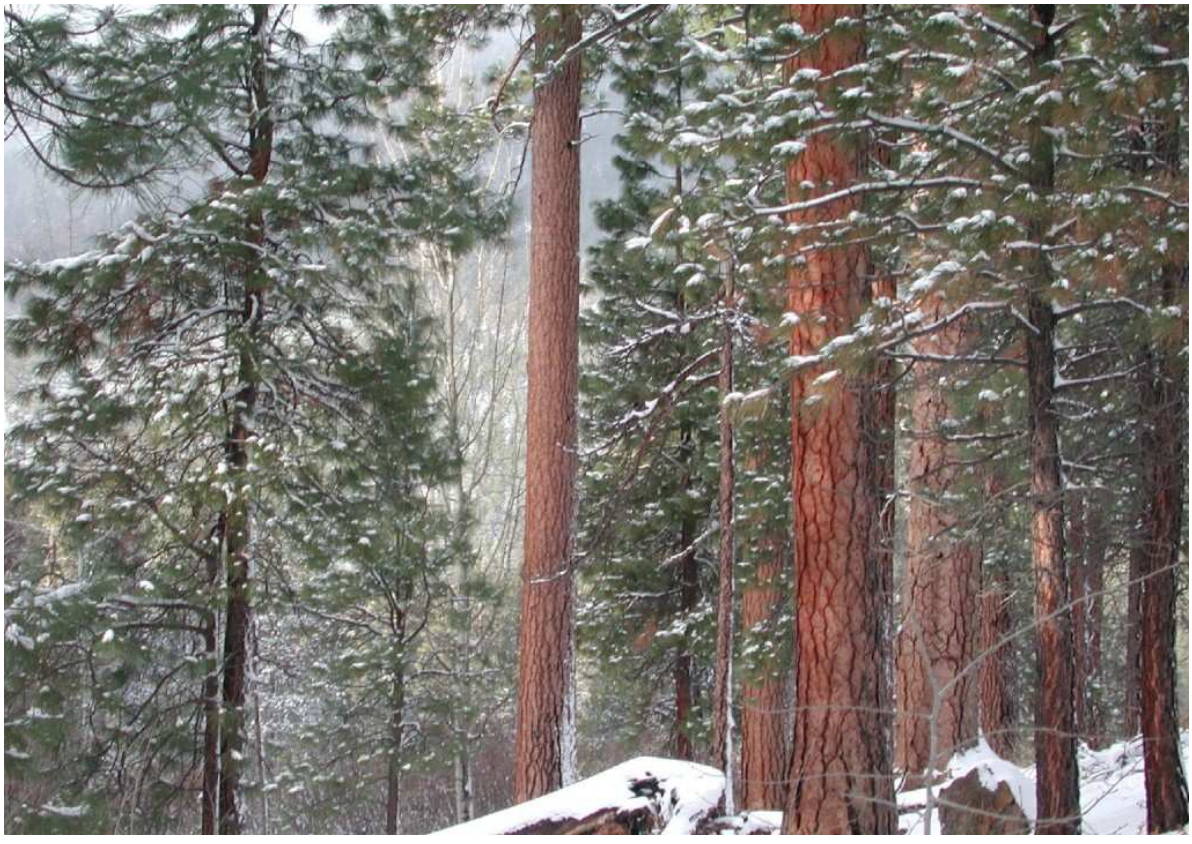
Glaze Forest Restoration Project

Decision Notice
and
Response to Public Comments



Sisters Ranger District, Deschutes National Forest
Deschutes County, Oregon

Decision Notice

& Finding of No Significant Impact

Glaze Forest Restoration Project

USDA Forest Service
Sisters Ranger District, Deschutes National Forest
Deschutes County, Oregon
T14S, R9E, Sections 10,11,14,15

Decision and Reasons for the Decision

Background

Remnant old growth forests are rare on the landscape and of great value both as habitat and to people who enjoy seeing large old trees. However, the question of whether active management is appropriate in old growth areas is controversial and has often been decided by lawsuits. I am gratified to have been part of this unusual restoration project which was proposed to the Forest Service by Tim Lillebo of Oregon Wild (formerly called the Oregon Natural Resources Council) and Cal Mukumoto of Warm Springs Biomass Project LLC. The goal of this partnership between a timber industry group, a conservation group, and the Forest Service was to break barriers of mistrust and create a template for how people with diverse viewpoints can cooperate to achieve ecosystem, community, and economic values.

