Cover Sheet

Proposed Action:	Fuels treatment in the Cove Area on BLM lands.
Type of Statement:	Environmental Assessment (EA OR-030-2003-05)
Agency:	Bureau of Land Management
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Introduction: Wildfires in recent years culminated in the year 2003 with severe impacts to public and private land resources, especially to rural communities, across the West. For 2001 and subsequent years, the President asked for budget and actions to support recommendations to reduce impacts in the future. Congress, with the support of the Western Governors Association approved this plan, with Congress providing the needed increase in fire management budgets to begin to address the problems that were identified. The resulting plan is referred to as the National Fire Plan (NFP). The underlying strategy is called "Protecting People and Sustaining Resources in Fire-Adapted Ecosystems: A Cohesive Strategy." In 2001 communities at high risk due to wildfire were identified and a list of these communities was published in the Federal Register. Cove, Oregon was identified as one of these communities at risk.

The Vale District, through a contract with Dynamac Corporation, undertook a survey of 8 communities in eastern Oregon identified at risk to wildfire, to determine the hazard faced of wildfire spreading across the Wildland-Urban Interface (WUI). The wildland interface community exists where humans and their development meet or intermix with wildland fuel. The Cove community was surveyed as part of this effort. The contractor surveyed points along the wildland-urban interface boundary and rated each based on the wildland-type fuels present there, according to a set of characteristics that made each site more or less susceptible to wildland fire. The contractor also conducted a survey of structures and firefighting capabilities in and around the community, in order to develop a general assessment of the community's preparedness for wildland-urban interface fires, and the defensibility and firewise practices exhibited by existing structures. Two community meetings were held in Cove to obtain public input as to values at risk, firefighting capabilities, and recommendations for improving each community's preparedness and defensibility. The contractor interviewed public officials and firefighting personnel in Cove to gain similar insights.

The results of these fuel and structure surveys, interviews, and community meetings have been incorporated into recommendations for mitigation measures and improvements. The reports can be viewed or downloaded at http://www.or.blm.gov/vale/. These recommendations are specific to the Cove community, and have been tailored to suit the needs noted by the contractor in its survey. The hazard to the community from wildfire on public lands near Cove is high. Recent fuels assessments revealed high risks in several categories, including fuel height, density, and elevation. Moreover, dead vegetation and multiple understory layers in some areas could serve as ladder fuels, spreading

fire rapidly and increasing the chances of canopy fires. Mitigation measures appropriate to reduce forest crown fire hazard include commercial and non-commercial mechanical fuel removal, and maintenance of treated areas with prescribed fire. Fuel removal would be effected through timber sales, the opening of firewood-clearing areas on public land, and removal of dead and insect-infested wood. The fuel reduction projects include practices that would reduce the accumulation or build-up of fuels in specific areas to directly reduce wildfire hazard to a community.

The proposed project (Map 1) is within the Blue Mountain Geographic Unit, as designated in the Baker Resource Management Plan (RMP), the land use plan that provides overall guidance for activities on BLM administered lands in the Baker Resource Area.

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I. Purpose of and Need for Action

The Baker Resource Area of the Vale District is applying the National Fire Plan strategy to:

- Improve the resilience and sustainability of lands at risk;
- Conserve watersheds, native species, and biodiversity;
- Reduce wildland fire costs, losses, and damages; and
- Improve assurances of public and firefighter safety.

The proposed projects outlined in this assessment would help to meet the recommended mitigation measures described in the final Cove Wildland-Urban Interface, Communities-at-Risk Program.

The primary purpose of the project is to reduce fuel loads that currently impose a high risk of uncharacteristic high intensity stand replacement fire; particularly as such a fire would impact urban interface areas.

Subsidiary goals include improving stand health, reducing the incidence of insect and disease problems within the stands, and encouraging the growth of desirable hardy tree species.

Forest stands within the proposed project area are quite dense. These dense stand conditions have reduced stand vigor and dramatically increased susceptibility to insect infestation. Most of these stands have suffered from insect related tree mortality. Historically, these forest types were open and dominated by large diameter trees, and their structure and composition were maintained by periodic, low intensity wildfires. Fire suppression over the last century and logging that removed the large, fire resistant trees, along with failure to thin the abundant tree regeneration are the primary causes for increases in stand density and fuel. This fuel, much of which is ladder fuel, is comprised

both of dead trees and a dense understory of young trees and ninebark. These dense stand conditions have reduced stand vigor and dramatically increased susceptibility to insect infestation.

The most prominent fuel-creating mortality agent has been bark beetles killing stressed trees in overstocked stands.

As stated above, past logging activities on BLM lands has contributed to fuel accumulation when slash was created and left on the ground. This slash presents a fire hazard both to the private land and to the BLM-administered parcels, over and above the hazards created by the dead trees on BLM land.

Conformance with Existing Land Use Plans

This proposal has been reviewed to determine if it conforms with the Baker Resource Management Plan, terms and conditions as required by 43 CFR 1610.5. This proposal has been found consistent with all applicable terms, conditions, standards, and guidelines specified in the Baker RMP.

Issues and Concerns identified during Scoping

Comments were solicited from individuals and groups during the scoping period. A "scoping letter was mailed December 5, 2002, and two public meetings were held in Cove. Comments and issues raised during the scoping process were used during the final project development and/or incorporated into the project by means of adding mitigation measures and project design features and/or modifying the proposal where feasible.

II. Alternatives

A. Alternatives considered but not given detailed Study

Burn only and grazing only alternatives were considered but not developed. Fuel loading and stand densities are too high to support prescribed burning and grazing programs that do not include pre-treatment of fuels without excessive risk to resources, private property and structures.

B. Design Features

Design features are actions taken as part of a proposal to reduce or avoid negative effects of a proposed action. Many of the design features are taken from the Baker RMP. The following design features would be applied to treatments identified under all alternatives:

Road Construction/Maintenance - Temporary roads to access specific areas would be built following Best Management Practices (BMPs) in the Baker RMP (pg 37). After all project activities are completed, roads would be closed and water-barred to prevent soil erosion. In areas where bare soil is exposed native grass seeding would be used to re-vegetate the area. Existing roads in the area would be used wherever possible. Minor amounts of surface blading, ditch cleanout, and culvert maintenance would be required for the use of natural surfaced road. Gravel and asphalt roads would need little to no maintenance.

Riparian Habitat Conservation Areas - Riparian Habitat Conservation Areas (RHCAs) would be

established on all streams in the project area. Where treatments are proposed in the Potters Creek RHCA, action would be limited to pre-commercial thinning treatments within 75 feet on each side of the stream. No yarding of trees would occur across Potters Creek. The spring located in Section 32 would be protected from yarding and other heavy machinery.

Precommercial thinning would occur within the first 75 feet of the stream within the RHCA. From 75 feet to 150 feet, commercial activities would occur following management guidelines for maintaining and enhancing components of the RHCA.

Yarding of fallen timber would not occur across perennial streams in the project area. Additionally, there would be no heavy equipment within the RHCA's, except for traveling along an existing road through the RHCA. Cable yarding of timber out of the RHCA's would be permitted, however, skid trails would be kept to a minimum, would be water-barred to prevent soil erosion, and in areas where bare soil is exposed, native grass seeding would be used to re-vegetate the area.

Fuel loadings would be treated within the RHCA's by hand piling slash material and burning the piles. Ten percent of the piles would be left unburned to provide habitat for wildlife.

Timber Harvesting - Standard design features listed on pages 37-40 of the Baker RMP/ROD would be implemented. Timber falling would be done by hand or with ground based mechanical equipment. The type of harvesting equipment used would be based upon slope. Timber harvesting done on slopes less than 35 % would be done using ground based harvesting equipment. The equipment would be restricted to pre-designated skid trails spaced approximately 100 feet apart. The leading end of the log would be suspended off of the ground when skidding on slopes greater than 20%. Skid trails would be water-barred following operations. In areas where bare soil is exposed and it is determined that seeding is necessary, native grass seed would be used to rehabilitate the sites. Skidding operations would avoid noxious weed sites wherever possible.

Cable logging would occur in areas where slopes range from 30-45%. During the operation, the leading end of the log would be lifted off of the ground whenever possible. In areas where bare soil is exposed and it is determined that seeding is necessary, native grass seed would be used to rehabilitate the sites. Water bars would be constructed in cable yarding roads to where it is necessary to divert runoff from areas of exposed soil. No log yard would take place across the ephemeral draws located in sections 25 and 35.

Whole tree yarding (yarding with limbs and tops attached) would be required in all areas harvested to prevent fuels buildup. Large debris piles would be created that would be located in designated landings in open areas and burned in late fall or early winter.

Seasonal Restrictions - The use of heavy equipment in Sections 5, 31 and 32 would be seasonally restricted. Operations would be limited to the winter when there is adequate snow mat or during the summer when soils are dry. Yarding during the summer operations would take place over a slash mat and be confined as much as possible to existing skid roads.

Snags, Down Logs, and Green Tree Retention - Snags, down logs, and large green trees are important for wildlife habitat and long-term site productivity. Snags would be retained to meet the requirements established in the Baker RMP. Specifically, approximately 2 to 3 snags per acre, >10" dbh would be left in each of the treated areas, selecting for the largest snags first. Where available,

5-10 down logs greater than 12" in diameter and 20 feet long would be retained. Down logs could be removed from areas where these numbers are exceeded.

Avoidance of sensitive species habitat - If northern goshawk, cougar, or other sensitive wildlife species were found in the project area, these species habitat would be avoided. In general, treatments would be scheduled and/or modified to avoid or minimize disturbance to these wildlife species and their habitat.

Section 32, T. 3 S., R. 41 E. and Sec 5, T. 4 S., R. 41 E. are considered Canadian lynx habitat and modifications to such habitat would be consulted upon with the U.S. Fish and Wildlife Service. Upon conferencing with the USFWS, treatment initially planned within 22 acres of Section 32 (unit 32D) would likely result in a finding of "may affect – likely to adversely affect" Canadian Lynx. Therefore, this 22 acre unit would not be treated under this project. However, analysis was conducted on this unit and actions to treat the unit at a later date may be considered, dependent upon new and additional information related to Canadian Lynx.

Slash pile burning - Slash piles would be burned in late fall or winter when fuel moistures are high and potential for fire spread is minimal. This would minimize the impact to soils.

Streamside buffers - Streamside buffers would be implemented to protect riparian habitat. The proposed buffers are 150 feet on each side of perennial non-fish bearing streams and 50 feet on each side of intermittent streams. If future analysis reveals a need to enter these areas in order to protect or enhance riparian habitat, some low-impact activities may be proposed.

Fuels Treatment and broadcast burning - Desirable post treatment fuel loadings would not exceed a total of 12 tons per acre with less than 5 tons per acre in the 0 to 3 inch diameter size class. This would include accumulations of both existing and activity generated slash.

All units planned for light intensity broadcast burning may require the construction of temporary perimeter fire lines a minimum of 3 feet wide down to mineral soil to prevent fire spread outside of units. Existing road systems and natural fuel breaks would be used as control lines where available.

Vegetation manipulation - Treatments would be designed to create a vegetation mosaic in areas with crucial wildlife habitat. Areas in which major vegetation manipulation occurs, and rehabilitation is necessary, would be deferred from livestock grazing for at least two growing seasons following treatment. Areas disturbed by treatments would be reseeded with native grasses, forbs and shrubs in accordance with habitat requirements.

Cultural resources - Cultural resource properties with historic significance would be avoided by project design.

C. Alternatives Including the Proposed Action

The proposed action and alternatives are designed to address the fire hazard and forest health concerns on BLM administered lands in the Cove area. Units are identified on maps 2 and 3. To accomplish this task the following proposed treatments would be utilized to reduce accumulated fuels.

Proposed treatments

Mechanical Fuel Treatment - A variety of mechanical fuel treatment methods would be used when treating the fuel loading in the project area. These methods include:

Slashbuster – A mechanical masticating head is mounted on a variety of tracked devices including feller-bunchers and excavators. The head shreds both live and dead woody debris converting it to mulch, which can be deposited on the ground throughout the project area.

Grapple piler – A grapple is mounted to a tracked excavator. Slash can be picked up with the grapple head and piled at pre-determined locations.

Hand piling – Small diameter understory trees are manually felled with a chainsaw and hand-piled in place in areas where mechanical devices aren't an option like rocky sites and slopes greater than 35%.

Tracked devices are preferred over wheels as they typically have lower ground pressure and are more maneuverable on slopes resulting in less soil compaction and disturbance.

Prescribed Burning - All burning would be done in accordance with resource objectives specific to individual sites documented in burn plans written prior to burning. Objectives include; natural and activity fuels reduction, re-introducing fire into the ecosystem, enhancement of nutrient recycling and soil microflora, and improved growth of shrub and herbaceous understory plants. Burn plans would comply with the parameters and the standard design features listed on page 41 of the Baker RMP.

The BLM would comply with a voluntary smoke management plan which would reduce the probability of prescribed burning contributing to the non-attainment of air quality standards during the critical time period of late fall and winter

Commercial Thinning - Commercial thinning would consist of harvesting live trees from overstocked forest stands. In these areas larger trees would be retained and smaller trees would be removed. Stands would be thinned to basal areas recommended by Cochran et.al. (1994). On less than 15% of the total area proposed for timber harvesting, a small number of trees greater than 21" DBH diameter would need to be removed to reduce stocking levels to recommended levels. Harvested trees would range from 5" - 24" dbh. The harvest of some larger diameter trees is necessary for enhancing the health of the forest and contributing to the reduction of risk of wildfire. Harvested trees would be whole tree yarded.

Shelterwood - Shelterwood harvest would be done in lodgepole pine stands that have reached maturity and are being attacked by bark beetles. Only lodgepole pine trees that have greater than 40% live crown ratio would be retained. Healthy western larch, Douglas fir, white fir and ponderosa pine trees would also be retained. Following harvest, the areas would be planted with grand-fir and western larch. This would be consistent with management objectives for maintaining or enhancing Canada lynx habitat in the area. Lodgepole pine would regenerate naturally in these areas.

Precommercial Thinning - Thinning would consist of selectively cutting small diameter trees (generally less than 8" dbh) and retaining larger trees. The objective would be to reduce stocking

levels and retain desired conifer species in overstocked stands. Trees would be thinned to 12 - 20 foot spacing, depending on stand diameters and plant communities. Slash would be treated down to the desired post treatment fuel loadings as identified under the Design Features Section. Thinning would be done between July 1 and December 1. Post treatment fuel loadings would not exceed a total of 12 tons per acre with less than 5 tons per acre in the 0 to 3 inch diameter size class.

Alternative A (Proposed Action)

A total of 262 acres of commercial thinning, 61 acres of shelterwood harvest, 91 acres of pre-commercial thinning, 406 acres of fuels treatment and 1.5 miles of road construction would occur under this alternative.

Table 1 summarizes the acres of specific treatment and miles of road constructed or improved for this alternative.

Table 1 – Alternative A

Stand No	Acres	Fuels Treatment	Comm. Thin	Shelterwood Harvest	Pre Comm Thin	New Road Construction
25A	6	6	6			
25B	6	6			6	
25C	38	38	38			0.15
25D	23	23	23			
35A	8	8	8			0.1
35B	2					
35C	10	10	10		10	
35D	1					
35E	3					
35F	17	17	17			0.15
1A	40	40	40			0.3
1B	5	5	5			
31A	34	34			34	
31B	5	5	5			
32A	41	41			41	
32B	28	28	28			
32C	12					
32D	22					
32E	14	14	14			
32F	3	3	3			
32G	13	13	13			
5A	13	13		13		
5B	17	17	17			
5C	10	10	10			0.8
5D	5	5	5			
5E	20	20	20	10		
5F	12	12				
5G	38	38		38		
Total	**446**	**406**	**262**	**61**	**91**	**1.5**

Alternative B (WUI Area Treatment)

Under this alternative only the lower elevation units in Section 25, 35, and 1 would receive treatments. These units are considered Wildland Urban Interface areas (WUI). A total of 147 acres of commercial thinning, 16 acres of pre-commercial thinning, 153 acres of fuels treatment, and 0.7 mile of new road construction or improvement would occur under this alternative.

Table 2 summarizes the acres of specific treatment and miles of road constructed or improvement for this alternative.

Table 2 – Alternative B

Stand No	Acres	Fuels Treatment	Comm. Thin	Shelterwood Harvest	Pre Comm. Thin	New Road Construction
25A	6	6	6			
25B	6	6			6	
25C	38	38	38			0.15
25D	23	23	23			
35A	8	8	8			0.1
35B	2					
35C	10	10	10		10	
35D	1					
35E	3					
35F	17	17	17			0.15
1A	40	40	40			0.3
1B	5	5	5			
31A	34					
31B	5					
32A	41					
32B	28					
32C	12					
32D	22					
32E	14					
32F	3					
32G	13					
5A	13					
5B	17					
5C	10					
5D	5					
5E	20					
5F	12					
5G	38					
Total	**446**	**153**	**147**		**16**	**0.7**

Alternative C (WUI Area Treatment without Commercial Thinning)

This alternative would be the same as Alternative B except commercial Thinning would not be considered as a treatment method. A total of 16 acres of pre-commercial thinning and 153 acres of fuels treatment would occur under this alternative.

Table 3 summarizes the acres of specific treatment for this alternative.

Table 3 – Alternative C

Stand No	Acres	Fuels Treatment	Comm. Thin	Shelterwood Harvest	Pre Comm. Thin	New Road Construction
25A	6	6				
25B	6	6			6	
25C	38	38				
25D	23	23				
35A	8	8				
35B	2					
35C	10	10			10	
35D	1					
35E	3					
35F	17	17				
1A	40	40				
1B	5	5				
31A	34					
31B	5					
32A	41					
32B	28					
32C	12					
32D	22					
32E	14					
32F	3					
32G	13					
5A	13					
5B	17					
5C	10					
5D	5					
5E	20					
5F	12					
5G	38					
Total	**446**	**153**			**16**	

Alternative D (Entire Area without Commercial thinning)

Under this alternative all units would be treated, however commercial thinning would be excluded from treatment methods.

