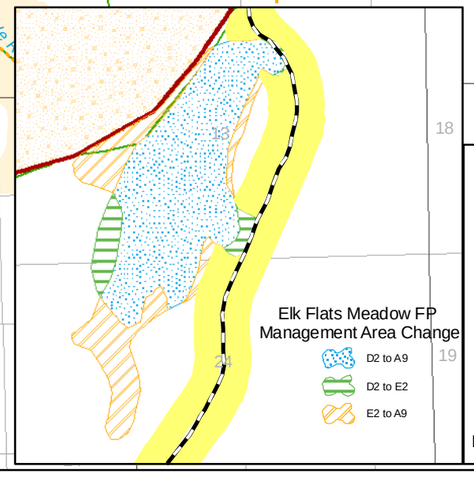
R. 40 E R. 41 E R. 42 E

T. 6 N T. 5 N T. 4 N

See enlargement of area

6200 6214 6217 6219 6222

Wenaha River Bear Creek Elbow Creek Grande Ronde River Alder Creek



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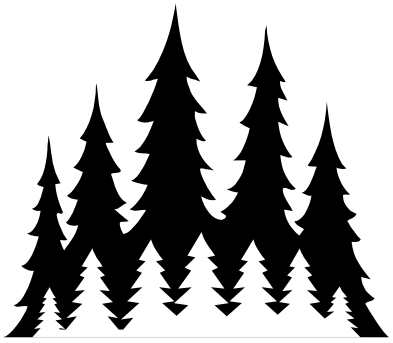
APPENDIX B

PLANNING UNIT TREATMENTS
BY
ALTERNATIVE



APPENDIX B

Planning Unit Treatments for Alternatives B and C

	Alt. B Acres	Alt. C Acres	Silvicultural Prescription	Harvest Method	Fuel Treatment	Stand Structure	Management Area
2	23	0	HITH/HSST	Tractor	mech., rx fire	SEOC	E2
5	44	44	HITH/HSST	Tractor	mech., rx fire	SEOC	E2
6	32	0	HITH/HSST	Tractor	mech., rx fire	SEOC	E2
7	52	52	HITH	Forwarder	3-9", mech.	SEOC	E2
9	13	0	HITH	Forwarder	3-9", mech., rx fire	OFMS	C4
10	15	15	HITH	Forwarder	mech., rx fire	OFMS, SECC	C4
11	27	27	HITH	Forwarder	mech	SEOC	C4
12	24	24	HITH/NCT	Forwarder	3-9", mech., rx fire	YFMS, SI	C4
13	16	0	HITH/NCT	None	mech., rx fire	OFMS	C4
14	2	0	HITH	Forwarder	3-9", mech., rx fire	OFMS	C4
18	19	0	HITH	Forwarder	3-9", mech., rx fire	OFMS, SI	E2
19	21	21	HITH	Forwarder	3-9", mech.	YFMS	E2
20	2	2	HITH	Forwarder	3-9", mech.	SEOC	E2
23	31	0	HITH	Forwarder	mech	OFMS, SEOC	C4, E2
24	13	13	HITH	Forwarder	mech	SEOC, YFMS	C4
25	16	0	HITH	Forwarder	mech	OFMS	C4
26	44	0	HITH/NCT	None	mech., rx fire	OFMS	C4
27	19	0	HITH	Forwarder	mech., rx fire	OFMS	C4
28	12	12	HITH	Forwarder	3-9", mech., rx fire	SEOC	C4
29	57	0	HITH	Skyline	mech., burn piles on landings	OFMS	E2, C5
31	29	29	HSSW/HITH	Tractor	mech	SEOC	E2
34	34	34	HITH	Forwarder	3-9", mech.	SEOC, OFMS	E2
37	3	0	HITH	Forwarder	mech	OFMS, SEOC	E2
38	100	0	HITH	Forwarder	3-9", mech.	OFMS, YFMS, SECC	E2
39	116	0	HITH	Forwarder	mech	SEOC, YFMS, OFMS	E2, C5
40	7	0	HITH	Forwarder	3-9", mech.	SEOC, OFMS	E2
41	32	0	HITH	Forwarder	3-9", mech.	SEOC	E2