The partners and the many conservation and industry groups who became involved have supported the Forest Service in developing a plan consisting of ecologically based management actions to benefit existing old growth and second growth forest areas. These actions will restore structural and functional attributes of old growth forests that were once maintained by frequent fire. These restoration activities will also reduce the risk of damage to this unique area and surrounding communities by an uncharacteristically high intensity wildfire.

The partnership also recognized that restoration cannot be accomplished without a supporting infrastructure which includes people, equipment, and markets for wood by-products such as sawlogs or biomass fiber. Revenues generated through by-products can help offset the high costs of restoration and produce jobs and economic benefits for local and regional economies.

Our restoration assessments of ecosystem integrity have revealed dramatic changes in the forested landscapes of the surrounding watershed over the past one hundred years. The majority of large old ponderosa pine trees have been either removed by logging, or suppressed in their growth by the after effects of the exclusion of natural wildfires. Acres dominated by large trees (over 21" in diameter at breast height or dbh) have decreased from historic conditions by 88%. This can be seen on half the project area, which was clear-cut in the 1930's. Forests are now dominated by smaller trees. The exclusion of fire has increased habitat instability and vulnerability to disturbances such as insects, disease, and fire. We are challenged to reverse these trends and help the recovery of ponderosa pine forests so that fire can play more of its natural role and provide its numerous ecological benefits. These scenic forests provide habitat for many unique wildlife and plant species and inspire people who live and visit the Cascadian foothills of Central Oregon.

Purpose and Need for Action

The **purpose** of the project is to restore old-growth forest conditions and Riparian Habitat Conservation Areas with ecologically driven thinning, shrub mowing, and prescribed fire.

This action is **needed** to meet the goals for the Metolius Old Growth and Metolius Black Butte Scenic Management Allocations and achieve the desired future conditions. The proposed action will improve forest health, sustainability, and resiliency, by promoting the development of old growth forest stands, diverse riparian forests, aspen stands, meadows, and prolong the life of large old trees.

Project activities will move both second growth and old growth forest areas toward structural attributes typical of fire-maintained old growth ponderosa pine forests. These attributes include: stands dominated by large trees, clumpy spatial arrangements, a range of tree densities, large snags and downed wood. Project activities will improve the ability of existing large trees to survive and create conditions that are more favorable for the development of future large trees in areas where they do not currently exist. Riparian areas including streamside forests, aspen groves, and meadows would also move toward conditions more reminiscent of their fire-maintained past.

Project activities will also reduce competing live ground, ladder and canopy vegetation, and enable the reintroduction of low intensity fire. Fire enhances nutrient cycling, pine regeneration, and the growth of fire evolved under-story plants. This will also lower the risk of moderate to high intensity wildfires to nearby communities, private properties, and special natural places as well as improve public and fire fighter safety as recommended in the Greater Sisters Country Community Wildfire Protection Plan.

An additional important purpose of this project is to fulfill the goals of the partnership to collaboratively build trust and break barriers to achieve ecosystem, community, and economic values. This requires a transparent process and extra attention to communication and listening. By proceeding slowly and carefully in this project and by taking the time to listen and build understanding and trust, I hope there will be more support and partnership opportunities for similar forest restoration projects in the future.

The **Need for Action** has been identified in a number of planning documents. The Deschutes National Forest Land and Resource Management Plan (here after referred to as the Deschutes Forest Plan) classifies 94% of the project area as the Metolius Old Growth Management Allocation, which is part of a forest wide old growth network to be managed for naturally evolved old growth forest ecosystems for 1) habitat for plant and animal species associated with old growth forest ecosystems, 2) representations of landscape ecology, and 3) public enjoyment of large, old-tree environments. The reintroduction of low intensity fire is encouraged to achieve desired old growth characteristics. The other 6% of the project area is identified as the Metolius Black Butte Scenic Management Area where landscapes should be managed to protect scenery and perpetuate the unique appearance of Black Butte, which can be seen from several areas within the project.