Approximately 91 acres of pre-commercial thinning, 406 acres of fuels treatment would occur under this alternative.

Table 4 summarizes the acres of specific treatment for this alternative.

Table 4 – Alternative D

Stand No	Acres	Fuels Treatment	Comm Thin	Shelterwood Harvest	Pre Comm. Tin	New Road Construction
25A	6	6				
25B	6	6			6	
25C	38	38				
25D	23	23				
35A	8	8				
35B	2					
35C	10	10			10	
35D	1					
35E	3					
35F	17	17				
1A	40	40				
1B	5	5				
31A	34	34			34	
31B	5	5				
32A	41	41			41	
32B	28	28				
32C	12					
32D	22					
32E	14	14				
32F	3	3				
32G	13	13				
5A	13	13				
5B	17	17				
5C	10	10				
5D	5	5				
5E	20	20				
5F	12	12				
5G	38	38				
Total	**446**	**406**			**91**	

Alternative E (No Action)

No fuels treatments would occur.

Table 5 Summary of Alternatives

Table 5 summarizes the acres of specific treatment and miles of road constructed or improved for each alternative.

Alternative	Fuels Treatment	Comm. Thin	Shelterwood Harvest	Pre Comm. Thin	New Road Construction
A	406	262	61	91	1.50
B	153	147	0	16	.75
C	153	0	0	16	0
D	406	0	0	91	0
E	0	0	0	0	0

III. Affected Environment

A. Forests and Forest Health

Stand Structure

Forest stands in the project area are in the warm dry forest potential vegetation group described in Chapter 2, pg. 63-75 of the Eastside Draft Environmental Impact Statement dated May 1997. Historically these stands were characterized by open stand conditions with large diameter trees that were maintained by frequent low-intensity fire. Frequent fire maintained fire resistant species such as ponderosa pine, western larch, and Douglas-fir. Fire exclusion has allowed the stands to become overstocked with fire intolerant species such as white fir.

The lower tracts, located in sections 25, 35, and 1 are warm dry forest types. Forest stands are primarily ponderosa pine, with associated cohorts of western larch, Douglas-fir, and grand fir. It appears that most of the large trees were removed around the turn of the century, either through timber harvesting or a stand replacement fire, and areas naturally regenerated. These areas currently have second growth stands with few large old trees. The upper tracts, located in sections 31, 32, and 5, are cool dry forest types that historically had a less frequent fire regime. These forest stands are primarily mixed conifer and lodgepole pine. The mixed conifer stands have an uneven large tree overstory of grand fir, Douglas-fir, and western larch. The understory in the mixed conifer stands has a very large number of small diameter trees ranging from 1-8 inches DBH. These understory trees create a fuel ladder that would allow a ground fire to move into the crowns of adjacent trees very easily.

The forest stands in the project area are made up of trees that are primarily 80 – 100 years old. None of the stands have 10-15 trees per acre that are greater than 150 years old which is required to meet the definition for old growth stands (USDA, 1993). There are some concentrations of large old trees along Potters Creek, but not enough to meet the old growth definition.

Portions of Sections 25, 31, and 32 were partial cut in 1972 and again in 1991.

The BLM lands make up a small percentage of the forest lands within the project area. The lower tracts are surrounded by small tracts of private forest lands. Most of these tracts have had some sort of timber harvesting conducted in them. The stand structure of these tracts varies considerably, depending on the amount of timber harvesting done. Some of the tracts have had most of the trees removed and are in the stand initiation phase, while others have had little to no trees removed and would be classified as mature forests. East of the upper tracts are National Forest lands. These lands are a mixture of mixed conifer and lodgepole stands. Some of the lodgepole stands were harvested 10-15 years ago, and currently have an open overstory and a dense lodgepole understory. The remaining mixed conifer and lodgepole stands have not been harvested and are similar to the stands described above.

Forest Insects

Historically, frequent low-intensity ground fires naturally thinned the forest stands. The lack of frequent fires over the last 120 years has allowed tree density in the forest stands to dramatically increase. This increased stocking level has resulted in decreased growth of individual trees, making stands susceptible to bark beetle. Research by Cochran et al. (1994) recommends specific range of stocking levels to keep stands healthy and growing, and avoid suppressed and stagnated trees, while

maintaining the stand at low risk to bark beetle attack. Cochran's guidelines recommend thinning even-aged stands from below, removing the small trees and retaining the large trees. "Normal" or "fully" stocked stands have dominant, co-dominant, intermediate, and suppressed crown classes. Most of the growth in these stands is in the dominant and co-dominant trees. Thinning an even aged stand from below, thereby eliminating all the suppressed and some or all of the intermediate trees, would not substantially decrease growth per acre but should substantially reduce the probability of mortality (Cochran et al. 1994). These guidelines recommend maintaining basal area between a lower management zone (LMZ) and an upper management zone (UMZ). To accomplish this stands would be thinned to the LMZ and allowed to grow to the UMZ. When the UMZ is reached the stand would be thinned again to the LMZ.

For the plant associations in the lower tracts, dominated by ponderosa pine, Cochran's guidelines recommend a LMZ 60 ft^2 and a UMZ of 90 ft^2 on the lower productive sites and a LMZ of 90–100 ft^2 and a UMZ of 135-145 ft^2 on the higher productive sites. The basal areas within these tracts average 130 ft^2 of basal area per acre, with some stands exceeding 280 ft^2. For the plant associations in the upper tracts, dominated by mixed conifer trees, Cochran's guidelines recommend a LMZ of 120 ft^2 and a UMZ of 185 ft^2. The basal areas within these tracts average 210 ft^2 of basal area per acre with some stands exceeding 400 ft^2. Several of the smaller stands currently have average stand basal areas that are between the LMZ and UMZ. Within these stands there are pockets of overstocking and small trees where a ground fire could move to the crowns of trees, and some thinning is necessary to reduce the risk of wildfire in these stands.

In the communities with mature lodgepole pine located in the upper tracts, stocking levels are high enough that mountain pine beetle is starting to become established in the stands killing pockets of trees. On US Forest Service lands approximately one mile east of these stands mountain pine beetle populations are increasing. This outbreak is described in *Review of the Moss-Potter Mountain Pine Beetle Outbreak* (Scott 2003). If beetle populations continue to increase large areas of susceptible mature trees would fuel an epidemic situation where mountain pine beetles kill entire drainages of lodgepole pine. Individual trees with greater than 40% live crown are generally able to withstand mountain pine beetle attack, unless attacked under epidemic conditions where even vigorous trees can be killed in mass attacks.

Within the treatment areas there are relatively few forest disease concerns. In the northeast corner of Section 25 approximately 6 acres are infected with Armillaria root disease. In this area susceptible trees have been killed over many years and the dead trees have been removed for firewood. Root disease inoculum will remain viable in infected roots and stumps for several decades and infect adjacent susceptible tree species upon root contact. The treatment recommended for root diseased areas is to thin the areas of susceptible trees retaining the most resistant species such as western larch, lodgepole pine, and ponderosa pine in that order. Natural regeneration of these species would be encouraged. Naturally regenerated trees are least likely to become infected. Scattered throughout the stands are low levels of Douglas-fir and western larch mistletoes, blackstain root disease, and comandra rust. These are at endemic levels and not a concern at this time. If these diseases were to reach epidemic levels there would be a substantial decline in tree growth and an increase in tree mortality. Douglas-fir mistletoe brooms are beneficial for some wildlife species and are often used by a variety of birds and small mammals for hiding and nesting cover (Schmitt, 1997).

Table 6 details existing conditions for each of the forest stands in the project area. The recommended basal areas are derived from Cochran et.al. (1994).

Table 6 - Forest Stands – Existing, and Recommended Stocking Levels

Stand No	Ac	Major species (1)	Existing Basal Area Average (ft^2)	Recommend Basal Area (ft^2)
25A	6	PP	68	60
25B	6	MC	270	120
25C	38	MC	111	90
25D	23	PP	91	60
35A	8	PP	160	85
35B	2	DF		
35C	10	MC	104	100
35D	1	NF		
35E	3	Willow		
35F	17	PP	167	90
1A	40	PP	153	95
1B	5	MC	185	90
31A	34	MC	70	120
31B	5	MC	190	120
32A	41	MC	60	120
32B	28	MC	167	120
32C	12	NF		
32D	22	LP		
32E	14	MC	253	120
32F	3	MC	253	120
32G	13	MC	233	120
5A	13	LP	200	
5B	17	MC	216	120
5C	10	MC	325	120
5D	5	MC	120	120
5E	20	MC	307	120
5F	12	MC	50	120
5G	38	LP	224	120

(1) PP = ponderosa pine
MC = mixed conifer
DF = Douglas fir
NF = non forest
LP = lodgepole pine
Willow = Scoulers willow

B. Urban Interface, Fuels, and Wildfire

Historical fire regimes in the Blue Mountains (which include the project area) have been the subject of several studies, the most recent by Heyerdahl, Olsen, and Agee in 1996 and 1999. These studies found that fires were large in size, low-intensity in nature, and occurred on a frequent basis. Fire was a dominant natural process in the Blue Mountains. Studies show that low-intensity fires burned throughout the drier forests and grasslands perpetuating open, park-like stands of fire tolerant species such as ponderosa pine, Douglas-fir, western larch, and grass. Fire return intervals in the warmer/drier forest types, which include the lower three tracts proposed for treatment (sections 25, 35, and 1), were 5 to 12 years or less while the cooler/drier mixed conifer stands, which includes the upper three tracts proposed for treatment (sections 31, 32, and 5), had a fire return interval between 35 and 100 years.

The majority of fires in the Blue Mountains historically occurred in late summer or early fall when fuel moistures of large dead wood were typically at their lowest and corresponded to the time of year with the peak occurrence of lightning. This combination would have resulted in the ignition of numerous low intensity fires and caused widespread low-level smoke to be visible throughout the Blue Mountains.

These frequent fires would have maintained fuel loadings at lesser levels than can be observed today. The fires would have had the effect of pruning lower limbs of vegetation while consuming other types of ladder fuels (dead/down wood, shrubs, etc.) thus reducing the chances that a fire would climb into the crowns of the trees. Tree stand density would have been low, consisting of large fire-tolerant tree species with scattered groups of regeneration. Non-forested openings would have been larger and more common than present. Tree species adapted to frequent fires (ponderosa pine, Douglas-fir, and western larch) would have been more common than fire intolerant tree species such as grand fir.

Table 6 shows the existing fuel loading and tree density values of each tract in the project area and when these figures are contrasted with the desired conditions discussed above it is not difficult to see that existing fuel accumulation levels and stand densities are much higher than desired or would occur naturally.

Recent fuels inventory and the Behave Fire Prediction and Fuel Modeling System support the fact that these forested sites are currently in a state that would be very susceptible to a stand replacement fire (See Table 7). For example, Fuel Model #10, which most accurately reflects the existing fuel conditions within the analysis areas, predicts flame lengths greater than 8 feet and crown scorch height of 45 feet during average summer weather conditions (Aids to Determining Fuel Models For Estimating Fire Behavior by Anderson 1982). Flame lengths greater than 8 feet typically require the use of heavy equipment and aerial retardants (Fireline Handbook 2001) often resulting in costly, high severity fires.

Table 7. Fuel Model Comparison

	Fuel Model 8	**Fuel Model 10**
Total Fuel Load <3 inch (tons/ac)	5	12
Fuel Bed Depth (feet)	0.2	1.0
Predicted Flame Length (feet)[3]	1.8	7.7
Predicted Rate of Spread (ft/min)	2.75	10.45
Crown Scorch Height (feet)	1.4	45

Flame length, rate of spread, and crown scorch height determined by inputting fuel moisture of 4% and wind speed and mid-flame of 8.0 mph.

Generally speaking, fire occurrence in the Blue Mountains declined abruptly in the late 1800's and corresponded with an increase in livestock grazing activities which effectively reduced the amount of fine fuel needed for fires to spread. The increased numbers of livestock along with an elevated level of mining activity, in the Blue Mountains, created numerous trails or paths of travel also limited the potential for a fire to spread. Finally, over the past 50 years, effective fire suppression activities have further reduced fire spread within the Blue Mountains.

Three of the tracts proposed for treatment contain evidence of past fire activity. Visible evidence of fire (both wildland and prescribed) can be seen within the BLM tracts in sections 25, 31, and 32.

The tracts in sections 25 and 31 were part of the Barrel Springs timber sale completed in the early 1990's. Residual slash concentrations, as a result of the sale, were scheduled for treatment with prescribed fire in 1993 but rainy conditions immediately prior to the attempted burning resulted in poor consumption of the residual slash. Sections 32 and 5 contain evidence of two separate fire events. Although no data exists to determine when the fire events actually occurred, it is believed that a large stand replacing fire occurred throughout most of the section 32 and 5 tracts in the early to mid 1900's. This observation is supported by decaying broken-off stumps and the lack of burn scars on existing live trees which are 50 to 60 years old. A smaller (20 to 30 acre), more recent fire is evident in a portion of the section 32 tract. This observation is supported by standing/fallen burned trees, young (10 to 20 year old) conifer trees, and a vigorous growth of ceanothus, which sprouts following fire.

This discussion above suggests that the lower tracts proposed for treatments (sections 25, 35, and 1) have missed several (2 to 5) fire cycles since the early 1900's. The upper tracts proposed for treatments (sections 31, 32, and 5) have missed one to three fire cycles within the same time period.

The factors described above, in addition to the past forest management practices described in the Forest Health section have resulted in unnaturally heavy fuel loadings and high tree stand densities. This situation, in combination with the overall decrease in the fire frequency (than historically occurred) has increased the risk potential for a high intensity fire event and the loss of ecosystem components should an ignition occur.

C. Wildlife and Wildlife Habitat

The pine forest habitat communities in the area consist of warm, dry forest species including; ponderosa pine, western larch, and Douglas fir. Approximately 160 terrestrial wildlife species use mixed forest habitat for the primary purposes of breeding or feeding. These species include: blue grouse and ruffed grouse, black bear, elk, mule deer, several bat species, and several species of migratory land birds. Within these forest types, there are approximately 46 wildlife species that use snags for the primary purposes of breeding or feeding, and approximately 56 wildlife species that use logs for the primary purposes of breeding or feeding.

Mixed conifer habitat communities consist of cool, dry forest species, primarily lodgepole pine. Other tree species include: grand fir, larch, and Douglas fir. Approximately 95 terrestrial wildlife species use lodgepole pine/grand fir forests for the primary purposes of breeding or feeding. These species include: snowshoe hare, lynx, elk, mule deer, several species of bats, and several species of migratory land birds. Within these forest types, there are approximately 26 wildlife species that use snags primarily for breeding or feeding, and approximately 37 wildlife species that use logs primarily for breeding or feeding.

<u>Snags and Down Logs</u>

Within the pine forest habitat in the lower elevation parcels of the Cove project area, there are approximately 16.8 snags per acre in the 10" – 19" dbh range. In the 20"+ dbh range there are approximately .09 snags per acre.

In the higher elevation, mixed conifer forested parcels, there are approximately 13.9 snags per acre in the 10" – 19" dbh range, and approximately 0.16 snags per acre in the 20"+ dbh range.

Past timber harvest activities have reduced the potential forested habitat by approximately 96 acres. Therefore, approximately 354 acres of BLM land in the area have conditions suitable to provide approximately 2 snags per acre and approximately 5 to 10 down logs per acre. These conditions would provide suitable habitat components to meet the Baker RMP guidelines of providing habitat sufficient to support 60 to 70 percent of the viable population of cavity dependent wildlife species.

Elk and Deer

There are numerous trails and signs that elk and deer are using the Cove project area for foraging and bedding. Using an analysis area that encompasses all of the BLM land and the surrounding U.S. Forest Service and Private land, the acreage within the analysis area is approximately 12,433 acres. This provides a landscape level look at the existing conditions for elk and deer in the area.

Current conditions show that there are approximately 7,992 acres (64%) of forested habitat that meet conditions necessary to provide suitable cover for elk and deer. There are approximately 3,158 acres of satisfactory cover within the area (>70% canopy cover), and approximately 4,834 acres of marginal cover within the area (40 to 70% canopy cover). The remaining acreage (4,442 ac. or 36%) is considered suitable foraging habitat.
Optimal ratios for cover to forage for elk and deer are 40:60, respectively. The cover forage ratio in the analysis area is 64:36.

Habitat effectiveness for elk and deer in the area is measured using a number of variables following Thomas, et. al. (1988). This process places weighted values on percentages of effective habitat for the following variables: percent of the analysis area in effective foraging habitat surrounding cover areas; percent of effective cover habitat; miles of road per square mile; and, percent of cover in satisfactory and marginal conditions. The closer to 1.0 the index is, the higher value, or effectiveness, it is for elk and deer.

There are approximately 82 miles of road in the analysis area, on all lands. Many of these roads are open to vehicle traffic; however, many of the roads are seasonal roads that have had water bars placed along them to prevent roads washing away and most vehicles from driving along them. With approximately 19 mi^2 of land in the analysis area, there are approximately 4.2 mi of road per square mile of area. This equates to a habitat effectiveness rating for Road Density of 0.25.

The highest utilized foraging areas are those that are within 92 meters (100yd) from cover/forage edge. Therefore, the further away a forage area is from cover, the less use the area will receive. Similarly, the highest effective cover areas are those that are within 92 meters (100yd) of the cover/forage edge. Cover areas further away from this edge do not have as high use. Weighting the more effective cover and forage locations different than the less effective locations, and, weighting the cover dependent upon satisfactory cover vs. marginal cover, provides an index that relates the arrangement of the cover to the forage in the area. The size and spacing of cover and forage index is .68.