	Alt. B Acres	Alt. C Acres	Silvicultural Prescription	Harvest Method	Fuel Treatment	Stand Structure	Management Area
42	31	31	HSSW/HSST	Tractor	mech	SEOC	E2
44	37	37	HITH	Forwarder	mech., handpiling	UR, SEOC, YFMS, OFMS	E2, A9
45	28	28	HITH	Forwarder	mech	SEOC	E2
47	31	10	HITH	Forwarder	mech., rx fire	OFMS, SEOC	E2
48	27	27	HITH	Forwarder	mech	SEOC, YFMS	E2
49	38	36	HITH	Forwarder	mech., rx fire	SEOC, OFMS	E2
50	11	0	HITH	Forwarder	3-9", mech.	OFMS	E2
51	27	27	HITH	Forwarder	mech.	SEOC, YFMS	E2
52	11	0	HITH	Forwarder	mech	SEOC, OFMS	E2
56	22	22	HSSW/HSST	Tractor	mech	SEOC	E2
57	62	62	HITH	Forwarder	mech	SEOC	E2
59	40	40	HSSW/HSST	Tractor	mech., rx fire	SEOC	E2
60	62	62	HITH	Skyline	mech., burn piles on landings	SEOC	E2, C5
61	32	32	HITH	Forwarder	mech	SEOC	E2
62	105	0	HITH	Forwarder	mech	OFMS	E2
63	20	20	HITH/NCT	Forwarder	3-9", mech., rx fire	SEOC	E2
64	32	32	HITH	Forwarder	mech	SECC	E2
65	70	0	HITH	Forwarder	mech	SECC, SEOC	E2
66	26	26	HITH	Forwarder	mech	SEOC	E2
67	21	21	HSSW/HSST	Tractor	mech	SEOC	E2
69	49	0	HITH	Forwarder	mech	SEOC	E2
70	67	0	HITH	Forwarder	mech	SEOC	E2
71	22	0	HITH	Skyline	mech., burn piles on landings	OFMS	E2, C5
72	31	31	HITH	Skyline	mech., burn piles on landings	SEOC	E2
74	28	28	HSSW/HSST	Tractor	mech	SEOC	E2
75	8	8	HITH	Forwarder	mech	SEOC, YFMS	E2
76	39	39	HSSW/HSST	Tractor	mech., rx fire	SEOC	E2, C5
77	87	81	HITH/NCT	Forwarder	3-9", mech.	SEOC, SECC, OFMS, YFMS	C4, E2
78	26	26	HITH/NCT	Forwarder	3-9", mech.	SEOC	C4
80	39	39	HSSW/HSST	Tractor	mech	SEOC, YFMS	C4
81	24	0	HITH	Forwarder	mech	YFMS	E2

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	Alt. B Acres	Alt. C Acres	Silvicultural Prescription	Harvest Method	Fuel Treatment	Stand Structure	Management Area
82	22	0	HITH	Forwarder	mech	YFMS	E2
83	40	0	HITH	Forwarder	mech	SEOC	E2, C5
84	18	0	HITH	Forwarder	mech	SEOC	E2, C5
86	46	0	HITH	Forwarder	mech	SEOC	C4, E2
87	24	24	HITH	Forwarder	mech	SEOC	C4
88	39	0	HITH	Skyline	mech., burn piles on landings	SEOC	E2, C4, C5
89	19	0	HITH	Skyline	mech., burn piles on landings	SEOC	C4, E2
90	29	29	HITH	Forwarder	mech	SEOC	29
91	26	26	HITH	Forwarder	mech., rx fire	SEOC	C4
92	25	25	HITH	Forwarder	mech	SECC	C4
93	67	0	HITH	Forwarder	mech	SEOC	C4
94	13	13	HITH	Forwarder	mech., rx fire	SEOC	C4
95	22	22	HITH	Forwarder	mech	SEOC	C4
96	60	60	HITH	Forwarder	mech	SECC	C4
97	25	25	HSSW/HSST	Tractor	mech., rx fire	SEOC	C4, C5
134	7	7	HITH/NCT	Forwarder	3-9", mech.	SEOC, SECC	E2
138	20	0	HITH	Forwarder	3-9", mech.	OFMS, SEOC	E2
145	10	0	HITH	Forwarder	mech	OFMS	E2, C5
231	5	0	HITH	Forwarder	mech	OFMS, SEOC	C4
Totals	**2,500**	**1,300**					

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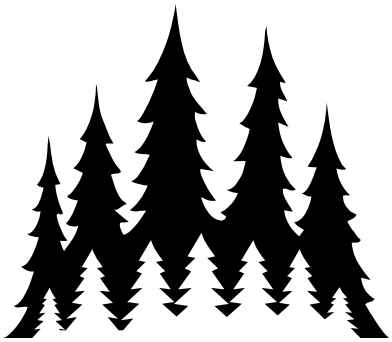
APPENDIX C

ROADS



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Appendix C

Table C-1 - Roads used in Alternative B

Road Number	Length - Miles	ATM Category
6200	31.98	Open
6200090	1.16	Open
6214	4.96	Open
6217	3.56	Open
6222	7.59	Open
6213	0.25	Open
6219	1.29	Seasonal
6200040	0.48	Closed
6200050	0.44	Closed
6200160	0.58	Closed
6200161	0.41	Closed
6200162	0.35	Closed
6200163	0.43	Closed
6200170	0.51	Closed
6200171	0.63	Closed
6200172	0.11	Closed
6200173	0.15	Closed
6200240	1.01	Closed
6200241	0.04	Closed
6200270	0.90	Closed
6200271	1.75	Closed
6200330	0.27	Closed
6200332	0.69	Closed
6200701	0.59	Closed
6200702	0.43	Closed
6214020	1.11	Closed
6214030	1.61	Closed
6214048	1.96	Closed
6214052	0.17	Closed
6214060	0.68	Closed
6217050	4.55	Closed
6217051	0.69	Closed
6217053	0.77	Closed
6217058	0.19	Closed
6217090	0.66	Closed
6217091	1.23	Closed
6219030	0.24	Closed
6219040	0.20	Closed
6219050	4.87	Closed
6219054	0.53	Closed
6222030	0.42	Closed
6222031	0.16	Closed
6222042	0.18	Closed
6222043	0.33	Closed
6222044	0.25	Closed
6222050	0.90	Closed