The Whychus Watershed Analysis identifies the need for the restoration of forest structure to have more large trees, more natural fire cycles, fire maintained meadows, hardwoods such as aspen, and riparian habitats with more large trees. The trend of too few big trees and too many small trees which have grown in the absence of the natural thinning done by frequent low intensity wildfire has affected many wildlife and plant species. People also greatly value old growth pine trees which are a key part of Central Oregon's scenic character. The environmental assessment (EA) prepared for the project documents the analysis of three alternatives to meet these needs.

Both the Deschutes Forest Plan and the Whychus Watershed Analysis lay the groundwork for collaborative community based stewardship. Forest Plan direction for all the Metolius Conservation

Area Allocations invites us to look beyond the standard approach and blend art and science with creativity to address sensitive resource and social issues on these landscapes. I believe this project is true to this challenge.

Decision

Based on my careful review of the Project Purpose and Need, Interdisciplinary Team analysis, and the extensive public comments I received throughout the project and during the April 15th, 2008 field review of tree marking, I have decided to implement Alternative 2 Modified. This alternative will restore old-growth forest conditions and Riparian Habitat Conservation Areas in both second growth and remnant old growth areas. At the same time, Alternative 2 Modified is designed to protect the needs of other resources. My conclusions are based on a careful review of the record that shows a thorough analysis of the relevant scientific information, as well as the acknowledgement of incomplete or unavailable literature.

There has been a lot of hard work to resolve issues and build trust with this groundbreaking project. Consequently, I have decided to modify Alternative 2 to address comments raised during the public review of the environmental analysis and our various demonstrations of tree marking. The modifications are responsive to the key issue raised by some members of the public concerning the size of trees removed during thinning to accomplish project objectives. The modifications will also address the project's second key issue which is what intensity of treatment is appropriate in Riparian Habitat Conservation Areas.

Alternative 2 Modified has nine elements (EA, Page 39-40), including: 1) Thinning approximately 416 acres in second-growth ponderosa pine stands to promote development of old-growth forest conditions over the long term; 2) Thinning approximately 458 acres in old-growth ponderosa pine stands to maintain and restore old-growth forest conditions; 3) Thinning approximately 79 acres of aspen stands to restore the viability of aspen clones; 4) Removing small encroaching conifers within approximately 236 acres of meadow; 5) Thinning and reducing fuels in Riparian Habitat Conservation Areas including: aspen groves, riparian forests around Indian Ford Creek, and forests around wetlands and ponds to restore riparian conditions; 6) Installing a temporary modular "Acrow" Bridge across Indian Ford Creek to eliminate the need for road reconstruction on existing meadow road crossings which have been flooded by beaver activity; 7) Reintroducing fire as needed as a key natural disturbance process in ponderosa pine ecosystems, and 8) Using only existing roads as temporary roads for removing and hauling wood products. The ninth element of the project is discussed below.

An important design features of Alternative 2 Modified includes that all old growth trees will be retained, regardless of size. All trees greater than 21 inches diameter at breast height (hereafter referred to as "diameter") are retained. The vast majority of thinning will occur in trees less than 16 inches diameter. Estimates from stand exams indicate that approximately 99% of the trees which would be thinned for ecological based density management are smaller than 16 inches diameter. Approximately 80% of the trees which would be thinned are estimated to be smaller than 8 inches in diameter.

The ninth element of Alternative 2 is an unusual step that I took to demonstrate my commitment to a transparent process and building trust. I asked the Interdisciplinary Team to demonstrate the thinning that would occur by flagging trees to be thinned. The public was invited to review and comment on the tree marking prescriptions before and during the public comment period. This was accomplished and public field reviews were held on November 15, 2007 and April 15, 2008. My decision to modify Alternative 2 considers this public input, along with all of the other input I received throughout the

planning process, and is described in detail below.