Satisfactory cover is weighted more than marginal cover. With approximately 40% of the cover in the area designated as satisfactory cover and 60% as marginal cover, the Cover Quality Index is .70.

The habitat effectiveness index for elk and deer in the analysis area is .49. Indices closer to 1.0 indicate that the habitat in the area in highly effective for elk and deer. Lower numbers near 0.1 indicate that the habitat in the area is not effective in providing forage and cover for deer and elk (Thomas, et. al., 1988). The habitat effectiveness for elk and deer in the Cove area is moderate. The best possible way to increase the overall habitat effectiveness in the area has the potential to be done in three ways: (1) decrease the miles of accessible roads in the area; this would be the easiest and most effective, (2) increase the amount of forage to closer represent the optimal cover: forage ratio, and (3) increase the amount of satisfactory cover.

Special Status Wildlife Species

Canada Lynx

The Canada Lynx *(Lynx Canadensis)* was listed as Threatened on the Endangered Species List in March 2000 due to the threat of the Distinct Population Segment from the inadequacy of existing regulatory mechanisms, specifically the lack of guidance for conservation of lynx in the National Forest Land and Resource Management Plans and the BLM Land Use Plans. This lack of guidance may allow or direct actions that cumulatively adversely affect the lynx.

The parcels of BLM land located at the higher elevations: Sections 31 and 32, T. 3 S. R. 41 E. and Section 5, T. 4 S. R. 41 E. are adjacent to a U.S. Forest Service designated Lynx Analysis Unit (LAU). The Lynx Scientific Team designated LAU's through the Canada Lynx Conservation Assessment and Strategy (2000) for the purposes of providing the fundamental or smallest scale with which to begin evaluation and monitoring of the effects of management actions on lynx habitat. The Conservations Strategy outlines specific Project planning objectives, standards, and guidelines relative to specific risk factors affecting lynx productivity. Even though the BLM parcels are not officially within the designated LAU, they would be treated as lynx habitat and guidelines associated with lynx habitat within the LAU's would be followed. Efforts are presently occurring to officially include the lynx habitat on BLM lands in the Cove area into the adjacent LAU.

Lynx habitat is categorized in 5 different habitat types: denning, primary foraging, marginal foraging, unsuitable, and non-habitat (see appendix for habitat definitions). Within the LAU there are approximately 28,827 acres (80%) of denning habitat, 3,017 acres (8%) of primary foraging habitat, 2,588 acres (7%) of marginal foraging habitat, and 1,419 acres (4%) of unsuitable habitat.

There are approximately 77 acres of denning habitat, 54 acres of marginal foraging habitat, 147 acres of unsuitable habitat, and 172 acres of non-habitat occurring on BLM lands in the Cove project area. There is no primary foraging habitat in the cove area.

Consultation with the US Fish and Wildlife Service (USFWS) would occur for modification to lynx habitat as a result of actions associated with the selected alternative. A Biological Assessment would be developed by the BLM and submitted to the USFWS. Mitigation measures developed during consultation through the issuance of a Biological Opinion or Letter of Concurrence under Section 7 of the Endangered Species Act (1973) as amended, would be adhered to for activities associated with this Project.

Northern Goshawk
There has been one sighting of a northern goshawk (*Accipiter gentilis*) on BLM lands in the Cove Project area. The northern goshawk is considered a Bureau Sensitive species and habitat for this species is managed to not contribute to the need to list the species (BLM Manual 6840). All of the BLM forested acres in the Project area are considered suitable nesting habitat for northern goshawks. There is additional nesting habitat on USFS and other lands adjacent to the Project Area.

Surveys to determine occupancy and nesting locations would be conducted prior to and during management activities on BLM lands. If a nest is located on BLM lands in the Project area, fuels reduction activities would be allowed in goshawk nesting areas, but seasonal restrictions would be followed. In addition, BLM guidance requires that a Post-Family and Fledgling Area be designated surrounding the nest site and management guidelines, designed to enhance or maintain goshawk habitat, are followed.

Pileated Woodpecker and Other Cavity Dependent Species
There is numerous sign of cavity excavating wildlife species in all of the forested stands in the Cove area. There have been sightings and auditory observances of pileated woodpeckers (*Dryocopus pileatus*). The pileated woodpecker is considered a Bureau tracking species and efforts to collect occurrence records on BLM lands would be conducted. In addition, efforts to protect known nesting and roosting trees would be done.

Pileated woodpeckers have a territory size of approximately 300 acres. Therefore, the maximum number of pairs per 100 acres is 0.3. Assuming the area surrounding the Cove project area is approximately 6,000 acres, the maximum number of pileated woodpecker pairs would be estimated at 20. This is assuming that there are an adequate number of snags per acre to sustain a viable population level of 100%. Guidelines provided for by the Baker RMP indicate that BLM would provide snags to support a 60% population level. Therefore, guidelines would be implemented to manage for approximately 12 pairs of pileated woodpeckers.

The number of snags required to meet the foraging and nesting needs for pileated woodpeckers, at the 60% population level, is approximately .08 snags per acre >19" dbh. The estimated number of snags, listed above, in the Cove project area indicates that there are a sufficient number of snags to meet these guidelines.

D. Hydrology

The proposed project is located within three different subwatersheds within the Lower Catherine Creek watershed, which is in the Upper Grande Ronde River subbasin (Table 8).

Table 8. Subbasins, Watersheds and Subwatersheds

Subbasin	Watershed	Subwatershed
Upper Grande Ronde River	Lower Catherine Creek	Mill Creek
		Lower Little Creek
		Upper Little Creek

Potters creek, a perennial stream, flows through a portion of the project area in sections 5 and 32. The stream is not fish bearing within the project area. Currently the riparian area is well vegetated adjoining the stream channel with some evidence of grazing and trailing within and adjacent to the stream channel. The BLM has not collected any stream temperature or water quality data on this stream. The Forest Service has completed a stream survey on Potters Creek, which is included in the Catherine Creek Watershed Analysis (USFS, 1999).

Millard branch is also a perennial stream which flows very near the property line of BLM managed land in section 25. Although the stream does not reach the BLM managed land, the access road runs parallel to the stream for a short distance and management activities within the project area could impact the riparian area and stream channel.

The other drainages within the project area are ephemeral in nature, and only have surface flow during storm events. Two of these ephemeral draws (one each in section 25 and 35) have riparian vegetation that possibly suggests a perched water table, which is where the distance to ground water is less than surrounding area, and as such exhibit some riparian characteristics that normally would not be found in ephemeral drainages in the project area. There is a spring located in section 32. Currently, no exclosure or other protection measures are in place to protect this spring source.

Potters Creek and Millard branch are the only drainages within the project area that would require establishment of an RHCA as outlined in PACFISH.

There are numerous existing roads and skid trails within the project area. Some of the roads are currently closed to vehicular traffic, although they have not been decommissioned and consequently could be used for this project.

The closest water right holder using surface flow from any of the streams within the project area is located in section 26 and is using water from Millard branch approximately one mile downstream of the project area.

Table 9. Road density, acreage by ownership, stream miles, and acres within the project area by subwatershed.

Subwatershed	Total acres	Total BLM acres	Total Forest Service acres	Total Private acres	Miles of road	Road density (per square mile)	BLM road miles	Total miles of stream	BLM stream miles
Mill Creek	14,002.6	124.5	5646.8	8231.4	93.45	4.27	0.93	27.7	None
Lower Little Creek	14,551.3	67.0	None	14,484.3	64.5	2.84	None	31.9	None
Upper Little Creek	9853.1	350.5	3173.1	6329.5	59.1	3.84	0.90	18.4	0.62

The information presented in the above table was generated from the Baker Field Office BLM Geographic Information System (GIS).

E. Soils

The following soils information was compiled mainly from the Soil Conservation Service (now called the Natural Resources Conservation Service) Soil Survey of Union County Area, Oregon (SCS, 1985).

Table 10. Acreage by three main soil types within the project area.

Soil Type	Acres within project area
Hall Ranch stony loam	287
Olot stony silt loam	64
Tolo silt loam	90

The main soil types in the project area consist of Hall Ranch stony loam, Olot stony silt loam, and Tolo silt loam. There are also small inclusions of other soil types such as Anatone-Klicker complex (approximately 3 acres in size) however these other soils are minimal in size and mostly outside of any proposed surface disturbance areas so they would not be discussed further.

The Hall Ranch stony loam is found mostly on slopes from 2 to 35 percent in the project area. This is a moderately deep, well drained soil found on mountainous uplands which was formed in colluvium and residuum derived mainly from andesite and rhyolite. The surface is usually covered with a mat of needles, twigs, and leaves approximately one inch thick. Permeability of the soil is moderate, runoff is medium, and the water erosion hazard is moderate.

Field reconnaissance of the project area has indicated that a portion of the project area in Sections 5 and 32 that were typed as Hall Ranch soils on 2 to 35 percent slopes actually exceeded this slope. While the soil types are the same, the slope range is from 35 to almost 60 percent on the ground and should have been identified as Hall Ranch stony loam, 35 to 65 percent, north slopes. The physical characteristics of the soil are basically the same; however the greater slope in this area would increase the water erosion hazard to high from moderate and the runoff would also be greater on the steeper slopes.

The Olot stony silt loam is a moderately deep, well drained soil found mainly on north and east-facing slopes in mountainous uplands on 12 to 35 percent slopes. In the project area, this soil is found mainly in the Upper Little Creek subwatershed. This soil formed in volcanic ash and loess deposited over a soil derived from basalt. Typically, the surface is covered with a mat of needles, twigs, and leaves approximately one inch thick. Permeability of the soil is moderate to a depth of 19 inches and moderately slow below this point. Runoff is medium to rapid and the water erosion hazard of this soil is moderate to high. This soil has an ashy surface layer which has exceptionally high available water capacity and also contains a significant amount of nutrients available for plant growth.

The Tolo silt loam found in the project area is found on slopes between 12 and 35 percent slope. In the project area, this soil is found mainly in the Upper Little Creek subwatershed. These soils are

deep, well drained in mountainous uplands. This soil was also formed in volcanic ash and loess deposited over a soil derived mainly from loess and basalt. The typical surface of this soil is covered with a mat of needles, twigs, and duff about two inches thick. Runoff associated with the Tolo silt loam is medium to rapid and the water erosion hazard is moderate to high. Again, these soils have an ashy surface layer which has exceptionally high available water holding capacity and a considerable amount of nutrients available for plant growth.

As found with the identification of the Hall Ranch soil types, a portion of Sections 5 and 32 that were typed as Tolo silt loam 12 to 35 percent slope actually should have been identified as having slopes of 35 to 65 percent. This portion of the project area has slopes approaching 60% as measured in the field. Again, the physical characteristics of the soil are basically the same; however the water erosion hazard should be rated as high with rapid runoff.

The portion of the project area involving the Olot and Tolo soils have soils which have a surface layer formed of volcanic ash. These soils are found mainly in the higher elevation units in the Upper Little Creek subwatershed. This ash layer in these soils is important for both water holding capacity as well as nutrients. This ash layer has low strength during wet periods and can be easily detached during dry periods. Because of this, care would be taken to disturb this layer as little as possible when using heavy equipment for any projects.

F. Fisheries

The Cove Fuels Treatment is located in the Catherine Creek watershed of the Upper Grande Ronde sub-basin. An analysis of the Catherine creek watershed was completed by the La Grande Ranger District in 1999. According to this analysis, streams within this drainage support populations of spring/summer chinook salmon, summer steelhead, bull trout, redband trout, mountain whitefish, sculpins, dace, suckers, redside shiners, northern squawfish, and several non-native, warm water species.

PACFISH (Strategies for Managing Anadromous Fish-producing Watersheds in Eastern Oregon and Washington, Idaho and Portions of California) identifies Catherine Creek as a Priority Watershed. Priority watersheds are defined as a network of drainages that contain the most viable runs of anadromous fish or have a high likelihood of recovering in the short-term. Priority watersheds function as source of high quality habitat or strong genetic pools that have the ability to provide the basis for recovery of endangered fish stocks.

Fish do not inhabit any of the streams adjacent to, or directly downstream of the treatment units. The primary factor excluding fish from the streams in the project area is the lack of water in the summer and fall.

Five of the six tracts, or 400 of the total 480 acre Cove Fuels Treatment are located in the Upper Little Creek subwatershed. Oregon Department of Fish and Wildlife (ODFW) aquatic habitat surveys, completed for steams in this subwatershed indicate the streams are in good to excellent condition with low width/depth ratios and high levels of shade and large woody debris.

The remaining 80 acres are within the Mill Creek and Lower Little Creek subwatersheds. Stream surveys in these drainages indicate the streams are in good condition with large amounts of woody debris, adequate shade and moderate amounts of pool habitat and hiding cover. Stream temperatures

currently meet or exceed Department of Environmental Quality (DEQ) standards.

Spring/Summer Chinook Salmon

Spring chinook salmon currently use 34.5 miles of Catherine Creek and it's tributaries for spawning and rearing. Most spring and summer chinook salmon spawn in the main stem of Catherine Creek directly below the North and South Forks. In 1992, a total of 42 redds were observed in Catherine Creek, 36 of these were located within a few miles of the confluence with the North and South Forks. Current spring/summer chinook populations appear to be stable.

Summer Steelhead

Steelhead are present in most of the 326.5 miles of habitat available within the Catherine Creek watershed. Spawning is widespread, but most spawning observations occur within headwater tributaries. Steelhead populations have also remained stable in recent years.

Bull Trout

Bull trout spawn in approximately 36 miles of habitat within the Catherine Creek watershed, primarily within the North and South Forks of Catherine Creek. No current information is available for bull trout population status.

G. Visual Resources and Recreation

Existing Landscape Character and Location

The project area is contained in the Blue Mountain geographic unit, which contains approximately 33,541 acres of BLM managed lands. The general location of this geographic unit contains all dispersed miscellaneous Bureau lands located within Wallowa, Union, Umatilla, Grant, Morrow, and Asotin Counties. The area in which the project lies is between 2700 feet MSL at Cove, OR to approximately and 7,132 feet MSL on Mt. Fanny, with project activities occurring between 3800 and 5900 feet MSL. Mt. Fanny is the predominant feature and focal point in the surrounding landscape, however, it is a non-descript high point in a continuous mountain range. From a distance, the area exhibits a semi-arid/agriculture pattern of smooth vegetation on the valley floor becoming interspersed with green timber "stringers" in the mid-slope, then flowing into dense tree coverage at the higher elevations. This landscape character is common to the settled Eastern Oregon valley's and is not unique. The project area, in general, is visible for many miles along I-84, highway 82, and the communities of Cove, LaGrande, Island City, Imbler, and Union.

Public land visitors have slight to limited opportunity to view most of the project area via road systems. However, the visiting public along these roads would observe a large variety of manipulated vegetation and harvesting practices, which create an artificial landscape variety. Primary tree cover is Douglas fir, Grande Fir, and occasional areas of aspen with scattered western larch. Primary water features are Potter creek, Little Creek and Mill creek and occasional springs and seeps. Water features create riparian zones and occasional groves of aspen which enhances the visual variety of the area, especially in the fall seasons. The creek drainages break up the continuity of the landscape by creating texture and converging lines to a relatively stable landscape, but do not add highly to the diversity of the landscape and create no "large" vistas. The water within the creeks is seldom seen due to the amount vegetation and limited access. Shrubs, hardwoods, also contribute to the visual resource, which provide color variations during spring and fall changes.

Primary land form character is that of the folded and uplifted Columbia Plateau basalt flow.

Important landscape features also include basalt rock cliffs, points and outcroppings.

Existing Visual Condition

The existing visual condition is predominantly altered and un-natural in appearance as viewed from the interior and exterior road systems due to the variety of types of agriculture, vegetation manipulation, and tree harvesting. These various types of vegetation manipulations in conjunction with broken ownerships have created vegetation patterns that exhibit un-natural edges, boundaries, and densities. Within the project area of the Blue Mountain geographic unit there are many acres of private land which vary from a lightly altered to a heavily modified landscape. Most of the views from interior access roads provide a limited field of view due to vegetation component and geographical limitations. Only on the upper treatment units can large landscapes be viewed, and those encompass large background panoramas at great distances with the focus points contained in the immediate foreground and mid-ground. The exterior views of the project area occur primarily from distances greater than 10 miles which minimizes the character, texture and diversity of the project area.

Recreation

Recreational activities in the Cove Project area are not well known. Most recreational activities would be dispersed in nature and include, but not limited to, hunting (big game, small game, game birds), hiking, scenic driving, snowmobiling, sightseeing, and wildlife viewing. Dispersed activities can be defined as "any and all activities occurring on public lands, not associated with a developed or improved recreation site". Therefore, having an accurate assessment of the recreational uses of the area is limited. However, with the proximity to the local community of Cove, it is believed that a fair amount of recreational activities does occur in the treatment area.

Land ownership patterns and access would also dictate the number and type of recreational activities seen in this area. The majority of the recreational activities identified would occur on the BLM lands which have legal public access via county or USFS road systems. Tracts isolated by private ownership with no "general public access" would still receive some incidental use by adjacent land owners and guests.

H. Special Status Plant Species

There are no federally listed threatened or endangered plant species known or likely to occur within the proposed Cove Fuels Project area. There is potential for Bureau sensitive, assessment, and tracking plant species to occur in the project area.

Field surveys during 2001 and 2002 documented four locations of mountain lady slipper *(Cypripedium montanum)* a Bureau Tracking Species in the lower elevation units. Occurrences were small consisting of 1 to 3 plants. One *C. montanum* location is within unit 35E where no treatment is proposed. Bureau Tracking species are tracked to gather more information to determine status within the state or they no longer need active management (BLM 1990). Tracking species will not be considered special status species for management purposes (BLM 1990).