Road Number	Length - Miles	ATM Category
6222055	0.93	Closed
6222057	0.99	Closed
6222061	1.86	Closed
6222062	2.62	Closed
6222080	0.98	Closed
6222090	0.30	Closed
6222428	0.35	Closed
New construction	0.25	Closed
Total	**90**	

Table C-2 Roads used in Alternative C

Road Number	Length - Miles	ATM Category
6200	45.92	Open
6200090	1.16	Open
6213	0.25	Open
6214	4.96	Open
6217	2.35	Open
6222	7.39	Open
6219	1.29	Seasonal
6200040	0.48	Closed
6200050	0.44	Closed
6200160	0.48	Closed
6200162	0.35	Closed
6200163	0.43	Closed
6200170	0.51	Closed
6200171	0.63	Closed
6200172	0.07	Closed
6200240	1.01	Closed
6200241	0.04	Closed
6200270	0.90	Closed
6200271	0.64	Closed
6200701	0.59	Closed
6200702	0.43	Closed
6214020	0.74	Closed
6214030	1.61	Closed
6214048	1.96	Closed
6214060	0.36	Closed
6217050	4.55	Closed
6217051	0.69	Closed
6217053	0.18	Closed
6217090	0.66	Closed
6217091	1.24	Closed
6219040	0.20	Closed
6219050	4.87	Closed
6222030	0.23	Closed
6222043	0.33	Closed
6222050	0.90	Closed
6222055	0.61	Closed
6222057	0.99	Closed

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Road Number	Length - Miles	ATM Category
6222061	0.43	Closed
6222062	1.58	Closed
6222080	0.98	Closed
6222090	0.30	Closed
New construction	0.25	Closed
Total	**80**	

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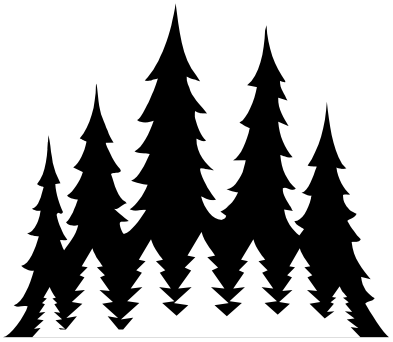
APPENDIX D

BEST MANAGEMENT PRACTICES



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Appendix D

Best Management Practices

BMP's and Contract "C" clauses will be included to insure minimal ground disturbance and to provide adequate mitigation. Effectiveness/implementation monitoring will be performed by TMA/resource personnel (the presale technician will assure BMPs are met during sale preparation and the sale administrator will assure BMPs are met during timber sale operations. Regional Standards require that C clause C6.6# be included to prevent adverse cumulative soil impacts (<15%) and protect soils.

Specific resource protection measures and mitigation's listed below would be implemented in any action alternative. These resource protection measures and mitigation's are consistent with the Umatilla National Forest LRMP standards and guidelines. The general discussion of Best Management Practices (BMP's) are found in the General Water Quality Best Management Practices, Pacific N.W. Region, 1988. BMP's and resource protection measures are identified below, as well as an estimation of the ability to implement BMPS's, their anticipated effectiveness, timing and responsibility for monitoring.

1. Maintain all Riparian Habitat Conservation Areas (RHCAs), with no removal of timber from these areas. PACFISH provides default standard widths for RHCAs based on one of four categories: fish bearing; perennial, non-fish bearing; ponds, lakes, wetlands greater than 1 acre; and intermittent or small wetlands.

2. Follow PACFISH standards and guidelines. Timber Management, Roads Management, and Fire/Fuels Management standards and guides apply to this project.

3. Design harvest systems to minimize crossing stream channels and ephemeral draws. All drainage crossings, including ephemeral draws, are to be approved on the ground by the Sale Administrator in consultation with the Hydrologist.

4. Ephemeral stream channels should have protections to minimize equipment disturbance of duff and soil, and should not be used as skid trails, landing sites, or as road locations. Ephemeral draws, not within RHCAs, are to meet the following down wood requirements to reduce risk of upward migration and channel initiation: retain all wood embedded in the soil; retain at least 5 pieces of wood >12" diameter and >20' in length per 1000' of draw bottom (average 1 piece per 200'); retain at least 20 pieces of wood >6" diameter and >10' in length per 1000' of draw bottom (average 1 piece per 50'). Ephemeral draws with a gradient of 5% or more will need to be visited by the hydrologist to determine if any additional site specific mitigation is required.

5. All temporary roads and landings shall be obliterated at the completion of their intended use (see BMP R-23) - NFMA requires that all temporary roads be returned to resource production within 10 years. Reclose all roads, with sufficient drainage structures, which are opened for project activities. For all temporary roads:

- · obliterate as soon as feasible after use
- · season of use shall be specified to minimize rutting, erosion, sedimentation, and water concentrations
- · plan, locate, design, and construct temporary roads with ease of obliteration as a priority - stockpile topsoil and duff for re-shaping after use or obliteration

· horizontal and vertical alignments should conform to the natural contour as closely as possible - outsloped rolls in the grade effectively break up water concentrations during use and can be crafted into silt traps and planting pockets during obliteration

6. The following BMP's are identified for the timber sale portion of the project, along with an estimation of the ability to implement them, as well as their anticipated effectiveness, timing and responsibility for monitoring.