First, in response to concerns raised during the public review of marking on April 15th that moist ecotones around meadows and aspen groves can support more tree density than adjacent drier forests, I have instructed the Interdisciplinary Team to alter marking prescriptions and leave some additional trees in these locations. People who raised this concern to me during the field trip were supportive of aspen restoration but noted these edge habitats are particularly valuable for wildlife. If trees eventually died, these would be excellent locations to have more snags. I have asked the Interdisciplinary Team to not compromise the purpose and need to restore meadows and aspen groves with this adjustment. We will leave more clumps of trees, dying trees that will become valuable snags, and extra trees, because as part of meadow restoration, the project design requires some trees to be cut and dropped into wet meadow edges to improve amphibian habitats. I believe with careful layout both objectives of restoring meadows and aspen and maintaining more tree density in these moist areas can be met.

Second, in response to concerns raised during the public review of marking on April 15th and in several letters, I have instructed the Interdisciplinary Team to alter marking prescriptions and leave some small patches of very small trees (0-40 years old) in old growth and near riparian and aspen areas to enhance habitat and visual diversity.

The third modification responds to concerns raised in several letters regarding the habitat provided by dead wood, such as standing snags or down logs. Because our analysis shows the second growth forests in the project area lack large old snags due to past management, I have decided to modify Alternative 2 to address this concern. Several people suggested that instead of removing larger trees that would be thinned we top or girdle them to create snags. We have found these methods are less effective than the natural processes which create snags, such as insects and fire. Our experience is that topped or girdled snags often remain standing for only a short time.

Under Alternative 2 Modified, about 12% of the second growth stands in the project area will remain at higher densities and will likely experience a higher rate of natural recruitment of smaller snags over time. After thinning is complete in second growth areas, there will be an average of 21 trees per acre over 16" dbh as well as many smaller trees. The re-introduction of fire will help recruit some of these trees to become snags through a more natural process because typically 1-2% of trees in the 16 inch diameter and larger size classes can die after prescribed fire. Fire killed trees become an important food source for many birds as a procession of insects colonize them. These insects introduce fungi which help soften the wood, and allow cavity excavators such as woodpeckers to create the holes which turn dead trees into homes for wildlife.

After thinning is completed, I will instruct the Interdisciplinary Team to field check and assess second growth forest areas. In treatment units where snags or down wood are at levels lower than recommended by wildlife biologists, we will adjust fire prescriptions to kill a few more trees during prescribed fire. This will accelerate the natural process which creates longer standing fire hardened snags. If downed wood is found to be deficient we will drop a few additional trees to speed the recovery of short term dead wood habitats. All forest areas will remain fully stocked with live trees and excessive fuel loads will not be created.

I recognize these snags or downed wood will not provide optimal habitat for many species because they are too small (trees over 20" dbh are the most desirable). However, since it will take many years to develop larger snags, I acknowledge these smaller dead trees can provide valuable foraging locations in the short term for many woodpeckers and other wildlife species. They can also be used by

key old growth pine forest focal species and cavity nesting birds such as white headed woodpeckers, flammulated owls, and pygmy nuthatches, as well as bats.

Because Alternative 2 Modified will slightly reduce the extent of thinning proposed in Alternative 2, I re-evaluated the conclusions described in the effects analysis sections of the EA. After consultation with the project team leader and Interdisciplinary Team members, I have determined that the original conclusions stated in the EA are still correct and the effect determinations for fish and wildlife species, economics, and other resources will remain unchanged. The retention of these additional trees or creation of fire killed snags or down wood is within the range of thinning that was described in Alternative 2. Therefore, no additional effects analysis is required. Design Criteria and mitigations for the project are found on pages 45-61 on the EA.

The rationale of my decision is based on how Alternative 2 Modified compares to the other Alternatives in terms of addressing the purpose and need for the project and the key issues: 1) the size of trees removed and 2) the intensity and method of riparian thinning (EA, page 62).