The upper elevation units have not been surveyed for special status plants. The units were visited to assess potential special status plant habitats on 10/1/2002. From this field visit and review of the district special status plant list, there is potential for special status plant species to occur in these

units. These units would be surveyed prior to project implementation. If special status plants are found mitigation measures would be employed to mitigate impacts to those species.

I. Noxious Weeds

The three lower tracts that have been logged in the past all have some populations of diffuse knapweed (*Centaurea diffusa*), St. Johnswort *(Hypericum perforatum*), Canada thistle (*Cirsium arvense*), bull thistle (*Cirsium vulgare*), and houndstongue (*Cynoglossum officinale*. Although relatively weed free, the upper elevation tracts do have some occasional Canada thistle, bull thistle, and St. Johnswort plants, primarily along roadsides. Except for diffuse knapweed, the Bureau has not been treating these species in northeast Oregon except coincidentally as part of other weed treatments and no noxious weed treatments have been done recently on any of these tracts. Yellow starthistle is known to exist in the general Cove vicinity and could possibly exist on one or more of these BLM tracts but has not been identified.

J. Air Quality

The project area is located near two federally designated areas with air quality restrictions as specified by The Clean Air Act (1955 as amended in 1967, 1970, 1977, and 1990). The Clean Air Act is a legal mandate designed to protect public health and welfare from the negative effects of air pollution. The Clean Air Act gives the United States Environmental Protection Agency (EPA) the task of setting limits on the amounts of pollutants that can be in the air where public has access. These air pollution limits are known as the National Ambient Air Quality Standards (NAAQS). States are required to develop specific programs for implementing the goals of the Clean Air Act through their State Implementation Plans. The State programs may set more restrictive limits than the NAAQS but never less.

The project area is located 17 miles east of La Grande which is an EPA designated "non-attainment" area. A non-attainment area is an area that has not consistently met the clean air levels set by the EPA through the NAAQS. The State of Oregon, Department of Environmental Quality monitors air quality for City of La Grande. Coordination between the BLM and Oregon DEQ would be completed to ensure that any burning activities associated with the Cove Project do not adversely affect the La Grande air-shed.

The project area is also located west of the Eagle Cap Wilderness Area which is designated a Class I Air-shed by the Clean Air Act. This designation is designed to prevent the Eagle Cap Wilderness (which is currently cleaner than allowed by the NAAQS) from being polluted up to the maximum ceiling established by the NAAQS. This provision of the Clean Air Act is known as the Prevention of Significant Deterioration (PSD). As discussed above, the BLM and Oregon DEQ would coordinate on all burning activities associated with the Cove Project to ensure that the Class I Air-shed values of the Eagle Cap Wilderness are maintained.

The town of Cove is less than 3 miles west of the project area. In addition there are isolated rural residences closer to the project area. Prior to implementing any prescribed burning activities the BLM would inform the adjacent landowners and the general public of the activity through letters, public notices in newspapers, radio ads, or any other appropriate notification method(s).

K. Cultural Resources

A Class III cultural resource inventory was conducted in the project area. Cultural resources identified in the project vicinity include one historic road trace, a shallow historic ditch, a scatter of debris associated with a reclaimed dump site evidently used between 1920 - 1960, and three isolated Native American artifacts. The isolated artifacts are considered not eligible for the National Register of Historic Places. The ditch, which may date from about 1900, was previously disturbed by existing roads and is unlikely to be eligible for the National Register. The road may have been associated with historic logging in the area during the 1880s to early 1900s

IV. Environmental Consequences

This section describes the anticipated environmental consequences on the resources if the alternatives are implemented. The general effect of each alternative on resource categories is addressed. Direct effects are caused by an action and occur at the same time and place. Indirect effects are caused by an action and occur later in time or farther removed in distance. Cumulative effects are impacts produced by the action and might add to other past, present, and reasonably foreseeable future actions, and can take place over a period of time (40 CFR 1508.7 and 1508.8). Where appropriate, resource information also addresses time of impacts (duration), relation of the impacts to other resources (context), and severity (intensity), all of which are factors of significance.

Table 11: Critical Elements Checklist

	Absent/ Unknown	Present, No Impact	Present, Discussed in EA
Air Quality Concerns			X
Areas of Critical Environmental Concern	X		
Cultural Resources			X
Environmental Justice	X		
Floodplains	X		
Hazardous Substances or Solid Wastes	X		
Native American Cultural Concerns	X		
Noxious weeds, Invasive species			X
Prime or Unique Farm Lands	X		
Special Status Species			X
Visual Resources Management			X
Water Quality Concerns			X
Wetlands/Riparian Zones			X

Wild and Scenic Rivers (eligible)	X		
Wilderness Study Areas	X		
Wild Horse Herd Management Areas	X		
Energy and Mineral Resources	X		

All Alternatives - Environmental Consequences

Cultural Resources
No properties eligible for the National Register would be affected by the action alternatives. The historic road would be avoided by project activities. Since the reclaimed dump site is outside project impact areas it would also be avoided

Alternative A (Proposed Action) - Environmental Consequences

A. Forests and Forest Health

Stand Structure
All of the forest stands in the project area that are currently over recommended stocking levels would be commercially thinned. Thinning would be from below which would generally retain the larger trees and remove small trees. This thinning would increase the growth of most desirable, selected individuals, increase the average diameter of trees in the stands, and decrease stocking levels to recommended levels. Stand structure of treated areas would be less complex because stands with multi-layered canopies would be converted to single story canopies. Fuels treatments would remove most of the small understory trees. Commercial thinning guidelines would favor for retention fire tolerant species such as ponderosa pine and western larch, where they are available. Pre-commercial thinning would also retain the larger trees and remove the smaller trees. In the Armillaria root disease area western larch, lodgepole pine, and ponderosa pine would be retained. In the lodgepole pine area proposed to be pre-commercially thinned in section 32 lodgepole pine would be retained.

The shelterwood harvests proposed in the upper units would remove most of the lodgepole pine trees from the stands. Lodgepole pine trees with greater than 40% live crown and other species such as ponderosa pine, western larch, grand fir, and Douglas-fir would be retained. This harvest would remove approximately 2/3 of the existing basal area from the stand. Following harvest lodgepole pine would regenerate naturally. In addition western larch and grand fir would be planted. Approximately 10-15 years after harvest these areas would need to be pre-commercially thinned.

Forest Insects
The commercial thinning would reduce stand basal area to recommended levels over all of the project area. In the short term this would reduce the stand susceptibility to bark beetle attack. After the thinning, trees in the stand would release and the stand density would slowly increase. Maintaining stand basal area with the recommended levels would keep the susceptibility to bark beetle attack low.

Thinning would also change the microclimate conditions (temperature, light, wind, and solar isolation) and effectively lower the usable habitat for bark beetles. These actions would lessen the probability of infestation for up to two decades (Scott, 2003).

Forest Diseases

Manipulating species composition within the Armillaria root disease area would favor disease resistant species and there would be less disease-caused mortality. Douglas-fir and western larch mistletoe, blackstain root disease, and comandra rust would remain at endemic levels.

Since the BLM forest lands make up a small percentage of the forest lands in the project area, there would be little cumulative effects. Treating all of the BLM areas that are overstocked would decrease the probability of bark beetle populations spreading to adjacent lands. In the long term, forest diseases would slowly spread to adjacent forestlands.

B. Urban Interface, Fuels, and Wildfire

This alternative would result in the greatest overall reduction in the existing fire hazard. A total of 406 acres would receive fuels reduction treatments. The reduction in ground fuel loadings, ladder fuels, and total basal area would significantly reduce fire intensity and severity. While the reduction in canopy fuels thru commercial thinning can dry out surface fuels the reduction in crown fuels outweighs any increase in the surface fire hazard (Effects of Fuels Treatment on Wildfire Severity by Omi 2002). Fire starts would be more manageable by fire suppression resources resulting in lower suppression costs and less threat to adjacent landowners.

While this alternative results in the highest number of acres treated (406 acres) overall effects would be low due to the small percentage of forested lands within the project area. Mitigation of existing fire risk within treatment areas may reduce fire threat to adjacent Private and Forest Service lands.

C. Wildlife and Wildlife Habitat

Elk and Deer

This alternative proposes to treat approximately 349 acres of big game cover on BLM lands in the Cove Project area. There are approximately 368 acres of big game cover on BLM lands; 158 acres of satisfactory cover and 210 acres of marginal cover. The proposed actions would effectively modify big game cover on BLM lands, creating foraging habitat for elk and deer. The proposed actions would also reduce the amount of satisfactory and marginal cover in the surrounding landscape to approximately 7,643 acres, or 61%. Foraging habitat in the area would increase to approximately 4,880 acres, or 39%. Actions associated with this alternative would be beneficial for elk and deer in the area by increasing the amount of forage available.

Direct effects associated with the forest treatment activities of this proposal would be the disturbance of elk and deer during operations. Elk and deer tend to avoid areas of high disturbance, however, re-occupy these areas within a relatively short period after activities have ceased. In addition, following the forest health treatments and prescribe fire treatments in the area, an increase in the quality and quantity of forage would occur. Furthermore, this area is on the edge of the summer range for elk and deer and during the winter season would provide higher quality forage for deer and elk to augment winter survival.

Existing roads in the area allow for access during hunting season for big game hunters. Approximately 57 of the 82 miles of road in the analysis area travel through current big game cover. This alternative proposes actions that would reduce the hiding cover along approximately 4.5 miles of road, or approximately 8% of the roads traveling through cover areas. Approximately 2.0 miles of the roads that access the units for treatments would be closed and reseeded following treatments. Therefore, approximately 2.5 miles of existing open road would remain open following treatments in the area, effecting existing hiding cover in the area.

Snags and Down Logs

The proposed treatments associated with this action would continue to maintain most snags 15" dbh and greater. A small unknown number of snags of that size may need to be removed for safety purposes. The number of snags required by the Baker RMP to meet 60% to 70% cavity nester populations is approximately 2 per acre. Impacts associated with this alternative on snags and cavity dependent wildlife species would not exceed the objectives in the Baker RMP.

The number of down logs providing optimal habitat in the area would not change significantly and no significant impacts would be associated with forest or fuels management activities. Additionally, approximately 10% of the fuel would remain undisturbed for wildlife habitat.

Special Status Species

Canada Lynx

This alternative would modify approximately 130 acres of identified Canada lynx habitat in the area, 77 acres of denning habitat and 53 acres of marginal foraging habitat. The adjacent LAU on Forest Service land has approximately 80% denning habitat and 7% marginal foraging habitat. Treatments associated with this alternative would serve to recruit foraging habitat in an area that has very little foraging habitat. Reducing the amount habitat in the area by 130 acres would change the amount of lynx habitat in the area by approximately 0.4%, a very insignificant acreage. These actions would be within the guidelines established by the Canada Lynx Conservation Assessment and Strategy (2000).

Prescribed fire following thinning treatments would recruit a dense composition of lodgepole pine and mountain shrub; conditions favorable to snowshoe hares. These conditions would not occur in the immediate future; however would occur within approximately 10-20 years.

With the current amount and condition of suitable habitat within the adjacent LAU, timber and fuels activities associated with this alternative would have insignificant impacts to lynx and lynx habitat.

Northern Goshawk

There are approximately 3,157 acres of goshawk habitat suitable for nesting in the landscape area surrounding the Cove Project. Approximately 7,940 acres in the surrounding landscape is considered suitable as foraging habitat.

The effects on goshawks and goshawk habitat associated with the proposed activities for this alternative would be the modification of approximately 147 acres of suitable nesting habitat to foraging habitat, changing the amount of nesting habitat to approximately 3,010 acres and foraging habitat to approximately 8,087 acres, or a change of approximately 5%. These actions are within the recommended management guidelines for goshawks in Reynolds, et. al. (1992)

The landscape analysis area covers potentially 2 goshawk home ranges. Optimally, 6 nest areas would be required, totaling 180 acres, 2 PFA's totaling 840 acres, and 2 Foraging areas totaling 10,800 acres, totaling approximately 12,000 acres.

Approximately 2,833 acres of older forests and 8,087 acres of young to mid-aged forest would remain following treatments. There would be sufficient habitat for PFA's and foraging in the area following the proposed treatments. Impacts to goshawks and goshawk habitat in the area would be minimal following the treatments proposed.

Prior to and during operations, surveys would be conducted to determine occupancy and nesting status of goshawks in the Cove Project area. Previous years surveys conducted in 2001 and 2002 did not locate nesting goshawks with the Project vicinity.

Pileated Woodpecker and other Cavity Dependent species
As stated earlier in *Snags and Down Logs,* there are a sufficient number of snags existing for cavity dependent wildlife species. Furthermore, the number of existing snags on BLM land in the area is sufficient enough to support 90% of the estimated maximum woodpecker populations that are known to inhabit these forest types. With the surrounding landscape on Forest Service land in similar conditions as the BLM lands, it is likely that sufficient snags exist landscape-wide to provide, at a minimum, support for about 80% of the maximum woodpecker populations.

Treatments associated with this alternative of the Project would not remove snags greater than 19" dbh. This size class of snags is considered the most important size class for pileated woodpeckers. Current conditions on BLM lands, and surrounding Forest Service land, show approximately .09 snags per acre in the mixed forest stands and approximately .16 snags per acre in the lodgepole pine stands. Effects to pileated woodpecker and their habitat from the proposed treatments of this alternative would be minimal.

D. Hydrology

No direct impacts to the hydrology resource are anticipated to occur under this alternative. Although pre-commercial and commercial thinning treatments are proposed in the RHCAs, no falling of trees into the stream or use of equipment in the RHCA would be allowed.

Indirect and cumulative impacts to the hydrology resource could include changes in peak and base flows, changes in stream shade and temperature, changes in snow accumulation, and increases in sediment.

As treatments are proposed within the RHCA of Potters Creek, there is the possibility to decrease shade and increase stream temperature. Most of the effective shade to small streams such as Potters creek is supplied by vegetation close to the streambank. As you move further away from the stream, the effective shade that the vegetation supplies decreases. Since only pre-commercial thinning would be allowed within 75 feet on each side of Potters creek, and the largest trees would be retained, any decrease in shade or increase in stream temperature from the proposed activity would be negligible. Similarly, since any commercial thinning would take place at least 75 feet from the stream, removal of forest canopy at this distance from Potters creek would not have a measurable impact on shade or stream temperature.

Treatments within an RHCA can also increase sedimentation delivered to a stream. However, since no mechanical equipment would be operating in the RHCA of Potters Creek, cable yarding of trees out of the RHCA is limited to at least 75 feet away from the stream, and the incorporation of project design features (PDFs), no measurable increase in sedimentation is expected.

Beneficial impacts to the RHCA from the proposed treatments include decreased risk of catastrophic wildfires, which could lead to removal of all or nearly all of the shade adjacent to the stream. Increased vigor of remaining trees which could help decrease likelihood of an insect or disease outbreak which would kill a significant number of trees in the RHCA is another beneficial impact of the proposed treatment, as is the creation of old-growth characteristics sooner than would happen naturally.

Harvesting of trees can increase openings in the forest canopy which in turn can lead to greater accumulations of snow in these openings than would occur in an undisturbed forest. Warm rain-on-snow events can melt this increased snowpack quickly and result in higher than normal flows. Since much of the proposed project involves commercial thinning, not all trees would be harvested, openings created in the forest canopy would be small, and any increase in snowpack due to these openings would not be expected to be large.

The trees left on site are expected to respond to the thinning with increased growth due to the reduction in competition. This growth from the largest trees left on site would result in this incremental chance of increased snowpack to be temporary. Due to the increased growth and vigor of the trees that were left on site, within approximately ten years most of the openings would have closed in enough so that any difference in snow accumulation before and after thinning would not be measurable. The above statement is true for the commercial and pre-commercial thinning units, however for the approximately 61 acres proposed for shelterwood harvest, increases in snow accumulation in these units would be expected to last up to 30 years depending upon the number of trees actually removed. While increased snowpack can lead to increases in peak flows, the amount of land affected by the shelterwood treatment is less than one percent of the subwatershed area. Due to the small amount of area in the Upper Little Creek Subwatershed, no measurable increases in peak flows from the proposed activity is anticipated.

Increases in base flows due to removal of vegetation are expected to be minimal and short lived. An increase in base flow can be expected after harvesting of trees in forested areas due to the fact that the trees that are harvested are no longer using water from the site. However, during thinnings, not all trees are removed, and the remaining trees may use more water than they had previously. Also, an increase in grasses and brush in this area can be expected which would utilize more water. So, for these reasons, any increase in base flows due to the harvest activities would only be expected to last for two to three years before the rest of the vegetation on site and any new vegetation that gets established would use up this increase. As mentioned above in snow accumulation, the shelterwood treatments on approximately 61 acres may result in increases in base flow to be longer than normal thinning treatments, but again the amount of area involved is less than one percent of the subwatershed and would result in negligible increases.

Roads can intercept subsurface water which can lead to an increase in peak flows as well as changing the timing and delivery rate of water to the stream channels. In addition, roads can also increase sedimentation from surface erosion and/or mass movement (landslides).

None of the proposed roads cross any streams or would require any culverts, and water dips and/or water-bars would be used to divert water off of the road surface.

With the exception of the proposed road in Section 5, all of the new road building would be on flat or nearly flat ground, or on or near a ridgetop, which would eliminate the chance of the new roads intercepting subsurface water. The road planned in Section 5 is also on flat or nearly flat ground for most of the proposed path; however it does travel on a sideslope for approximately 2000 feet near the end of the road. This last segment of road would be built where the slope of the ground is between 40 and 55 percent, creating a cutbank which could intercept subsurface water. The portion of the proposed road which would be built on the steepest part of the slope would also be the closest part of the road to Potters Creek (approximately 500 feet from the stream at the nearest point). The proposed road in Section 5 would have the highest chance of increasing sediment of any proposed new roads due to its location, however due to the fact that the road is at least 500 feet from Potters Creek and any sedimentation from the road surface would most likely be intercepted by vegetation and down wood before being transported to the stream channel, any increase in sedimentation from the road would be minimal. Because of the last 2000 feet of this road being built on sideslopes from 40-55%, risk of mass movement in this section is possible. Field review and engineering would minimize this risk by placing the proposed road on stable ground, avoiding any potentially unstable areas, and following BMPs.