T-1 - Timber Sale Planning Process
Estimates will be made on the potential changes to water quality and instream beneficial uses.
Responsibility: Hydrologist and Fisheries Biologist
Timing: Prior to activity
Ability to Implement: High
Effectiveness: High

T-2 - Timber Harvest Unit Design
Unit design will ensure favorable conditions of water flow, water quality, and fish habitat through PACFISH RHCAs.
Responsibility: Hydrologist and Fisheries Biologist
Timing: Prior to activity
Ability to Implement: High
Effectiveness: High

T-4 - Use of Sale Area Maps for Designating Water Quality Protection Needs
The Sale Area Map will include locations of streams to be protected and the required harvest method (ephemeral draws would be protected during forwarder route design, but not under the protected stream course provision).
Responsibility: Presale Technician
Timing: Prior to activity
Ability to Implement: High
Effectiveness: High

T-8 - Streamcourse Protection (Implementation and Enforcement)
Location, method and timing of streamcourse crossing will be agreed upon in advance by the Forest Service and Purchaser.
Responsibility: Sale Administrator
Timing: During activity
Ability to Implement: High
Effectiveness: High

T-10 - Log Landing Location
Harvest plans will include proposed landing locations. Landing locations and size will be approved by the Forest Service in advance.
Responsibility: Presale Technician and Sale Administrator
Timing: Prior to and during activity
Ability to Implement: High
Effectiveness: High

T-11 – Yarding and Skidding Trail Location and Design
Harvest plans will include proposed yarding patterns. Trails will be approved in advance by Forest Service personel.

Responsibility: Presale Technician and Sale Administrator
Timing: Prior to and during activity
Ability to Implement: High
Effectiveness: High

T-12 - Suspended Log Yarding in Timber Harvesting
Full suspension will occur where forwarder and helicopter logging is required and partial suspension will occur where skyline logging is required so as to create minimal soil disturbance.

Responsibility: Presale Technician and Sale Administrator
Timing: Prior to and during activity
Ability to Implement: High
Effectiveness: High

T-13 - Erosion Prevention Measures During Timber Sale Operations
Equipment shall not operate when ground conditions are susceptible to detrimental soil disturbances (not more than 15% of the logged area is permitted to have detrimental soil disturbance). Erosion control work will be kept current.

Responsibility: Sale Administrator
Timing: During activity
Ability to Implement: High
Effectiveness: High

T-15 - Log Landing Erosion Prevention and Control
The Forest Service will designate areas for landing scarification and erosion control seeding as well as any necessary water bars or other drainage structures.

Responsibility: Sale Administrator
Timing: During activity
Ability to Implement: High
Effectiveness: High

T-18 - Erosion Control Structure Maintenance
The Purchaser will provide maintenance of soil erosion control structures as required in the TSC.

Responsibility: Sale Administrator
Timing: During activity
Ability to Implement: Moderate
Effectiveness: High

T-19 - Acceptance of Timber Sale Erosion Control Measures Before Sale Closure
The effectiveness of erosion control measures will be evaluated periodically during the life of the TSC.

Responsibility: Sale Administrator and Hydrologist
Timing: During activity
Ability to Implement: High
Effectiveness: High

T-20 - Reforestation

Suitable land will be reforested within five years of harvest.

Responsibility: Reforestation Technician
Timing: Prior to activity
Ability to Implement: High
Effectiveness: High

T-21 - Servicing and Refueling of Equipment

The Forest Service will designate refueling and servicing areas. A Spill Prevention Control and Countermeasures Plan is required if on site fuel storage exceeds 660 gallons in a single container or if total storage exceeds 1320 gallons.

Responsibility: Sale Administrator
Timing: During activity
Ability to Implement: High
Effectiveness: High

R-1 - General Guidelines for the Location and Design of Roads

Road reconstruction will assure design creates minimal resource damage.

Responsibility: Engineering Technician
Timing: Prior to activity
Ability to Implement: High
Effectiveness: High

R-2 - Erosion Control Plan

Limit erosion and sedimentation through effective planning and contract administration.

Responsibility: Engineering Technician
Timing: Prior to and during activity
Ability to Implement: High
Effectiveness: Moderate

R-3 - Timing of Construction Activities

Road reconstruction will occur during minimal runoff periods to minimize erosion.

Responsibility: Engineering Technician
Timing: During activity
Ability to Implement: High
Effectiveness: Moderate

R-18 - Maintenance of Roads

Ditches and culverts will be kept open and ruts repaired.

Responsibility: Sale Administrator
Timing: During activity
Ability to Implement: High
Effectiveness: High

R-20 - Traffic Control During Wet Periods

Haul and other associated traffic will be controlled when road damage is likely to occur due to road/weather conditions.

Responsibility: Sale Administrator
Timing: During activity
Ability to Implement: High
Effectiveness: High

R-21 - Snow Removal Controls to Avoid Resource Damage
Snow removal will assure water can drain from road prism before it develops enough energy to erode road surface or fill slopes.