The Decision will restore Old Growth Forest Conditions

My decision will meet the purpose and need of restoring old growth forest conditions in both second growth and remnant old growth forest areas. Alternative 2 Modified will use a relatively new technique of "mosaic thinning" on 416 acres of second growth forests. In this ecologically based approach, trees are removed in a non-uniform pattern to create a spatially complex forest. Guiding objectives are to maintain a visually appealing forest, increase resistance to high severity wildfires, accelerate development of large diameter trees, restore clumpiness and un-evenage structure, and stimulate a more diverse and functional understory plant community. Past management in the 1930's removed the large trees from this area and resulted in a uniform forest of small black-barked trees. I am implementing these actions so that in the short term, people will see a more natural appearing variable pattern in these forests of small trees and in the long term our children will see the emergence of a spatially complex forest with characteristic large orange bark pine trees.

My decision will help protect and maintain 458 acres of remnant old growth forest areas by thinning small trees around large old trees, and thinning the smallest trees from below through younger tree groups or cohorts to increase their growth. With the aggressive suppression of wildfires since the early 1900's, this forest has missed five to nine natural fire cycles, allowing many small trees to grow at unsustainable densities and crowd large old trees. Old trees are vulnerable to the stress caused by these high densities and are at a higher risk of loss to insects and diseases than they would be in a more open grown condition maintained by frequent fire.

After reducing tree densities under Alternative 2 Modified, approximately 71% of the project area forests will be at densities where trees are not stressed from intense competition for growing space. Approximately 29% of the project area forests will remain at higher densities and this will allow the natural recruitment of snags and down wood and provide more dense canopied forest for wildlife habitat, as well as visual diversity (Ea, page 91). I believe Alternative 2 Modified is a better approach to restore old growth forest conditions than Alternative 3 which would leave only 57% of the forest areas at lower densities. Although Alternative 3 would provide more acres of denser canopied forests (and conversely 43% of the project area would remain stressed from high densities) the majority of stressed trees would be located in old growth areas. The risk and ecological price of losing these rare old trees is too high. In contrast under the No Action Alternative (Alterative 1) only 28% of the area would be at densities where trees are not intensely competing. Old trees could die at an accelerated

rate and few younger trees would have the room to grow larger.

I have carefully reviewed the project and the requirements of the "Eastside Screens" (Regional Forester's Forest Plan Amendment No. 2). This direction to National Forests on the eastside of the Cascade Mountains guides management activities to ensure they retain old-growth attributes at the local scale and move toward the historic range of variability (the range of forest conditions likely to have occurred before European settlement*)* across the landscape. The Eastside Screens are very specific in determining when old growth can and cannot be treated. An analysis of the Historic Range of Variability contained in the Environmental Assessment shows that multi-storied stands of ponderosa pine, which developed during the past 100 years of fire suppression, are now present at higher levels than historically occurred. Single-storied stands which once dominated the landscape are present at far lower levels than historically occurred. The Screens specifically allow that "Some timber sale activities can occur within Late Old Structure that is within or above the Historic Range of Variability in a manner to maintain or enhance Late Old Structure within that biophysical environment." (USDA Forest Service 1995, Appendix B: Revised Interim Direction, page 9, EA page 83).

Treatments in old growth forest stands (called Late Old Structure in the Eastside Screens) will involve thinning trees from below, mowing brush, and prescribed burning. These treatments will reduce tree density and improve growth of remaining trees, enhance forest health, and reduce the potential loss of trees from competition. These activities will more quickly restore historic structure and improve growing conditions for larger trees than either no action or prescribed burning alone. By helping perpetuate large old trees across the landscape this provides for the long term maintenance of old growth into the future. All Late Old Structure will remain Late Old Structure after treatment (EA, page 88). No trees over 21 inches dbh will be removed except in rare instances for safety reasons and then only as a last resort. Treatments in Late Old Structure **will not** involve any type of regeneration harvest (i.e. clear-cutting or any other even-aged management system).