The other proposed roads would most likely not result in any measurable increases in sedimentation or changes to peak and/or base flows. This is due in fact to the location of these roads being on nearly flat ground or at or near the ridgetop which would require any sediment produced from road surface erosion to travel a great distance to any waterway. Additionally, because of the location, none of the proposed roads in Sections 1, 25, or 35 would involve cutbanks which could intercept subsurface flows and possibly change peak and/or base flows. While new road construction also creates openings in the forest canopy which can lead to increased snow accumulation, the fact that the 1.5 miles of proposed roads are spread out through three different subwatersheds and would result in a small area (5-6 acres) being cleared, any peak and/or base flow changes due to increased snow accumulation would not be measurable.

Due to the fact that there are no units in close proximity to downstream water rights holders, there is no riparian treatments in close proximity to water rights holders, and the relatively small percentage of land treated in each subwatershed, no impacts to downstream water users is expected.

E. Soils

Mechanical treatments of forested stands can result in direct, indirect, and cumulative effects upon the soils resource. These effects may include alterations to the physical, chemical, and/or biological properties of the soil. Effects can also include the actual removal of soil from a site. Management activities which can affect soil properties include but are not limited to; soil compaction, high intensity burning, erosion, sedimentation, soil displacement, and mass wasting. Following the project design features listed above and the standard design features in the Baker RMP would be key to preventing undue impacts to the soils resource (RMP, pp. 37-41).

Soil compaction resulting from the use of ground based equipment can occur during harvest and yarding activities. Although not all of the project area would have commercial harvest activities,

some of the fuels treatment areas can also impact soil compaction as non-merchantable material would be skidded to the landings to reduce fuel loadings. Use of existing skid trails wherever possible would minimize soil compaction, soil displacement, and loss of productivity. Seeding of bare soil areas with native grasses after yarding would also help vegetation establish quicker and help reduce soil erosion.

Some of the soils in the project area have an ash layer that is easily detached when dry and which has low strength when wet. For this reason, ground based yarding would be limited to the winter when there is an adequate snow mat to protect the soil, or during the summer when the soil is dry and equipment is operated over a slash mat. If yarding occurs during the summer, operations would be confined as much as possible to existing skid roads where soil compaction and/or displacement have most likely already taken place. Using these skid roads in conjunction with a slash mat over them would help reduce cumulative effects to the soils resource. In addition to the use of existing skid roads, because of the ash layer having low strength when being wet, all skidding activity would be halted during and after any summer thunderstorms until the soil dries sufficiently to prevent rutting.

The soils in the project area have an erosion and runoff hazard that is variable between moderate and high (SCS, 1985). The existing roads in the project area are in good shape and are not rutted, and the existing skid trails are also well vegetated. The majority of the project area where treatments would take place is on slopes less than 35% and most commercial thinning and shelterwood harvest would utilize ground based logging systems. There are some slopes that exceed 35% where commercial thinning treatments would involve the use of cable logging systems and one road proposed which involves construction on 40-55% slopes as mentioned above. Erosion from logging operations increases on steeper slopes, so BMPs such as limiting number of yarding corridors, waterbarring yarding trails, seeding bare soil areas, etc. are critical in minimizing possible erosion and sediment impacts. If all BMPs and project design features are followed, the risk of soil surface erosion associated with the proposed activities would be low.

Burning of slash piles and broadcast burning can also cause impacts to the soil resource. Large slash piles which cause extreme heat can reduce soil productivity, remove soil nutrients, and provide a bed for noxious weeds to become established. The whole tree yarding would help reduce the amount of slash left within the units; however the slash piles at the landings are still expected to be large and burning of these piles would impact the soil directly beneath these piles. Impacts can be reduced by utilizing as much chip material as possible, allowing firewood cutting before pile burning, and burning of the piles in late fall or winter after snow is on the ground. After burning, these areas would be seeded with native grasses as soon as possible in late winter or early spring to reduce the chance of noxious weeds becoming established.

Burning of hand piles should have minimal impact to the soils resource. These piles would be small and scattered throughout the unit and would not produce the same intensity or duration of heat as the large landing piles. Hand piling and burning is proposed in a portion of the RHCA of Potters Creek under this alternative, and as such could produce several small bare soil areas within the RHCA which could deliver sediment from surface erosion to the stream. As mentioned previously though, these areas would be small and scattered throughout the RHCA, these piles would also be surrounded by unburned vegetation which would most likely intercept any sediment before it reached the stream channel, and these small areas would be re-vegetated within one to two years following burning so any risk of increased sedimentation would be for a relatively short period of

time. Broadcast burning within the stands is not expected to cause appreciable impacts due to the timing and desired outcome of the burning. Broadcast burning would take place when fine fuels left on the forest floor could be consumed without burning significant amounts of larger material or allowing for high fire intensities that would damage the leave trees within the stand. This timing would be during the spring when the soil, duff, and large fuel moisture contents are high, or in the fall after enough moisture has been received to accomplish the burn plan prescriptions. Grasses, shrubs, and small trees may be killed by the fire which could for a short time (one growing season) increase the amount of bare soil in the project area. During this time storm events such as a summer thunderstorm could cause some surface erosion within the project area, however no measurable sediment would be expected to be mobilized downstream because of the gentle topography of the area and the lack of active stream channels in the majority of the project area.

Prescribed burns which reduce fuels and return fires the landscape can produce beneficial impacts within the project area. Reduced fuel loadings would lower the risk of catastrophic wildfires which can destroy all of the vegetation in an area and cause surface erosion, loss of soil nutrients, increased sedimentation, and loss of shade, increases in stream temperatures, and a decrease in soil infiltration.

Some of the impacts caused from road construction are discussed above. In addition, surface erosion and soil displacement can occur which may or may not lead to sedimentation in the stream channels in the project area. Most of the new roads would be built on flat or nearly flat ground away from intermittent and perennial streams. As such, while surface erosion and soil displacement may occur, most of the roads would not be a significant source of sediment. Incorporation of PDFs described above and BMPs in the Baker RMP, including but not limited to; closing of new roads after logging and fuels treatments, water bars to channel water off of the road, and re-vegetating the road surface to reduce erosion would result in any increases in surface erosion and soil displacement from the new road building to be minimal.

Repeated entries into forested stands can also increase the percentage of compacted and/or disturbed ground. The Baker RMP provides guidance to limit compacted ground to 12% or less. If, after treatment the project area is found to have exceeded the 12% compaction layer, steps to mitigate this compaction such as subsoiling skid trails and temporary roads with a winged subsoiler would occur. However, other PDFs described above, such as use of existing skid trails and use of designated skid trails, would be used first to keep compaction below the 12% threshold in the units.

With strict adherence to the project design features and the BMPs listed in the RMP, the proposed project would not have impacts to the soils resource in excess of those analyzed in the Baker RMP.

F. Fisheries

No direct effects to fisheries are expected to occur under this alternative. Actions that have the potential to cause mortality generally occur from equipment working in or near a stream channel. This proposal does not include the use of equipment in or around any stream.

Indirect effects occur at a later time and are farther removed from the action. Indirect effects are difficult to measure and quantify, but for the purposes of this report it is assumed that increased water temperature and turbidity, decreased large woody debris inputs and altered streamflows, result in decreased fish production and negatively affect life history requirements.

Water temperature, and altered large woody debris inputs are closely linked to riparian habitat, primarily within 100 feet of streams. Under alternative A, pre-commercial and commercial thinning may occur within 100 feet of an active stream channel, but treatments would retain sufficient trees to ensure water temperature and large woody inputs are not adversely affected.

Increased turbidity is generally related to the amount of ground disturbance, the distance the disturbance occurs from a stream channel, and the ability of sediment to travel from the disturbance to an active stream. Under alternative A, no mechanical ground disturbing actions would occur within RHCA's or in areas that have the potential to transmit sediment to an active stream channel. No increase in sediment to streams is expected to result under this alternative.

Altered Stream flows result from increasing the drainage network, primarily by increasing permanent road miles, and to a lesser extent, from removing riparian vegetation. No permanent roads would be constructed to facilitate this project. Removal of understory trees, outside RHCA's would result in a minor increase in runoff, but the amount of additional runoff would be small and unquantifiable and the effects to stream flow negligible. Riparian Habitat Conservation Areas (RHCA's) were established to protect aquatic species and habitat. Under this proposal, any action within an RHCA would benefit the RHCA and/or result in a negligible affect to fish populations and habitat

Cumulative effects to fisheries are measured in the effects of the proposed action, added to the effects of all past and known future action within a defined boundary. For the purposes of this report, cumulative effects are considered at the basin scale (Upper Grande Ronde).

No new permanent roads or clear cut acres would be added to the watershed. Other planned actions within the Upper Grande Ronde basin are listed in the Upper Grande Ronde Area Assessment (UGRAA).

G. Visual Resources and Recreation

The Baker Resource Area Management Plan (1989) identified the Blue Mountain Geographic Unit, which contains the Cove Project, as moderate visual quality and was rated as Class III. The basic definition of Visual Resource Management (Class III), are areas considered important from an aesthetic view point, but not necessarily outstanding scenery. Project work can be seen within a Class III area from travel routes; however, they cannot be a focal point to the casual observer or dominate the viewshed.

The proposed activities under this alternative would meet the objectives of the VRM Class III designation for the Blue Mountain Geographic Area.

Analysis of the project area to determine impacts revealed that the surrounding area has suffered various forms of vegetation/cultural/agricultural manipulation from adjacent landowner practices. Furthermore, these manipulations have created situations where the BLM lands, in their current state, are more distinct and "out of the norm" than the areas surrounding them. This creates areas where the unusual densities and straight line borders of the BLM lands impact the fluidity of the views for the casual observer.

Views of the treatment areas are primarily from internal road systems. Due to the existing

ownership patterns and topography of the area, these views are limited. All of the units see slight to moderate use by the general public, or are in areas determined to be "seldom seen" due to access and ownership patterns. There are no "open vistas" or panoramic views that contain the treatment area, and views would be predominantly localized in nature.

It should be noted that Sensitivity Levels for some of the units would be elevated due to the proximity of residences and recreational cabins. The removal of portions of the existing vegetation would impact the visual experience of those individuals familiar with the areas. However, these impacts would be similar to those already existing in the surrounding area and would "soften" the contrast currently existing between BLM lands and other ownerships. The completion of this project would help to blend the various vegetation conditions of the area and create a "smoother" pattern in the dominant views already established.

Primary impacts to the VRM would be from activities such as broadcast burns, pile burning, and slash busting. These activities would be readily seen by the casual observer, but would be short term in nature and would not dominate the viewshed. It is believed that the majority of the impacts created as a result of these treatments would be minimized or eliminated after one growing season.

Road development for extraction and piling of debris should not impact the view due to the minimum amount of roads to be constructed and the pre-existence of established roads and trails in the area. Most of the roads to be developed are in areas seldom seen by the public and are temporary to meet the objectives of the treatment areas. Furthermore, the closing and re-vegetation of the temporary roads would minimize the overall impacts to the area.

It is expected that the Cove Project, and identified vegetation manipulation, would have a minimal amount of impacts on the recreationist who have historically used the area. These impacts would affect primarily those individuals who hunt in that area as the movement patterns/habits of game species adapt to the changes caused by the project. However, these impacts would be short term in nature as recreationists re-familiarize themselves with the area. Overall impacts of the treatment areas on other "dispersed" recreational activities would be slight.

H. Special Status Plant Species

The potential loss of up to six individuals of *Cypripedium montanum* would not contribute to a loss of population viability or contribute to a need to list the species as state or federally threatened or endangered. *Cypripedium montanum* has an Oregon state rarity rank of 4 (not rare and apparently secure, but with cause for long-term concern, usually with over 100 occurrences). *Cypripedium montanum* is known to occur in 19 counties in Oregon (Oregon Natural Heritage Program 2001). Globally *C. montanum* occurs from Alaska to California and east to Alberta, Montana, and Wyoming (Hitchcock and Cronquist 1974). No special management recommendations are needed to maintain the viability of *Cypripedium montanum*.

There is little documentation of fire effects on *C. montanum*. Intuitively one would expect that a return to natural fire frequencies, under which *C. montanum* has evolved would benefit the plant. The proposed reduction of fuel loads in and around populations of *Cypripedium montanum* would reduce the likelihood of a stand replacing fire occurring. The high fire intensity associated with a stand replacing fire would probably destroy some individuals of *C. montanum* and reduce suitable habitat for *C. montanum*. Thus, the planned fuel treatments could be beneficial to *C. montanum*.

The upper elevational units have not been surveyed for special status plants. Given the potential for the occurrence of special status plants in these units and the high degree of disturbance of the proposed treatments these units be surveyed for special status plants prior to project initiation. If special status plants are found to occur in these units mitigation measures would be put in place to avoid adverse impacts to these species.

I. Noxious Weeds

Under this alternative, the potential risk of noxious weed invasion after a catastrophic fire would be reduced once treatments were complete. However, this particular alternative proposes more fuels treatments and commercial thinning activities of any of the alternatives considered. These various ground disturbing and vegetation removal actions together would result in the greatest risk of noxious weed increases of any of the proposed alternatives, barring wildfire.

Canada thistle and bull thistle would be expected to establish on landing sites and skid trails. However, these two species typically increase after forest management activities and then decline over an approximate seven year period. Both thistle species would still continue to have a presence for sometime afterwards.

Due to the existing presence of diffuse knapweed on the lower tracts there is a risk of this specie expanding after the various fuels treatments and commercial thinning are completed. Monitoring for knapweed and treating as necessary would be planned for two to five years after the fuels and thinning treatments are finished.

As mentioned, yellow starthistle exists in this portion of Union County and could possibly establish after some of the proposed treatments are completed. Minimizing soil disturbance on droughty open south exposures would help reduce this risk of starthistle establishment on the lower elevation tracts.

J. Air Quality

All of the action alternatives incorporate the use of prescribed fire as a fuel reduction method, although to different degrees. Broadcast, jackpot, and pile burning may be used based on site specific conditions. In general pile burning would produce less smoke than broadcast or jackpot burning because piles concentrate fuels and typically burn more efficiently and produce less smoke.

The alternatives that propose road construction and the use of commercial and pre-commercial thinning have the potential to produce more fugitive dust caused by construction and traffic than the alternatives which don't include these actions. However, these alternatives would produce less potential smoke because biomass would be removed from the project location leaving less material on site to be burned.

Under all alternatives the BLM would comply with all Oregon Department of Environmental Quality regulations for the project area. Any potential impacts to air quality are expected to be short term.

The potential for cumulative impacts to air quality caused by the project are anticipated to be minimal. This is because the project is expected to be fully implemented within 10 years. As

described above any potential impacts are expected to be of short duration (while a fire is burning or during biomass removal activities).

There is the potential that planned activities for the project may also occur at the same time as other burning activities within the La Grande air-shed. However, through coordination with the Oregon DEQ and compliance with air quality regulations any potential long term cumulative effects that may be caused by activities related to this project are expected to be minimized. Prescribed burns would be planned so that factors such as wind direction would limit the effects of smoke on local residents and the La Grande air-shed. The BLM plans to complete public notification procedures prior to any ignitions. Appropriate safety signs or other methods of notification would be used to warn motorists who may be traveling in the project area.

This alternative has to potential to impact air quality from both fugitive dust and smoke production. This alternative would provide the most potential impacts caused by fugitive dust than any of the alternatives because of the miles of road constructed, the increased traffic flow during the removal of biomass from the site, and the total amount of acres treated.

This alternative is anticipated to provide more potential impacts caused by smoke production than alternatives B and C because more total acres are being treated but less than alternative D because more biomass is being removed from the project area.

Alternative B (WUI Area Treatment) - Environmental Consequences

A. Forests and Forest Health

Forest Stand Structure

In this alternative commercial thinning would only take place in the lower tracts. Within the lower tracts all of the overstocked stands would be thinned to recommended levels. Over the entire project area approximately 45% of the commercial sized stands and 14% of the pre-commercial sized stands that are currently overstocked would be treated. This treatment would modify stand structure as described in Alternative A. No treatments would take place in the upper tracts and the effect of not treating these areas would be the same as described in the no action alternative. In the Armillaria root disease area western larch, lodgepole pine, and ponderosa pine would be retained.

Forest Insects

Commercial thinning would reduce stocking levels in the lower tracts. This would reduce the stand susceptibility to bark beetle attack as described in alternative A. Without thinning in the upper tracts the stands would remain overstocked and susceptible to bark beetle attack. Stocking levels in these stands would increase over time which would increase bark beetle activity as described in the no action alternative.

Forest Diseases

Manipulating species composition within the Armillaria root disease area would favor disease resistant species and there would be less disease-caused mortality from trees killed by the root disease. Douglas-fir and western larch mistletoe, blackstain root disease, and comandra rust would remain at endemic levels.

Since the BLM forest lands make up a small percentage of the forest lands in the project area, there would be little cumulative effects. In the lower tracts the probability of bark beetle populations spreading to adjacent lands would decrease. In the upper tracts bark beetle populations would buildup in overstocked stands and eventually spread to adjacent forest lands. In the long term, forest diseases would slowly spread to adjacent forestlands.