Responsibility: Sale Administrator
Timing: During activity
Ability to Implement: High
Effectiveness: High

R-22 - Restoration of Borrow Pits and Quarries
Borrow Pits will be stabilized such that banks are stable and access road provides necessary drainage.

Responsibility: Engineering Technician
Timing: During activity
Ability to Implement: High
Effectiveness: High

R-23 - Obliteration of temporary roads and landings
Temporary roads and landings will be obliterated at the completion of their intended use to reduce chronic sediment sources and restore productivity. *Effective obliteration is generally achieved through a combination of the following measures: temporary culverts and bridges removed and natural drainage configuration reestablished, road* surface ripped, sideslopes reshaped and stabilized, road effectively drained and blocked, road returned to resource production through revegetation (grass, browse, or trees).

Responsibility: Sale Administrator, with advice from hydrologist
Timing: At the completion of activity
Ability to Implement: High
Effectiveness: High

F-1 - Fire and Fuel Management Activies
Activity related fuel will be managed to assure the risk of wildfire is not increased. The timber sale contract will be utilized to ensure that LRMP standards and guidelines for down woody material are met without necessitating additional impacts due to use of machinery. Some slash should be retained on the forwarder trails to reduce the chances of erosion, to trap sediment, and to provide nutrients to the soils for productivity.

Responsibility: Fire Management Officer
Timing: During activity
Ability to Implement: High
Effectiveness: High

F-2 - Consideration of Water Quality in Formulating Prescribed Fire Prescriptions
The prescribed fire plan will be developed to assure fire mortality does not exceed 10% of the tree canopy or remove effective ground cover from more than 20% of the burn area. Fire ignitions will not occur within RHCAs.

Responsibility: Fire Management Officer
Timing: Prior to activity
Ability to Implement: High
Effectiveness: High

F-3 - Protection of Water Quality During Prescribed Fire Operations
The prescribed fire will follow the burn plan. Adjustments will be made during firing operations if objectives are not being met.

Responsibility: Fire Management Officer
Timing: Prior to and during activity
Ability to Implement: High

W-5 - Cumulative Watershed Effects
To ensure that the additional effects of the proposed management activities, when added to the existing conditions, do not exceed thresholds of concern or result in adverse (degraded) water quality or channel/fish habitat conditions.

Responsibility: Hydrologist
Timing: Prior to activity
Ability to Implement: High
Effectiveness: High

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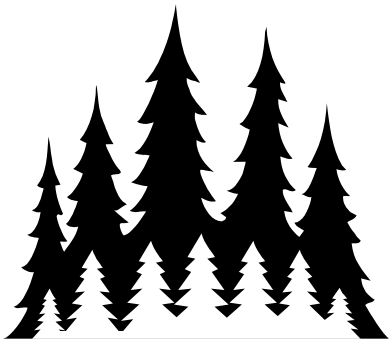
APPENDIX E

SOILS



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Appendix E

Table E-1 Cumulative Detrimental Soil Condition (DSC) by Unit for Alternative B

Activity Unit Number	Existing Disturbance Condition Descriptor	Existing Detrimental Soil Condition Percent	Unit Treatment Acreage	Current Average Calculated ACRES DSC*	Estimated Added Percent DSC from Harvest Activity	Estimated Added Percent DSC from Fuels Activity	Total Percent Potential DSC Post-Activity	Acres DSC Post-Activity
2	Low	3	23	0.7	6	3	12	3
5	Low	3	44	1.3	6	3	12	5
6	Low	3	32	1.0	6	3	12	4
7	Low	3	52	1.6	3	2	8	4
9	Low	2	13	0.3	3	3	8	1
10	None	1	15	0.2	3	3	7	1
11	None	1	27	0.3	3	2	6	2
12	Moderate	4	24	1.0	3	3	10	2
13	Low	3	16	0.5	3	2	8	1
14	Low	3	2	0.06	3	3	9	0
18	Low	2	19	0.4	3	3	8	2
19	Low	3	21	0.6	3	2	8	2
20	Low	3	2	0.1	3	2	8	0
23	Low	3	31	0.9	3	2	8	2
24	Moderate	4	13	0.5	3	2	9	1
25	Low	3	16	0.5	3	2	8	1
26	Low	4	44	1.8	3	2	9	4
27	Moderate	7	19	1.3	3	2	12	2
28	High	10	12	1.2	3	3	16	2
29	Low	3	57	1.7	3	2	8	5
31	None	1	29	0.3	6	2	9	3
34	Low	2	34	0.7	3	2	7	2
37	Low	2	3	0.1	3	2	7	0
38	Low	3	100	3.0	3	2	8	8
39	Low	3	115	3.5	3	2	8	9
40	Low	3	7	0.2	3	2	8	1
41	Low	2	32	0.6	3	2	7	2
42	Low	2	31	0.6	6	2	10	3
44	Moderate	5	38	2.0	3	2	10	4
45	Low	3	28	0.9	3	2	8	2
47	Low	3	31	0.9	3	3	9	3
48	Low	3	27	0.8	3	2	8	2
49	Low	3	38	1.1	3	3	9	3
50	Low	3	11	0.3	3	2	8	1
51	Low	3	27	0.8	3	2	8	2