The Decision will restore Riparian Habitat Conservation Areas

My decision will help protect and restore approximately 551 acres of Riparian Habitat Conservation Areas, some of which overlay the second growth and old growth forest stands discussed above. These riparian forests around Indian Ford Creek, forests around wetlands and ponds, aspen groves, and meadows have high biological value. They have also been altered by human intervention.

Despite their higher moisture, which should allow for more rapid development of large trees, only 9% of the streamside forests in this watershed remain dominated by larger trees over 21"dbh (EA, page 19). This is because past logging removed large trees and the exclusion of fire resulted in dense stressed growing conditions which has slowed tree growth. There is also less down wood and large dead trees than historically occurred and this reduces habitat value for plants, wildlife and fish.

Indian Ford Creek is a perennial fish-bearing stream. It has been listed by the Oregon Department of Environmental Quality under the Clean Water Act Section 303(d) because it does not meet federal water quality standards by exceeding the State water temperature standard. This condition is due to upstream water impoundments and diversions outside of the project area on private land that result in low stream flows and because of the lack of riparian vegetation that provides shade upstream. Regardless, because of the stream's 303(d) status, shade in the project area cannot be reduced and water quality cannot be impacted by this project.

Alternative 2 Modified implements careful thinning and prescribed fire in the 51 acres of Indian Ford

Creek's Riparian Habitat Conservation Area in order to develop larger trees, increase the rate of the long term recovery of stream shade, and reduce fuels. Stream shade will not be reduced in the short term. Alternative 2 Modified uses an accepted shade model to allow hand thinning of smaller trees from 12 to 50 feet from the creek and thinning with low impact equipment over frozen ground in areas farther than 50 feet from the creek. Specialists on the Interdisciplinary Team have verified the shade models validity on this site by field checking the width of the primary shade zone with a solar pathfinder. Very limited hand thinning of small trees would occur from 12 feet away from the stream to the bench above the creek which varies from 50, to 100, to 200 feet away. To insure an adequate supply of larger down wood near the stream no trees over 16" dbh will be thinned within 100 feet from the stream. Low impact equipment over frozen ground will used to thin trees beyond this area (EA, page 48).

Alternative 3 also uses the shade model but utilizes only hand thinning in the Indian Ford Creek Riparian Habitat Conservation Area which extends to 300 feet from the creek. Some limited removal of trees by line pulling, or grappling could occur over frozen ground. Thinned trees cannot be easily removed in this Alternative, and cutting trees and leaving too many on the ground would increase fuels. Forest densities would not be reduced as effectively to encourage large tree development. If no action occurred (Alternative 1), areas surrounding Indian Ford Creek would remain with greater potential for high intensity wildfire fuels conditions. They would be very slow to develop larger trees or more hardwoods.

Fire suppression has also contributed to the shrinking size of aspen groves and meadows. My decision to allow thinning of small conifers from within and surrounding aspen groves and meadows will help restore these special areas which are unusual on our District but have exceptional value as habitat. Meadows and aspen groves provide scenic diversity. Fire will be reintroduced as needed to restore this key natural disturbance process**.**

Without the modifications to Alternative 2 that I discussed above, the original proposed action would have emphasized edges of meadow and aspen groves as areas to create lower tree densities as part of the variable mosaic thinning throughout the project area. This was to compensate for the encroachment of trees and loss of aspen that has occurred with the exclusion of fire. Frequent wildfires were an important process which historically maintained these habitats in a more open state.

However, since these edge habitats are within Riparian Habitat Conservation Areas, they are a nexus for the two key issues of the project: 1) the size of trees removed and 2) the intensity and method of riparian thinning. After conversations with concerned public and review of comments with the Interdisciplinary Team, I believe Alternative 2 without modification would not satisfactorily address these key issues. By leaving additional trees in the manner I discussed above, I believe I can address public concerns while moving these habitats toward a more sustainable condition than they exist in today.