B. Urban Interface, Fuels, and Wildfire

Under this alternative 153 acres would receive fuels reduction treatments. Overall reduction in the existing fire hazard would be less than alternative A. The three units identified for fuels reduction treatments under this alternative would result in lower potential for high severity stand replacement fires while the units outside this alternative would continue to pose a high fire risk. Commercial thinning of over-story would decrease crown fire potential but may propagate nine bark production in the under story. Therefore mechanical mastication and under burning in ninebark sites would be critical to prevent future accumulation of ladder fuel.

Under this alternative less acres would be treated (153 acres) resulting in less impacts to overall project area. Mitigation of fire risk to adjacent Private lands would remain while the reduction in fire risk to Forest Service lands would be low.

C. Wildlife and Wildlife Habitat

Elk and Deer

The amount of thinning that would take place for this alternative is 16 acres. There would be approximately 13 acre of cover treated under this alternative. The treatments would not reduce the effectiveness of the cover habitat as there would be no overstory canopy cover removed. Therefore, there would be no impact to satisfactory or marginal cover in the area from this alternative.

This alternative proposes actions that would reduce the hiding cover along approximately 0.1 mile of road. There would be 0.75 mile of new road construction under this alternative. All newly constructed roads would be reseeded following thinning and fuels treatments. Therefore, there would be no net increase in the open road density in the area and impacts to wildlife associated with road construction would be short term.

This alternative treats only the lower elevation, pine forest areas. Impacts would be associated with habitat in the lower elevations that are outside the area that is more likely to be used by wintering elk and deer (the high elevations).

Snags and Down Logs

This alternative would not remove any of the large snags in the area that are habitat components for cavity dependent wildlife species. There may be an occasional small diameter short snag that may be consumed during the fuels treatment using prescribed fire. However, these snag sizes are not the optimal snags that are used by cavity dependent wildlife species and do not remain standing for long periods of time under natural conditions. Therefore, the impact to standing snags from this alternative would be insignificant.

The potential for down logs that are smaller in size and at an older decay class to be consumed in fuels treatments through prescribed fire is great. However, these sizes and decay classes of down logs of lower importance to wildlife species that rely on down logs as a habitat component. Furthermore, the larger logs in earlier decay classes are of higher value for wildlife species and remain in the ecosystem for a longer duration providing habitat for a longer period of time. Therefore, the impact to down logs from this alternative would be insignificant.

Special Status Species

Canada Lynx
This alternative would not modify any of the identified Canada lynx habitat in the area. Therefore, there would be no impact on Canada lynx or Canada lynx habitat from this alternative.

Northern Goshawk
This alternative would treat approximately 9.5 acres of suitable goshawk nesting habitat. However, the treatments would not modify the components of this habitat significantly to alter the characteristics necessary to be designated as nesting habitat. Therefore, there would be no direct impacts to goshawk nesting habitat from this alternative.

Pileated Woodpecker and other Cavity Dependent species
The snags associated with pileated woodpecker habitat would remain intact following the treatments. There would be sufficient numbers of snags remaining following the treatments from this alternative to provide for current woodpecker populations in the area.

D. Hydrology

The units proposed for treatment under this alternative are located mostly within the Mill Creek and Lower Little Creek subwatersheds, with approximately eight acres located within the Upper Little Creek subwatershed.

No treatments are proposed within RHCAs under this alternative, and the only intermittent or perennial stream close to any of these units is Millard Branch, which actually does not flow within BLM managed land, but does come within about 15-20 feet of the property line. There is currently an existing road on private and BLM managed land which lies between Millard Branch and the proposed units in Section 25. As such, none of the proposed treatments would impact shade and/or stream temperatures under this alternative.

As mentioned in alternative A, harvesting of trees can increase openings in the forest canopy which in turn can lead to greater accumulations of snow in these openings than would occur in an undisturbed forest. Warm rain-on-snow events can melt this increased snowpack quickly and result in higher than normal flows. Since this alternative involves commercial thinning, not all trees would be harvested, openings created in the forest canopy would be small, and any increase in snowpack due to these openings would not be expected to be large.

The trees left on site are expected to respond to the thinning with increased growth due to the reduction in competition. This growth from the largest trees left on site would result in this

incremental chance of increased snowpack to be temporary. Due to the increased growth and vigor of the trees that were left on site, within approximately ten years most of the openings would have closed in enough so that any difference in snow accumulation before and after thinning would not be measurable.

As mentioned in alternative A, increases in base flows due to removal of vegetation are expected to be minimal and short lived. An increase in base flow can be expected after harvesting of trees in forested areas due to the fact that the trees that are harvested are no longer using water from the site. During thinnings not all trees are removed and the remaining trees may use more water than they had previously. An increase in grasses and brush in this area can also be expected which would utilize more water. For these reasons any increase in base flows due to the harvest activities would only be expected to last for two to three years before the rest of the vegetation on site and any new vegetation that gets established would use up this increase.

Four roads totaling approximately 0.7 miles of new road are proposed in this alternative. Some road construction would take place in all three subwatersheds within the project area. The roads proposed for construction are all located on flat or nearly flat ground, or on or near the ridgetop. No stream crossings are involved with the construction, and none of the new roads would be near any intermittent or perennial streams. While roads can intercept subsurface water, none of these proposed roads would be expected to impact subsurface water because of their location on flat or nearly flat ground. Also, due to the location of the new roads, no conduit is available for delivery of any surface erosion that may occur to any stream channels in the project area, so no increases to sedimentation are expected.

With the incorporation of PDFs, the BMPs from the Baker RMP, and the fact that less than one percent of the land within the subwatersheds are being impacted, no significant impacts to the hydrology resource is expected under this alternative.

Due to the fact that there are no units in close proximity to downstream water rights holders, there is no riparian treatments in close proximity to water rights holders, and the relatively small percentage of land treated in each subwatershed, no impacts to downstream water users is expected.

E. Soils

As mentioned previously in alternative A, mechanical treatments of forested stands can result in direct, indirect, and cumulative effects upon the soils resource. The activities proposed under this alternative involve operations mainly on the Hall Ranch stony loam soil type. All but approximately six acres are within the Hall Ranch soil type, with the other six acres being associated with the Olot stony silt loam soil type. While the Hall Ranch soil type does have volcanic ash in the surface layer, it is not as prevalent as in the other soil types within the project area. As such, there is less risk of impacting the ash layer as in the other soil types. The Hall Ranch soil type has a runoff which is medium and an erosion hazard which is moderate.

Soil compaction resulting from the use of ground based equipment can occur during harvest and yarding activities. Since the majority of the project area would have commercial harvest activities, and some of the fuels treatment areas can also impact soil compaction as non-merchantable material would be skidded to the landings to reduce fuel loadings, the use of existing skid trails wherever possible would help minimize additional soil compaction, soil displacement, and loss of

productivity. Seeding of bare soil areas with native grasses after yarding would also help vegetation establish quicker and help reduce soil erosion.

Yarding activities would all be ground based under this alternative, so the use of existing skid trails to the extent possible, and following the PDFs listed above and the BMPs in the Baker RMP would be instrumental to preventing undue impacts to the soils resource.

The same impacts described in Alternative A for pile burning and broadcast burning would be applicable to this alternative, the only difference being that no burning would occur in RHCAs, and the total acreage proposed for burning would be less.

The impacts described in Alternative A for road building would also be applicable to this alternative with the only differences being that new road construction would not occur on slopes that would require a cutbank which may intercept subsurface water, and the total road mileage would be less.

Cumulative impacts related to soil compaction would be the same as described in Alternative A for the units that would have commercial treatments in this alternative.

F. Fisheries

As stated above, effects to fisheries under alternative A are expected to be negligible. Effects to fisheries species and habitat under alternative B are also expected to be negligible, but alternative B would have less ground disturbing activities and no actions within RHCA's. Overall effects to fisheries species and habitat are expected to be less than under alternative A.

No direct effects to fisheries are expected to occur under this alternative. Actions that have the potential to cause mortality generally occur from equipment working in or near a stream channel. This proposal does not include the use of equipment in or around any stream.

The indirect effects of Alternative B are hard to measure or quantify; however, it is assumed that fisheries would be less impacted under this alternative.

Under alternative B, no vegetation would be altered within RHCA's. Stream temperature and large woody inputs would remain at existing rates and levels.

Under alternative B, no ground disturbing actions would occur within RHCA's or areas that have the potential to transmit sediment to an active stream channel.

No permanent roads would be constructed to facilitate this project. Removal of understory trees, outside RHCA's would result in a minor increase in runoff, but the amount of additional runoff would be small and unquantifiable and the effects to stream flow negligible

No new permanent roads or clear cut acres would be added to the watershed. Other planned actions within the Upper Grande Rhonde basin are listed in the Upper Grande Rhonde Area Assessment (UGRAA).

G. Visual Resources and Recreation

Impacts would be similar as those described but slightly less than under alternative A due to less ground disturbing activities.

H. Special Status Plants

Impacts would be the same as those described under alternative A, except further surveys on the upper elevational units would not be need as no treatment would occur in those areas.

I. Noxious Weeds

The commercial thinning and fuels treatments proposed for the lower tracts would be similar to those under Alternative A; therefore the potential risk for noxious weeds to increase on these sites due to ground disturbance would be the same.

The risk of noxious weed invasion on the upper elevational tracts would be similar to the No Action Alternative as no fuels treatments or commercial thinning are planned on these tracts under Alternative B. However the risk of weed invasion resulting from potential catastrophic wild fire would be greater than under Alternative A for the same reasons.

J. Air Quality

This alternative has the potential to provide impacts to air quality from both fugitive dust and smoke production. This alternative is anticipated to provide fewer impacts caused by fugitive dust than alternative A because less acreage would be treated, fewer miles of road would be constructed, and a smaller volume of biomass removed. Because this alternative prescribes removal of biomass from the project area it is anticipated that it would provide more potential fugitive dust impacts than Alternatives C and D.

This alternative is anticipated to provide the least amount of smoke of all the alternatives. This is because a smaller total acreage is proposed for treatment while removing available biomass from the project area.

Alternative C (WUI Area Treatment, no Commercial Thin) - Environmental Consequences

A. Forests and Forest Health

<u>Forest Stand Structure</u>

In this alternative fuels treatments would be done only in the lower tracts, the upper tracts would not be treated. Stand structure of the treated areas would be modified by removing most of the small diameter understory trees. Overstory trees greater than 8 inches in diameter would not be removed. The average stand diameter would increase because a large number of small diameter trees would be removed. Species composition would shift to more fire tolerant species as the understory has a higher component of fire intolerant species that became established in the absence of frequent fire. Over the entire project area approximately 47% of the commercial sized stands and 14% of the pre-commercial sized stands that are currently overstocked would be treated

<u>Forest Insects</u>

The fuels treatments would remove a small amount of basal area from treated stands. In most of the stands this reduction would not substantially reduce stocking levels and most stands would remain near or above the UMZ recommended by Cochran. These stands would remain overstocked and susceptible to bark beetle attack.

Forest Diseases

Manipulating species composition within the Armillaria root disease area would favor disease resistant species and there would be less mortality from trees killed by the root disease. Douglas-fir and western larch mistletoe, blackstain root disease, and comandra rust would remain at endemic levels.

Since the BLM forest lands make up a small percentage of the forest lands in the project area, there would be little cumulative effects. Stand structure would be minimally changed and there would be little impact to the overall project area. Bark beetle populations would buildup as stands remain overstocked. Eventually bark beetles would spread to adjacent forest lands. In the long term, forest diseases would slowly spread to adjacent forestlands.

B. Urban Interface, Fuels, and Wildfire

Under this alternative the same number of acres would receive fuels reduction treatments as Alternative B. The reduction in existing ground fuel loadings and ladder fuels would reduce the risk of high severity stand replacement fires. Excluding commercial- thinning in these sites would result in a continuation of overstocked stands that have a higher crown fire potential than Alternative B. Sites would remain more shaded than commercially thinned areas resulting in lower potential for ninebark propagation.

With fewer acres treated than alternative A and D impacts to overall project area would be low. The exclusion of commercial harvesting would lessen mitigation of fire risks to adjacent landowners than under alternative B.

C. Wildlife and Wildlife Habitat

Elk and Deer

The amount of thinning that would take place for this alternative is 16 acres. There would be approximately 13 acre of cover treated under this alternative. The treatments would not reduce the effectiveness of the cover habitat as there would be no overstory canopy cover removed. Therefore, there would be no impact to satisfactory or marginal cover in the area from this alternative.

This alternative proposes actions that would reduce the hiding cover along approximately 0.1 mile of road. This alternative would not have new road construction and access for fuels treatments would be through the treatment areas without designated roads.

This alternative treats only the lower elevation, pine forest areas. Impacts would be associated with habitat in the lower elevations that are outside the area that is more likely to be used by wintering elk and deer (the high elevations).

Snags and Down Logs

This alternative would not remove any of the large snags in the area that are habitat components for cavity dependent wildlife species. There may be an occasional small diameter short snag that may be consumed during the fuels treatment using prescribed fire. However, these snag sizes are not the optimal snags that are used by cavity dependent wildlife species and do not remain standing for long periods of time under natural conditions. Therefore, the impact to standing snag from this alternative would be insignificant.

The potential for down logs that are smaller in size and at an older decay class to be consumed in fuels treatments through prescribed fire is great. However, these sizes and decay classes of down logs of lower importance to wildlife species that rely on down logs as a habitat component. Furthermore, the larger logs in earlier decay classes are of higher value for wildlife species and remain in the ecosystem for a longer duration providing habitat for a longer period of time. Therefore, the impact to down logs from this alternative would be insignificant.

Special Status Species

Canada Lynx
This alternative would not modify any of the identified Canada lynx habitat in the area. Therefore, there would be no impact on Canada lynx or Canada lynx habitat from this alternative.

Northern Goshawk
This alternative would treat approximately 9.5 acres of suitable goshawk nesting habitat. However, the treatments would not modify the components of this habitat significantly to alter the characteristics necessary to be designated as nesting habitat. Therefore, there would be no direct impacts to goshawk nesting habitat from this alternative.

Pileated Woodpecker and other Cavity Dependent species
The snags associated with pileated woodpecker habitat would remain intact following the treatments. There would be sufficient numbers of snags remaining following the treatments from this alternative to provide for current woodpecker populations in the area.

D. Hydrology

No direct impacts to the hydrology resource would occur under this alternative.

As mentioned previously, harvesting of trees can increase openings in the forest canopy which in turn can lead to greater accumulations of snow in these openings than would occur in an undisturbed forest. However in the case of pre-commercial thinning, little to no impact to snow accumulation is anticipated. With pre-commercial thinning taking place under an overstory, the forest canopy is not being manipulated and as such openings are created in the canopy to allow greater snowpack to develop. In the case of pre-commercial thinning taking place in an area such as a plantation, the size of trees that are usually thinned have not yet developed a canopy which would compare to a mature stand and as such would not intercept snow at the same rate as a mature forest. In addition, pre-commercial thinning usually only occurs when the site is overstocked, and the trees removed are the smallest, so the largest trees with the best canopies area retained. Due to these facts and the fact that only 16 acres is planned for pre-commercial thinning, no impact to the hydrology resource is anticipated from this thinning.

In Sections 25 and 35, fuels treatment using mechanized equipment is proposed. While no new roads are being built, the equipment would be using existing skid trails and traveling cross-country to reduce the fuel loadings. In addition, broadcast burning is planned in all of the sections within this alternative.

While mechanized equipment can increase bare ground which can lead to increased sedimentation, no noticeable increase in sedimentation is expected to occur under this alternative. This is due to the fact that the equipment would not be yarding logs or slash to a landing, most of the equipment use would only involve one pass over the ground which would reduce the chance to disturb the surface layer and vegetation, and the fact that other than a very small portion of unit 25D being close to Millard Branch, there are no other intermittent or perennial streams in the project area to transport sediment.

Due to the fact that there are no units in close proximity to downstream water rights holders, there is no riparian treatments in close proximity to water rights holders, and the relatively small percentage of land treated in each subwatershed, no impacts to downstream water users is expected.

E. Soils

As mentioned previously, mechanical treatments of forested stands can result in direct, indirect, and cumulative effects upon the soils resource. These effects may include alterations to the physical, chemical, and/or biological properties of the soil. Effects can also include the actual removal of soil from a site. Management activities which can affect soil properties include but are not limited to; soil compaction, high intensity burning, erosion, sedimentation, soil displacement, and mass wasting.

Soil compaction and creation of bare soil area resulting from the use of ground based equipment can occur during fuels treatment activities. Impacts to the soils resource are usually expected to be minimal with just fuels treatments activities due to the fact that normally just one pass with the machine occurs and the machine can usually travel on slash that it creates which reduces the risk of compaction. In addition, the use of existing skid trails wherever possible would also minimize soil compaction, soil displacement, and loss of productivity. Seeding of bare soil areas with native grasses after yarding would also help vegetation establish quicker and help reduce soil erosion.

As discussed in Alternative A, broadcast burning within the stands is not expected to cause appreciable impacts due to the timing and desired outcome of the burning. Broadcast burning would take place when fine fuels left on the forest floor could be consumed without burning significant amounts of larger material or allowing for high fire intensities that would damage the leave trees within the stand. This timing would be during the spring when the soil, duff, and large fuel moisture contents are high, or in the fall after enough moisture has been received to accomplish the burn plan prescriptions. Grasses, shrubs, and small trees may be killed by the fire which could for a short time (one growing season) increase the amount of bare soil in the project area. During this time storm events such as a summer thunderstorm could cause some surface erosion within the project area, however no measurable sediment would be expected to be mobilized downstream because of the gentle topography of the area and the lack of active stream channels in the majority of the project area.

No impacts from road building would occur under this alternative. Cumulative impacts resulting from soil compaction could occur in the units proposed for treatment under this alternative as described in Alternative A due to the use of ground based machinery.

Following the PDFs listed above and the BMPs in the Baker RMP would be an integral part to preventing undue impacts to the soils resource.