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Activity Unit Number	Existing Disturbance Condition Descriptor	Existing Detrimental Soil Condition Percent	Unit Treatment Acreage	Current Average Calculated ACRES DSC*	Estimated Added Percent DSC from Harvest Activity	Estimated Added Percent DSC from Fuels Activity	Total Percent Potential DSC Post-Activity	Acres DSC Post-Activity
52	Low	4	11	0.4	3	2	9	1
56	Low	3	22	0.7	6	2	11	2
57	Moderate	5	62	3.1	3	2	10	6
59	Low	3	40	1.2	6	2	11	4
60	Low	3	62	1.8	7	2	12	7
61	Low	3	32	1.0	3	2	8	3
62	Low	3	105	3.1	3	2	8	8
63	Low	3	20	0.6	3	3	9	2
64	Low	4	32	1.3	3	2	9	3
65	Low	3	70	2.1	3	2	8	6
66	Low	3	26	0.8	3	2	8	2
67	Low	3	21	0.6	6	2	11	2
69	Low	3	49	1.5	3	2	8	4
70	None	1	67	0.7	3	2	6	4
71	Low	3	22	0.7	10	2	15	3
72	Low	3	31	0.9	2	2	7	2
74	None	1	28	0.3	6	2	9	3
75	None	1	8	0.1	3	2	6	0
76	Low	3	39	1.2	6	2	11	4
77	Low	3	87	2.6	3	2	8	7
78	Low	3	26	0.8	3	2	8	2
80	Low	3	39	1.2	6	2	11	4
81	Low	3	24	0.7	3	2	8	2
82	Low	3	22	0.7	3	2	8	2
83	Low	3	40	1.2	3	2	8	3
84	Low	3	18	0.5	3	2	8	1
86	Low	3	46	1.4	3	2	8	4
87	Low	3	24	0.7	3	2	8	2
88	Low	3	39	1.2	3	3	9	4
89	Low	3	19	0.6	5	2	10	2
90	Low	3	29	0.9	3	2	8	2
91	Low	3	26	0.8	3	3	9	2
92	Low	3	25	0.8	3	2	8	2
93	Low	3	67	2.0	3	2	8	5
94	Low	3	13	0.4	3	3	9	1
95	Low	3	22	0.7	3	2	8	2
96	Low	3	60	1.8	3	2	8	5
97	Low	3	25	0.8	6	2	11	3
134	Low	3	7	0.2	3	2	8	1
138	Low	3	21	0.6	3	2	8	2

Activity Unit Number	Existing Disturbance Condition Descriptor	Existing Detrimental Soil Condition Percent	Unit Treatment Acreage	Current Average Calculated ACRES DSC*	Estimated Added Percent DSC from Harvest Activity	Estimated Added Percent DSC from Fuels Activity	Total Percent Potential DSC Post-Activity	Acres DSC Post-Activity
145	Low	3	10	0.3	3	2	8	1
231	Low	3	5	0.2	3	2	8	1
Total			**Approx. 2,500**	**Approx. 75**				**Approx. 215**

Table E-2 Cumulative Detrimental Soil Condition (DSC) by Unit for Alternative C

Activity Unit Number	Existing Disturbance Condition Descriptor	Existing Detrimental Soil Condition Percent	Unit Treatment Acreage	Current Average Calculated ACRES DSC*	Estimated Added Percent DSC from Harvest Activity	Estimated Added Percent DSC from Fuels Activity	Total Percent Potential DSC Post-Activity	Acres DSC Post-Activity
5	Low	3	44	1.3	6	3	12	5
7	Low	3	52	1.6	3	2	8	4
10	None	1	15	0.2	3	3	7	1
11	None	1	27	0.3	3	2	6	2
12	Moderate	4	24	1.0	3	3	10	2
19	Low	3	21	0.6	3	2	8	2
20	Low	3	2	0.1	3	2	8	0
24	Moderate	4	13	0.5	3	2	9	1
28	High	10	12	1.2	3	3	16	2
31	None	1	29	0.3	6	2	9	3
34	Low	2	34	0.7	3	2	7	2
42	Low	2	31	0.6	6	2	10	3
44	Moderate	5	38	1.9	3	2	10	4
45	Low	3	28	0.8	3	2	8	2
47	Low	3	31	0.3	3	3	9	3
48	Low	3	27	0.8	3	2	8	2
49	Low	3	38	1.1	3	3	9	3
51	Low	3	27	0.8	3	2	8	2
56	Low	3	22	0.7	6	2	11	2
57	Moderate	5	62	3.1	3	2	10	6
59	Low	3	40	1.2	6	2	11	4
60	Low	3	62	1.9	7	2	12	7
61	Low	3	32	1.0	3	2	8	3
63	Low	3	20	0.6	3	3	9	2
64	Low	4	32	1.3	3	2	9	3
66	Low	3	26	0.8	3	2	8	2
67	Low	3	21	0.6	6	2	11	2