F. Fisheries

Alternative C proposes fewer disturbed acres than alternative A and B. As a result, effects to fisheries species and habitat under alternative C are also expected to be less under this alternative.

No direct effects to fisheries are expected to occur under this alternative.

The indirect effects of Alternative C are expected to be less than in alternative A and B.

Under alternative C, no vegetation would be altered within RHCA's. Stream temperature and large woody inputs would remain at existing rates and levels.

Under alternative C, no ground disturbing actions would occur within RHCA's or areas that have the potential to transmit sediment to an active stream channel.

No permanent roads would be constructed to facilitate this project. Removal of understory trees, outside RHCA's would result in a minor increase in runoff, but the amount of additional runoff would be small and unquantifiable and the effects to stream flow negligible

No new permanent roads or clear cut acres would be added to the watershed. Other planned actions within the Upper Grande Rhonde basin are listed in the Upper Grande Ronde Area Assessment (UGRAA).

G. Visual Resources and Recreation

Impacts would be similar but slightly less than those described under alternative B due to less disturbed acres.

H. Special Status Plants

Impacts would be similar to those described under alternative B but slightly less due to less disturbed acres.

I. Noxious Weeds

Under this alternative the same 153 acres within the lower tracts identified in Alternative B would receive fuel treatments but those forested stands identified for commercial thinning in B (147 acres) would not be thinned. This change in forest treatments would decrease the amount and degree of soil disturbance that would occur, thereby lessening the potential for noxious weed establishment and spread. By leaving the over story trees under Alternative C the ground would also remain more

shaded promoting native vegetation that could compete with noxious weeds that may attempt to establish.

The risk of noxious weed invasion on the upper elevational tracts would be similar to the No Action Alternative and Alternative B as no fuels treatments or commercial thinning are planned on these tracts under this Alternative as well. However the risk of weed invasion resulting from potential catastrophic wild fire would be greater than under Alternative A for the same reasons.

J. Air Quality

This alternative has the potential to provide impacts to air quality from smoke produced by prescribed fire. Because less total acreage is proposed for burning, the potential for impacts to air quality caused by this alternative are anticipated to be less than alternatives A and D. However, since more biomass would remain on site and available for consumption by a prescribed fire the potential impacts to air quality of this alternative to air quality are anticipated to be more than alternative B.

Alternative D (Entire Area without Commercial thinning) - Environmental Consequences

A. Forests and Forest Health

Forest Stand Structure
The difference between this alternative and alternative C is that all of the stands within the project area would be treated. The effects to stand structure would be similar to what was described in alternative C except all of the stands would be treated.

Forest Insects
As with stand structure, the effects to resistance to bark beetle attack would be similar to alternative C. Stand basal area following fuels treatments in the upper tracts would be above the recommended UMZ and the stands would remain susceptible to bark beetle attack.

Forest Diseases
Manipulating species composition within the Armillaria root disease area would favor disease resistant species and there would be less root disease-caused mortality. Douglas-fir and western larch mistletoe, blackstain root disease, and comandra rust would remain at endemic levels.

Since the BLM forest lands make up a small percentage of the forest lands in the project area, there would be little cumulative effects. Bark beetle populations would buildup as stands remain overstocked. Eventually bark beetles would spread to adjacent forest lands. In the long term, forest diseases would slowly spread to adjacent forestlands.

Impact to local project area would remain low although overall impact would be higher than Alternatives B and C as more acres would be treated. Mitigation of fire risk to both Private and Forest Service lands would be less than alternative A due to elimination of Commercial Thinning.

B. Urban Interface, Fuels and Wildfire

Under this alternative all units within the Cove Project would receive fuels reduction treatments. Treatments would be limited to reducing the existing ground and ladder fuels while commercial thinning of overstory would be eliminated. A reduction in both ground and ladder fuels would reduce the existing fire hazard but not to the degree of Alternative A as excluding commercial-thinning would result in a continuation of overstocked stands that have a higher crown fire potential. Sites would remain more shaded resulting in lower potential for ninebark propagation and favor more shade tolerant species (fir).

C. Wildlife and Wildlife Habitat

Elk and Deer

This alternative would use non-commercial methods to treat all acres in the project area. Approximately 17 acres of satisfactory cover would be treated and approximately 52 acres of marginal cover would be treated under this alternative. There would be no commercial thinning done for the project. These treatments would not reduce the effectiveness of the cover habitat as there would be no overstory canopy cover removed. Therefore, there would be no impact to satisfactory or marginal cover in the area from this alternative.

This alternative proposes actions that would reduce the hiding cover along approximately 0.6 mile of road. This alternative would not have new road construction and access for fuels treatments would be through the treatment areas without designated roads.

This alternative treats only the lower elevation, pine forest areas. Impacts would be associated with habitat in the lower elevations that are outside the area that is more likely to be used by wintering elk and deer (the high elevations).

Snags and Down Logs

Impacts to snags and down logs from this alternative would be similar to those described for Alternative C, with the exception that there would be no treatments to the higher elevation areas.

Special Status Species

Canada Lynx

This alternative would modify approximately 22 acres of marginal foraging lynx habitat and approximately 75 acres of unsuitable lynx habitat. The proposed treatments would meet guidance outlined in the Canada lynx strategy, as these "improvement harvests" would be designed to "a) retain and recruit the understory of small diameter conifers and shrubs preferred by hares; b) retain and recruit coarse woody debris, consistent with the likely availability of such material under natural disturbance regimes; and c) maintain or improve the juxtaposition of denning and foraging habitat."

The amount of lynx habitat treated from this alternative would be insignificant with respect to the amount of existing denning and foraging habitat that currently exists within the adjacent LAU. Therefore, impacts to lynx from this alternative would be minimal.

Northern Goshawk
This alternative would treat approximately 20 acres of suitable goshawk nesting habitat. However, the treatments would not modify the components of this habitat significantly to alter the characteristics necessary to be designated as nesting habitat. Therefore, there would be no direct impacts to goshawk nesting habitat from this alternative.

Pileated Woodpecker and other Cavity Dependent species
The snags associated with pileated woodpecker habitat would remain intact following the treatments. There would be sufficient numbers of snags remaining following the treatments from this alternative to provide for current woodpecker populations in the area.

Cumulative effects are associated with additional wildlife habitat modifications on surrounding lands. The adjacent USFS lands are located within a LAU and any modifications to this habitat would require following guidelines established by the Lynx Conservation Strategy and consultation with the US Fish and Wildlife Service. Furthermore, adjacent FS lands are within a wilderness area with no planned habitat modifications. Therefore, the cumulative effects to Canada lynx would be insignificant and is most cases beneficial.

Habitat located on private lands would be modified to meet the objectives of the land owner and often would not follow guidelines and recommendations to maintain or enhance wildlife habitat. Treatments on private lands would involve the removal of most, if not all, of the trees and replanting with a single tree species. BLM lands and adjacent FS lands would be of a higher value to wildlife and maintaining this habitat would allow the continued use of these areas. Currently most of the private lands have already been modified and provide minimal wildlife habitat quality.

D. Hydrology

As mentioned in Alternative C, no significant impacts to the peak or base flows are expected to occur due to pre-commercial thinning. Pre-commercial thinning is proposed within the RHCA of Potters Creek and the impacts would be the same as those discussed in Alternative A relating to pre-commercial thinning. No commercial thinning or removal of trees would occur within the RHCA or any unit under this alternative.

As discussed in Alternative C, while no new roads are being built, the equipment would be using existing skid trails and traveling cross-country to reduce the fuel loadings and broadcast burning is planned in all of the sections within this alternative.

While mechanized equipment can increase bare ground which can lead to increased sedimentation, no noticeable increase in sedimentation is expected to occur under this alternative. This is due to the fact that the equipment would not be yarding logs or slash to a landing, most of the equipment use would only involve one pass over the ground which would reduce the chance to disturb the surface layer and vegetation, and the fact that other than a very small portion of unit 25D being close to Millard Branch and some units in Sections 32 and 5 being adjacent to Potters Creek, there are no other intermittent or perennial streams in the project area to transport sediment. And as mentioned previously, no equipment is allowed within the RHCA, so mechanical fuels treatments would be at least 150 feet away from Potters Creek and any sediment which may travel from any bare ground created by the machine would be intercepted by the vegetation within the RHCA.

Due to the fact that there are no units in close proximity to downstream water rights holders, there is no riparian treatments in close proximity to water rights holders, and the relatively small percentage of land treated in each subwatershed, no impacts to downstream water users is expected.

E. Soils

The impacts discussed in Alternative C due to mechanical fuels treatments and broadcast burning would be the same for the units identified in this alternative. The treatments proposed for Alternative C and D are the same, there is just more acreage involved in this alternative. In addition, the impacts from pile burning in conjunction with the pre-commercial thinning in the RHCA of Potters Creek would be the same as discussed in Alternative A.

No impacts from road building would occur under this alternative. Cumulative impacts resulting from soil compaction could occur in the units proposed for treatment under this alternative as described in Alternative A due to the use of ground based machinery.

F. Fisheries

Alternative D would have similar effects to Alternative A, but does not propose commercial harvest on any unit. Effects to fisheries species and habitat under Alternative D are also expected to be more than under Alternative B and C, but less than Alternative A.

No direct effects to fisheries are expected to occur under this alternative.

The indirect effects of Alternative D are expected to be more than alternative B and C. However, overall impacts to fisheries would remain negligible.

Under alternative D, no vegetation would be altered within RHCA's. Stream temperature and large woody inputs would remain at existing rates and levels.

Under alternative D, no ground disturbing actions would occur within RHCA's or areas that have the potential to transmit sediment to an active stream channel.

No permanent roads would be constructed to facilitate this project. Removal of vegetation outside RHCA's would result in a minor increase in runoff, but the amount of additional runoff would be small and unquantifiable and the effects to stream flow negligible

No new permanent roads or clear cut acres would be added to the watershed. Other planned actions within the Upper Grande Ronde basin are listed in the Upper Grande Ronde Area Assessment (UGRAA).

G. Visual Resources and Recreation

Impacts would be similar to those described under Alternative A but slightly less due to no commercial harvest.

H. Special Status Plant Species

Impacts would be similar to those described under Alternative A but slightly less due to no commercial harvest.

I. Noxious Weeds

All units would receive fuels treatments except that there would be no commercial thinning at all. No commercial thinning would result in forested stand conditions on the lower tracts that would be similar to those under Alternative C. The potential effects regarding noxious weed establishment on these sites would be the same as discussed in Alternative C.

Fuels treatments would be planned on upper elevational tracts. These treatments would reduce the potential of catastrophic wildfire that could in turn result in noxious weed invasion. This reduction would not be to the same extent as in Alternative A however, since no commercial thinning would occur. This alternative would still result in an overstocked condition and an increased risk of wildfire.

J. Air Quality

This alternative has the potential to provide impacts to air quality from smoke produced by prescribed fire. This is because the maximum total acreage is proposed for treatment and biomass removal would not occur. For these reasons this alternative is anticipated to provide for the greatest potential to impact air quality caused by smoke production from prescribed fires of all the alternatives.

Alternative E – No action - Environmental Consequences

A. Forests and Forest Health

Stand Structure

In the short term, stand structure would not change substantially from the existing structure. As trees in the stands grow, individual tree size and stocking levels would gradually increase. This would increase the inter-tree competition, make trees more susceptible to bark beetle attack, and increase mortality within the stands. The increase in tree mortality would increase fuel loadings within the stands.

The tree species composition would not change over the short term. Without disturbances, such as fire, intolerant species such as grand fir and Douglas-fir would increase and eventually dominate some sites.

Forest Insects

The increase in stand density would increase the susceptibility to bark beetle attack which would continue to kill pockets of trees. This would increase the number of snags and down logs which would add fuel loadings. In lodgepole pine dominated stands tree mortality would increase as mountain pine beetle spreads to currently uninfected areas.

Forest Diseases

In the area with Armillaria root disease, susceptible species such as Douglas-fir and grand fir would continue to be killed slowly over time. The area infected may slowly expand radially at a rate of 2-3 feet per year.

The small amount of Douglas-fir and western larch mistletoes, and blackstain root disease would slowly infect adjacent trees. Over time these low level infections could increase to moderate levels of infection where tree growth and mortality would begin to be effected. Comandra rust would continue to intensify on infected individuals, and may infect new trees if conditions for spread are favorable.

Since the BLM forest lands make up a small percentage of the forest lands in the project area, there would be little overall cumulative effects if no action were taken. The BLM lands would remain overstocked with multiple canopy layers. Bark beetle populations would buildup in overstocked stands and eventually spread to adjacent forest lands. As untreated stands become denser this probability would increase. In the long term, forest diseases would slowly spread to adjacent forestlands.

B. Urban Interface, Fuels and Wildfire

Under a non treatment alternative the potential for a high severity stand replacement would remain the same or increase as both ground fuel loadings and ladder fuels would accumulate over time. Fire starts would be harder to manage by fire suppression forces resulting in higher suppression costs and increased threat from fire to local landowners and adjacent communities. We can expect a significant increase in post burn fire severity.

Since no acres would be treated fire risk to overall project area would remain. Potential for fire starts reaching Private and Forest Service lands would be much higher than the action alternatives.

C. Wildlife and Wildlife Habitat

Under the No Action Alternative there would be no immediate impacts to wildlife in the area because there would be no actions conducted on BLM lands. Existing conditions would remain and existing use by wildlife would continue.

Long-term effects on wildlife would be associated with the loss of trees on BLM lands due to natural mortality. As existing snags fell and became down logs, those wildlife species dependent upon down logs would benefit from the increased habitat. However, those wildlife species dependent upon standing snags for habitat would see a decrease in the existing habitat. As existing green trees died and became snags this would balance out the loss of those fallen snags. This would only last until there were virtually no remaining large green trees to replace those standing snags. Smaller trees would continue to grow and become large trees in approximately 50 to 75 years. These trees may become snags as early as 30 to 40 years, but these snags would not be large enough for use by many snag dependent wildlife species. Trees with a diameter of 12 inches or greater provide the best opportunity for snag dependent wildlife species. This snag creation cycle would continue but would take approximately 50 years or more to complete.

In the higher elevation areas, natural mortality of pockets of lodgepole pine trees would create opening where young trees would become established. The amount of lynx habitat in the area would remain relatively unchanged with relatively little foraging habitat and the majority of the area as unsuitable habitat. As these sparsely forested areas began to establish young growth in the area, the amount of unsuitable habitat would decrease and the amount of marginal foraging habitat followed by preferred foraging habitat would increase. In the event of a wildfire passing through the area, the amount of unsuitable habitat would increase dramatically, however, within 30 years this unsuitable habitat would transition to foraging habitat as seedlings and saplings became established in the area.

D. Hydrology

The project area would continue to be characterized by high fuel loads with potential for stand replacement fires which in turn could impact soil productivity, sedimentation and snowpack accumulation in the project area.

No treatments within the RHCA of Potters Creek would occur, and high fuel loadings and overstocked stands within the RHCA would be left.

Road densities would remain the same as they are currently.

No changes to current peak and/or base flows from timber harvest would occur. No changes in sediment delivery from timber harvest and hauling would occur.

Table 12. Road density by subwatershed before and after proposed treatments. Road density is represented in miles of road per square mile of land.

	No Action Alternative E	Alternative A	Alternative B	Alternative C	Alternative D
Mill Creek	4.27	4.28 0.25 miles of new road construction	4.28 0.25 miles of new road construction	No change	No change
Lower Little Creek	2.84	2.85 0.2 miles of new road construction	2.85 0.2 miles of new road construction	No change	No change
Upper Little Creek	3.84	3.91 1.05 miles of new road construction	3.85 0.25 miles of new road construction	No change	No change

While impacts to the hydrology and soils resource vary by alternative, none of the alternatives considered with this project present impacts which could not be mitigated and/or which are outside the scope of impacts analyzed by the Baker RMP (RMP, 1989).

E. Soils

No timber harvest, fuels reduction, or slash burning would occur. The project area would continue to be characterized by high fuel loads with potential for stand replacement fires which in turn could impact soil productivity, erosion and snowpack accumulation in the project area. No changes to current peak and/or base flows from timber harvest would occur. No changes in sediment delivery from timber harvest and hauling would occur.

F. Fisheries

Under the No Action alternative, no work would occur that has the potential to directly affect fish species or habitat.

Under the No Action alternative no indirect effects to fisheries species and/or habitat are expected to occur. The current stream temperature, sediment inputs, erosional processes, woody debris recruitment, and hydrologic processes would continue to function at existing rates and levels. Fish populations and habitat suitability are expected to remain at existing rates and levels.

Cumulative effects to fisheries would be restricted to past and future management within the watershed (see the Upper Grande Ronde Area Assessment).

G. Visual Resources and Recreation

There would be no direct effects to visual resources or recreation under this alternative. Large, stand replacing fire would have adverse impacts to visual resources and recreation.

H. Special Status Plant Species

There would be no direct effects to special status plants under this alternative. Large fuel accumulations left in place could help to fuel stand replacing fires. The loss of overstory tree and shrub cover caused by high intensity wildfires could adversely affect special status plant habitat. Cumulative impacts to special status plants could include fragmentation of habitat from stand replacing wildfires.

I. Noxious Weeds

Under a no action alternative the present situation regarding noxious weeds on these BLM tracts would remain the same. Some treatment of diffuse knapweed could occur should funding and time allow. Periodic monitoring for yellow starthistle or other species would occur. Since no fuels or forest management activities would take place the risk of ground disturbing activities that could promote the establishment or spread of noxious weeds would be minimized. Continued use of existing roads and trails by vehicles and ATVs would remain the primary means of weed spread in the planning area.

Since this alternative would allow for the continued overstocking of the forest stands and increased fuel loadings the risk of a catastrophic wildfire would remain high. Such a fire could potentially cause the greatest threat of a serious infestation of noxious weeds within two or three years of the fire occurrence.

K. Air Quality

The would be no impact to air quality under the no-action alternative although the potential impact to air quality would remain high as high intensity wildfires result in increased levels of particulate matter in the atmosphere. In addition, unlike prescribed fires, smoke dispersal from wildfires could not be managed to mitigate impact to local communities.

V. Monitoring

During project implementation the project design features would be monitored to assure compliance.

Skid trails would be monitored during and after yarding operations. Monitoring would be used to ensure that existing skid trails are used to the greatest extent possible, skid trails are spaced 100 feet apart, and that a slash mat is on the trails to reduce soil impacts. Monitoring would also ensure that less than 12% of the area is compacted during thinning and fuels treatment activities.

Monitoring after yarding would include ensuring adequate waterbars are in place and native seeding has occurred on any bare soil areas.

Landings and large slash piles would be monitored after burning to ensure adequate vegetation establishment and to monitor for noxious weeds.

Monitoring of the Potters Creek RHCA would include ensuring that no equipment is allowed to operate in the RHCA for yarding or fuels treatments. Monitoring would also be used to ascertain that no increase in sediment occurred from the project activities.

All units receiving treatments would be monitored to determine responses by vegetation, specifically ninebark, to both mechanical and prescribed fire treatments. Monitoring may determine if a second entry underburn is needed in the future to maintain fuels accumulations at desirable levels, as identified above, and restrict regeneration of ninebark in the understory.

VI. List of Preparers

Dale Ekman	Fuels Specialist
Dick Watson	Forester
Greg Miller	Wildlife Biologist
Todd Kuck	Hydrologist
Garth R. Ross	Fisheries Biologist
Roger Ferriel	Botanist
Mary Oman	Archeologist
Randy Eyre	Planning and Environmental Coordinator
Brian Watts	Fire Ecologist
Kevin McCoy	Outdoor Recreation Planner
Mike Woods	Weeds Specialist

VII. List of Agencies and Persons Consulted

USDI Fish and Wildlife Service
USDC National Marine Fisheries Service
Oregon Department of Fish and Wildlife
Union County
Powder Valley Water Control District
Oregon Department of Environmental Quality
Oregon Department of Forestry
Oregon Water Resources
Environmental Protection Agency
Federal Energy Regulatory Commission
Confederated Tribes of the Umatilla Indian Reservation
Identified interested Publics
Adjacent landowners

VIII. Finding of No Significant Impact

The Baker Resource Area of the Bureau of Land Management (BLM) Vale District has analyzed a proposal for fuels treatment in the Cove area. The proposed project sets forth land treatment activities designed to reduce fuel loadings, improve forest health and reduce the risk of wildfire while protecting and enhancing other resource values. The attached Environmental Assessment (EA 030-2003-05) contains a detailed description and analysis of four action alternatives and a no action alternative. This EA was prepared under the guidance provided by the Baker Resource Management Plan. There would be positive impacts to the overall human environment with few, if any, negative impacts. In relation to context, the project's affected region is localized and the effects of implementation are limited to the area affected by the project. This is particularly true in light of the mitigation measures adopted into the project specifications. In relation to intensity or severity, mitigation measures have been designed to protect public health and safety. Further, no unique characteristics are involved, there are no highly uncertain, unique or unknown risks, and the project does not set a precedent for future actions that could have significant effects. The action also does not appear to be related to any other action that could be significant, there will be no impacts to sites that could be listed on the National Register of Historic Places, no scientific, cultural or historic resources will be lost, and there will be no violation of any law or requirement protecting the environment. There will be no irretrievable or irreversible commitment of resources as a result of the proposed action. I have determined, based upon the analysis of environmental impacts contained in the referenced EA, that the potential impacts raised by the proposed project will not be significant and that preparation of an environmental impact statement is not required.

s/Penelope Dunn Woods	May 28, 2003
Baker Resource Area Field Manager	Date

IX. Appendices

a. Appendix A. Wildlife

i. Lynx Habitat Definitions

Primary vegetation that may contribute to lynx habitat is subalpine fir habitat types where lodgepole pine is a major seral species, generally between 4,100 – 6,600 feet. Moist grand fir and moist Douglas-fir habitat types, where they are mixed with subalpine fir habitat types, constitute secondary vegetation that may also contribute to lynx habitat.

Denning Habitat – Dense, mature forest habitats that contain large woody debris to provide security and thermal cover for kittens. Other important features of denning sites are minimal disturbance, proximity to foraging habitat, and stands that are at least 2.5 acres in size. It requires at least one tree layer with at least 6 trees per acre =12" dbh and averages one large (21" diameter or larger on one end) down log per acre or down logs in piles or moderate to heavy concentrations.

Primary Foraging Habitat – Areas with two tree layers. One layer at least 12 feet average height above ground and less than 12" dbh with a =50% canopy cover plus understory cover above average snow depth and at least 200 trees per acre. One layer of high density young trees where the live crown cover is maintained within the lower 12 feet above ground, plus dbh between 2" and 7" and at least 500 trees per acre.

Marginal Foraging Habitat – These are stand meeting the tree size and density requirements for foraging habitat, but lacking either the high density of young trees or the 12 feet above ground live crown cover requirement. Trees are between 2" and 12" dbh and at least 200 trees per acre.

Unsuitable Habitat – Areas capable of producing lynx foraging or denning habitat but currently do not have the necessary vegetation composition, structure, and/or density to support lynx. This could be the result of past management practices, severe insect, or disease caused mortality, and/or wildfire.

Non-Habitat – Areas that do not have the capability of providing lynx habitat. This would include inadequate snow depth (<2 feet average snow depth), warm, dry, and hot plant associations, grasslands, rock outcrops, and all habitats <4,500 feet elevation.

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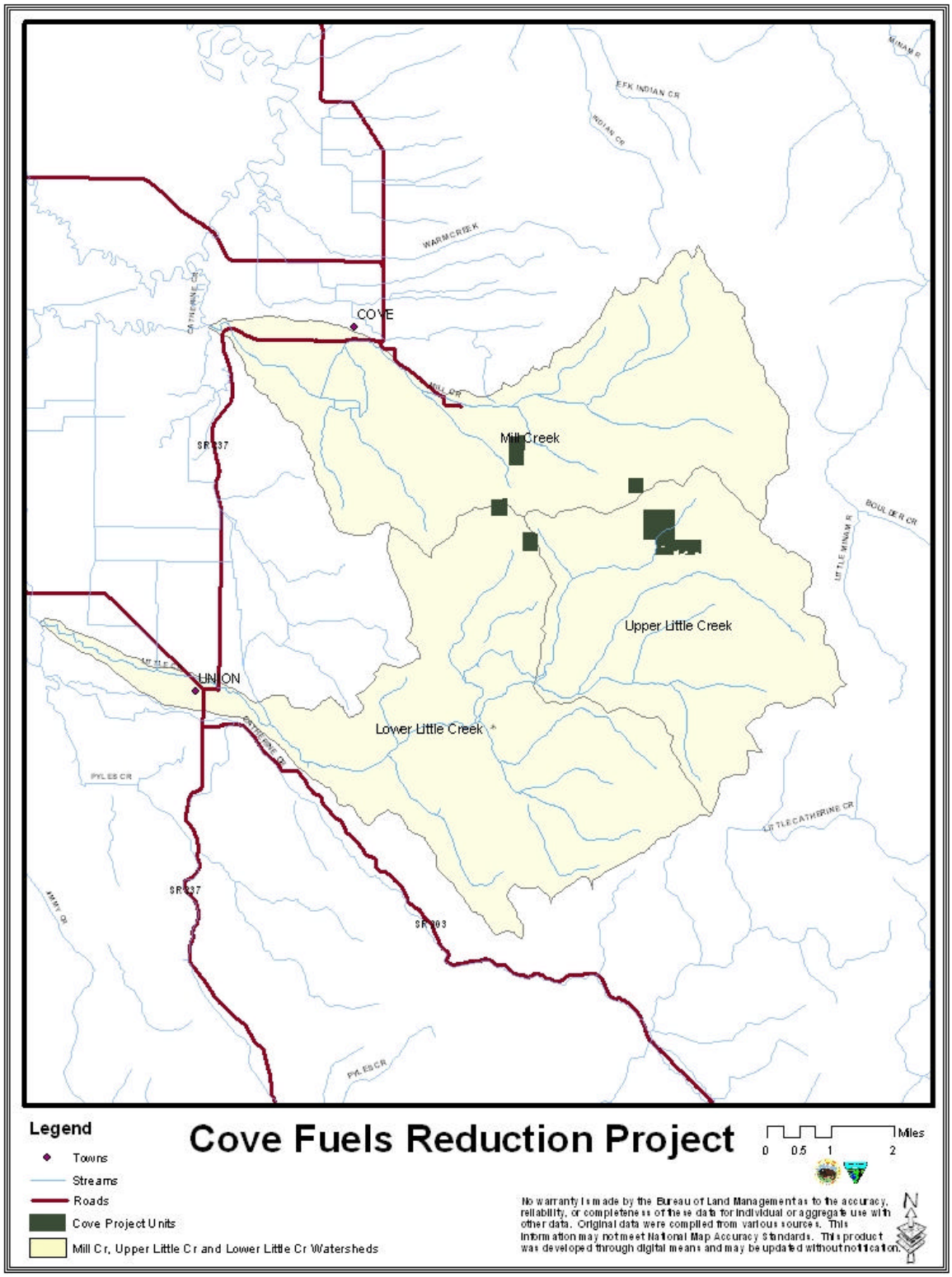
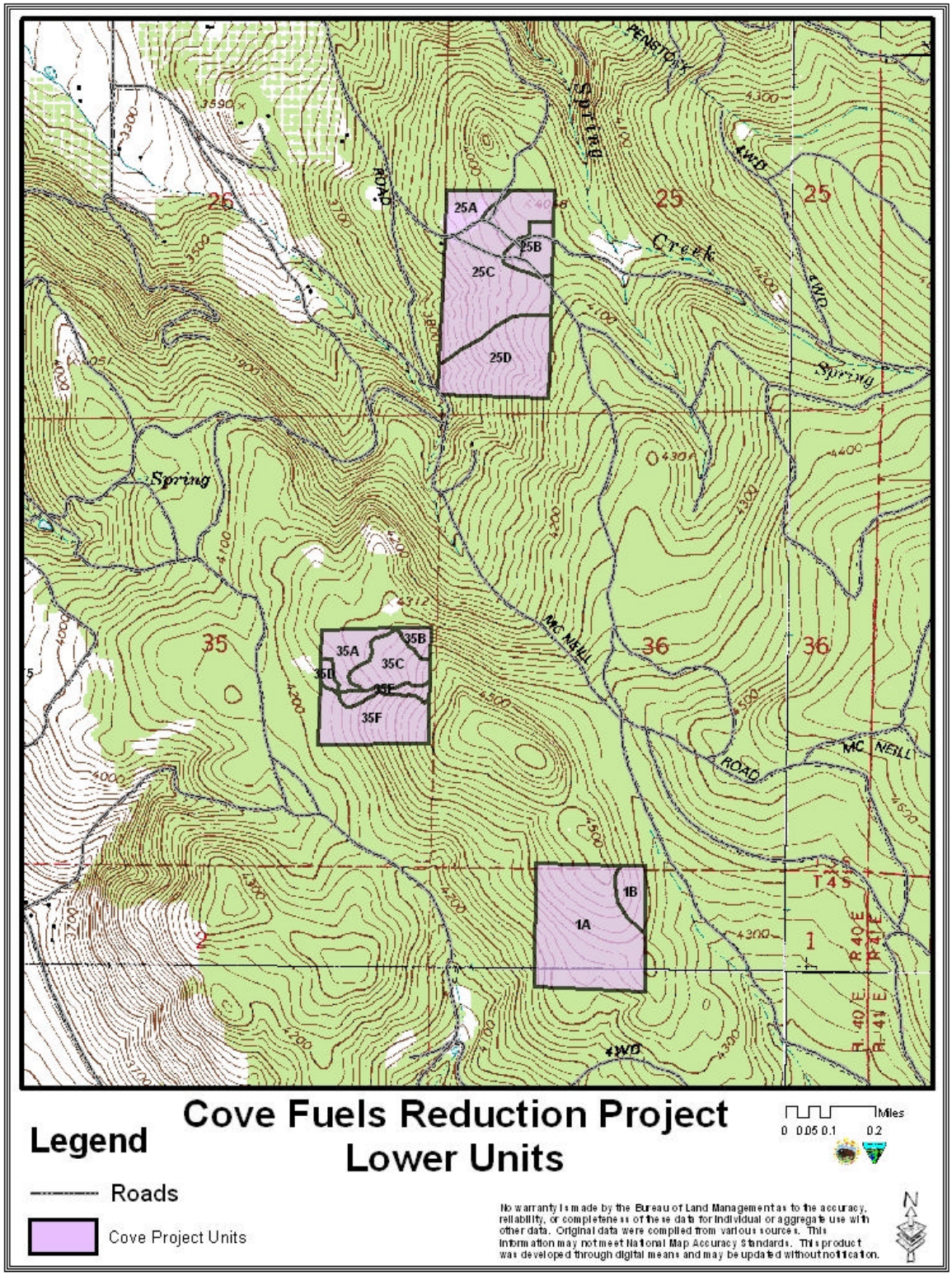

COVE
UNION
Mill Creek
Upper Little Creek
Lower Little Creek
WARM CREEK
SR 237
SR 203
Legend
Towns
Streams
Roads
Cove Project Units
Mill Cr, Upper Little Cr and Lower Little Cr Watersheds
Cove Fuels Reduction Project
Miles
0 0.5 1 2
No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 1


Cove Fuels Reduction Project
Lower Units
Legend
Roads
Cove Project Units
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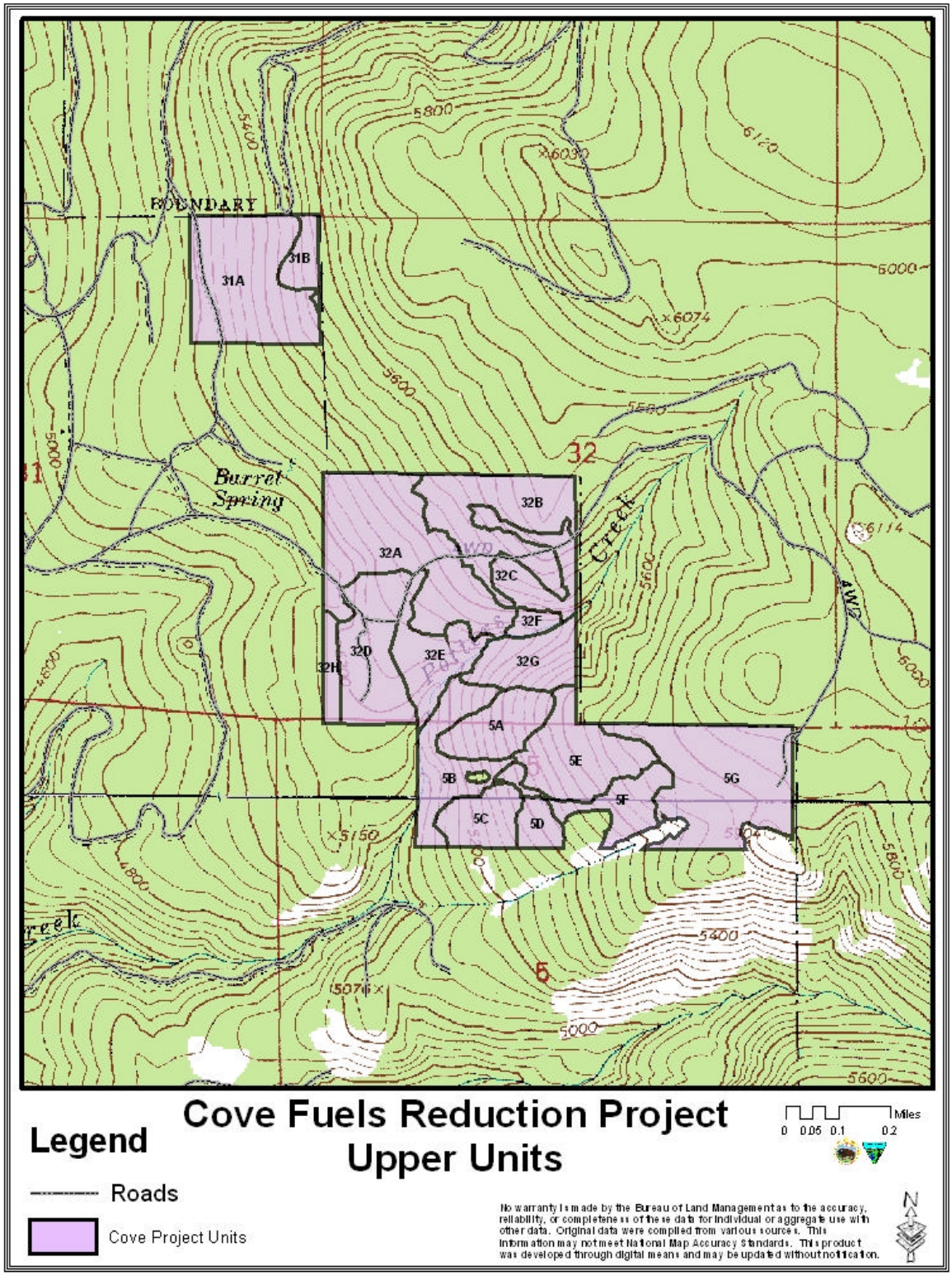
Map 2


BOUNDARY
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Burrel Spring
Creek
Legend
Roads
Cove Project Units
Cove Fuels Reduction Project
Upper Units
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No warranty is made by the Bureau of Land Management as to the accuracy, reliability, or completeness of these data for individual or aggregate use with other data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed through digital means and may be updated without notification.

Map 3