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Activity Unit Number	Existing Disturbance Condition Descriptor	Existing Detrimental Soil Condition Percent	Unit Treatment Acreage	Current Average Calculated ACRES DSC*	Estimated Added Percent DSC from Harvest Activity	Estimated Added Percent DSC from Fuels Activity	Total Percent Potential DSC Post-Activity	Acres DSC Post-Activity
72	Low	3	31	0.9	2	2	7	2
74	None	1	28	0.3	6	2	9	3
75	None	1	8	0.1	3	2	6	0
76	Low	3	39	1.2	6	2	11	4
77	Low	3	87	2.4	3	2	8	7
78	Low	3	26	0.8	3	2	8	2
80	Low	3	39	1.2	6	2	11	4
87	Low	3	24	0.7	3	2	8	2
90	Low	3	29	0.9	3	2	8	2
91	Low	3	26	0.8	3	3	9	2
92	Low	3	25	0.8	3	2	8	2
94	Low	3	13	0.4	3	3	9	1
95	Low	3	22	0.7	3	2	8	2
96	Low	3	60	1.8	3	2	8	5
97	Low	3	25	0.8	6	2	11	3
134	Low	3	7	0.2	3	2	8	1
Total			**Approx. 1,300**	**Approx. 40**				**Approx. 120**

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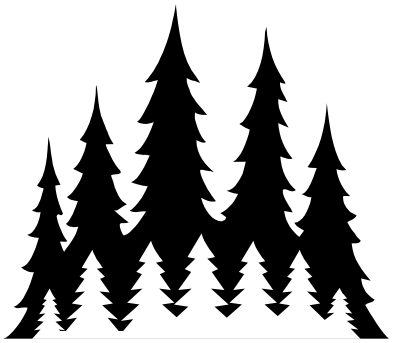
APPENDIX F

CONSISTENCY WITH EASTSIDE SCREENS



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APPENDIX F

Cobbler Timber Sale and Fuel Reduction Project
Consistency with Eastside Screens

Summary:

Umatilla National Forest Land and Resource Management Plan Amendment #11 (also known as Regional Forester's Forest Plan Amendment #2) requires that certain categories of timber sales be screened to evaluate their potential impact on riparian habitat, historical vegetation patterns, and wildlife fragmentation and connectivity.

The riparian screen will be met by implementing the PACFISH riparian habitat conservation area requirements (Umatilla National Forest Plan Amendment #10).

In Cold Upland Forest, no harvest is proposed.

In Moist Upland Forest, harvest is allowed in late and old structure because the amount of LOS is above the historical range. The Ecosystem and Wildlife screens are met because all stands entered for harvest are less than 100 acres each, and the requirements for LOS connectivity, snag and down wood habitat, and goshawk are met.

In Dry Upland Forest, one type of LOS is below the historic range. The Ecosystem and Wildlife screens are met because no harvest will occur within late or old structure (LOS) stands, and no trees greater than or equal to 21" DBH will be harvested in dry forest. The requirements for LOS connectivity, snag and down wood habitat, and goshawk are also met.

The Eastside Screens

The Eastside Screens consist of six items: three general standards, a riparian standard, an ecosystem standard, and a wildlife standard.

General Standards (items 1-3 in FP Amendment #11)

General standards define which types of projects are covered by the Eastside Screens. Because the Cobbler project includes the use of a timber sale to accomplish the stated objectives, the Eastside screens will apply.

Riparian Standard (item 4)

Item 4 of the Eastside Screens directs that timber sales (green and salvage) will not be planned or located in riparian areas.

Umatilla National Forest policy is that by applying PACFISH, the Eastside Screens riparian standard is met. PACFISH uses a buffer concept to establish riparian habitat conservation areas (RHCA) along both sides of streams, rivers, lakes and other wetlands. RHCA widths extend from the edge of the active stream channel and they vary with stream class and whether a stream is fish bearing or not. RHCAs can be established using specified feet of slope distance (300 feet on either side of perennial, fish-bearing streams) or in numbers of "site potential tree heights" (2 site-potential tree heights for perennial, fish-bearing streams). The interim RHCA widths established by the PACFISH environmental assessment

could be adjusted during watershed analysis or after site-specific analysis presenting a rationale for RHCA modifications.

None of the forest vegetation proposed actions (timber harvest, fuels treatments) will occur in riparian habitat conservation areas established using PACFISH (Forest Plan amendment #10).

Ecosystem Standard (item 5)
The ecosystem standard requires a landscape-level assessment of the historical range of variability (HRV) for structural stages, including a comparison of current structural stage amounts with their historical ranges. An HRV analysis of stand structure classes (equivalent to "structural stages" in the Eastside Screens) was prepared for the Cobbler analysis area.

	PVG	UPLAND FOREST STRUCTURAL STAGES **SI**	**SEOC**	**SECC**	**UR**	**YFMS**	**OFMS**	**OFSS**
Cobbler Analysis Area	**COLD UPLAND FOREST Historic%**	1-30	0-5	5-35	5-25	5-50	1-60	0-10
	Current%	**8**	**16**	**61**	**0**	**0**	**0**	**15**
	MOIST UPLAND FOREST Historic%	1-15	0-5	1-25	5-25	20-60	10-60	0-5
	Current%	**14**	**51**	**3**	**1**	**10**	**21**	**0**
	DRY UPLAND FOREST Historic%	5-15	5-20	0-10	0-10	5-25	5-20	15-70
	Current%	**15**	**14**	**24**	**8**	**10**	**22**	**6**

Wildlife Standard (item 6)
The wildlife standard has two possible scenarios to follow based on HRV results for late-old structural stages (LOS). LOS is defined as "multi-stratum with large trees" and "single stratum with large trees" structural stages. Scenario A is to be used whenever either one of the LOS stages is below HRV. If both LOS stages occur within a single biophysical environment and one is above HRV and one is below, Scenario A is to be used. Scenario B (item 6 e) is to be used only when both LOS stages for a particular biophysical environment are within or above HRV.

Biophysical Environment	LOS Component	Historical Range (%)	Current Percent	Comparison	Wildlife Standard Results
Cold Upland Forest	SSLT	0 – 10	15	Above HRV	Scenario A
	MSLT	1 - 60	0	Below HRV	
Moist Upland Forest	SSLT	0 – 5	0	Within HRV	Scenario B
	MSLT	10 – 60	21	Within HRV	
Dry Upland Forest	SSLT	15 – 70	6	Below HRV	Scenario A
	MSLT	5 – 20	22	Above HRV	

Since the Cobbler analysis area is within HRV in moist forest, Scenario B may be applied to moist forest stands. In dry forest, Scenario A applies.

Dry Upland Forest, Scenario A:
Scenario A includes four major items and many sub-items as described below.

1. Item 1 allows some timber sale activities to occur within late/old structure (LOS) stages that are within or above HRV in order to maintain or enhance LOS in a particular biophysical environment.

Result: 150 acres of thinning is proposed within Dry Upland Forest late/old structure. These stands will be converted to single story structure typical of dry forest historically.

2. Remnant late and old seral and/or structural live trees ≥ 21" DBH" should be retained. Many types of timber sale activities are permissible outside of LOS, with the intent of maintaining or enhancing LOS components; that manipulation of vegetative structure not meeting LOS standards should occur in such a way that conditions are moved toward LOS structure; and that maintenance or restoration of open, park-like structure should be emphasized whenever appropriate.

Result: No trees ≥ 21 inches DBH would be removed in dry upland forest.

3. Item 3 involves maintaining or enhancing the current level of connectivity between LOS stands and between Forest Plan old-growth areas, reducing fragmentation of existing LOS stands, and not applying even-aged regeneration cutting methods or group selection to non-LOS stands surrounded by LOS stands.

Result: Connective corridors have been mapped according to forest plan requirements. Harvest proposed within connective corridors would leave fully stocked stands and connectivity of LOS stands would be maintained (Wildlife Report).

4. Item 4 involves retention of snags, green-tree replacements, and down logs. It also addresses goshawk habitat by requiring protection of known goshawk nests (both active and historical), requires 30 acres of goshawk nesting habitat surrounding all active and historical goshawk nest trees, and provision of a 400-acre "post fledging area" around every known active nest site.

Result: Snags, down logs, and green tree replacements would meet or exceed Forest plan standards. Since the majority of harvest involves thinning from below and will not impact snags to a great degree. Where down logs are below management requirements, down logs would not be removed in the harvest operations.

According to the wildlife specialist report, there are no known goshawk nests in the Cobbler analysis area. If a nest is discovered during project preparation or implementation, most-suitable nesting habitat and post-fledging area standards from this item will be applied at that time.

Moist Upland Forest, Scenario B:

Scenario B includes four major items and many sub-items as described below.

Item 1 gives the priority of stand types in which harvest activities should occur, and emphasizes that harvest may occur within LOS, but preference should be given to smaller, isolated LOS stands <100 acres in size, and regeneration activities are not allowed within larger LOS stands.

Result: All proposed treatments in LOS are in stands < 100 acres. (Planning unit 62 is listed as 105 acres, however treatment will cover a smaller area.) Treatment in the old forest multistory stands is intended to make these stands more resilient to insects, disease, and crown fire. The stand structure will be changed from old forest multi-story to old forest single story.

Item 2 involves maintaining or enhancing the current level of connectivity between LOS stands and between Forest Plan old-growth areas, reducing fragmentation of existing LOS stands, and not applying even-aged regeneration cutting methods or group selection to non-LOS stands surrounded by LOS stands.

Result: Connective corridors have been mapped according to forest plan requirements. Harvest proposed within connective corridors would leave fully stocked stands and connectivity of LOS stands would be maintained (Wildlife Report).

Item 3 involves non-fragmentation of large LOS stands ≥ 100 acres. In the interior (beyond 300 ft from edge), harvest is limited to non-fragmenting prescriptions such as thinning, single-tree selection, or other non-regeneration activities. Group selection is only allowed when openings created either mimic the natural forest pattern, and/or do not exceed ½ acre in size.

Result: Treatment is not proposed in LOS stands ≥ 100 acres. All proposed harvest in LOS entails thinning from below.

Item 4 contains the same wildlife guidelines provided in Scenario A, Item 4, for snags and down wood habitat, and Item 5 for goshawk habitat with the following exception: maintain 60% of the 400 acre post fledging area in an LOS condition.

Result: Snags, down logs, and green tree replacements would meet or exceed Forest Plan standards. Since the majority of harvest involves thinning from below and will not impact snags to a great degree. Where down logs are below management requirements, down logs would not be removed in the harvest operations.

According to the wildlife specialist report, there are no known goshawk nests in the Cobbler project planning area. If a nest is discovered during project preparation or implementation, most-suitable nesting habitat and post-fledging area standards from this item will be applied at that time.