Although Alternative 3 addresses the key issues concerning the size of trees removed and the intensity and method of riparian thinning, by doing only pre-commercial thinning of trees less than 6" dbh in old growth areas and hand thinning in some riparian areas, its does not address public concerns about riparian edges. This is because it would not ensure additional tree densities and clumps are left in second growth areas along the east edge of Glaze Meadow or in the aspen areas which are adjacent to second growth stands. Second growth forest areas are thinned in the same way in both action alternatives. Alternative 1 (No Action) would allow some natural processes such as insects and disease to continue throughout the project area while continuing to suppress the natural process of fire and

would not meet the need to restore riparian conservation areas toward a more resilient state.

The Decision will Reduce Wildfire Hazard to At-Risk Communities in the Wildland-Urban Interface and Improve Public Health and Safety

My decision will reduce the risk of wildfire to nearby communities by thinning overly dense conifer stands, mowing brush where needed, and prescribed burning. Reducing wildfire hazard to at-risk communities is an important result of this habitat restoration project.

My decision will treat up to 1,200 acres in the Wildland Urban Interface as defined by the Greater Sisters Country Wildfire Protection Plan. All of the lands within the identified at-risk communities are classified as having Medium-High to Extreme risk based on fire ignition rate data from 1994 - 2003 (EA, page 123). And certainly the wildfires that have occurred in the area over the last few years indicate the risk is still high. My decision will lower fire hazard around the following communities at extreme risk which occur within 10 miles of the project area: Black Butte Ranch, Tollgate, Crossroads, Camp Sherman, Sage Meadow, Sisters, and Indian Ford (EA, page 121).

I have reviewed the Fire Hazard Reduction Analysis (EA, pages 119-135). The analysis shows that both action alternatives reduce ground fuels, ladder fuels, and crown bulk density, meeting the objective of hazardous fuels reduction. However, under Alternative 3, given an upper diameter cutting limit of 6" in old growth stands, fuels conditions would remain at higher levels. This is because the height of the tree canopy is a primary contributor to smaller trees catching on fire and wildfires moving from the ground to the tree canopy. The canopies of smaller trees have lower canopy base heights (their canopies are closer to the ground). Wildfire behavior modeling for Alternative 3 showed that if a wildfire started in the old growth stand on a typical summer day, the expected fire behavior could easily engulf small trees 8" dbh and larger and carry fire into the tree canopy. Riparian areas would receive less treatment in Alternative 3 than in Alternative 2 because fuels cannot be easily removed by hand and fuels conditions would remain at higher intensities.

If no action occurs (Alternative 1), the project area and adjacent communities remain at a high potential for damaging crown fires which would threaten valuable private property, compromise public and firefighter safety as well as risk damage to special places such as the Glaze Old Growth Forest. Six large wildfires have threatened Black Butte Ranch and other nearby communities in the past 6 years. Both the 2002 Cache Mountain Fire and the 2007 GW Fire required evacuation of the Black Butte Ranch. These fires and others have caused disruption to peoples lives and serious economic losses to local businesses. I am committed to helping reduce the risk to forest/urban interface communities with projects such as this one which reduce wildfire risk while restoring habitat.

The Decision will Restore the Role of Fire in the Old Growth Ponderosa Pine Ecosystems

My decision will help restore the role of fire in the Glaze Old Growth Management Area. This goal is identified in the Deschutes Forest Plan as well as in watershed assessments as a key restoration activity which has untold benefits to the area's ecology. Many of the plant and wildlife species in the area have evolved with this natural disturbance and are fire dependent. The use of prescribed fire will help move the project area to the desired future condition of a more open, large tree dominated ponderosa pine forest that is less susceptible to large scale, stand replacement fires and has a more diverse understory. It will also maintain more open meadows and healthy aspen groves.

Our understanding of the areas fire ecology shows that the forested portions of the project were once

subject to high frequency, low severity fires (this is called Fire Regime 1, EA page 122). Local data from fire scars on old tree stumps in the project area indicates that historically, fires burned through this area on an average of every 12 years. These fires were low to the ground and helped thin small trees in an irregular fashion. The meadows and aspen groves also once burned frequently. After over a hundred years of fire suppression these habitats have missed many fire cycles. Looking at the structure of forests in the area today, they are in a condition where if they burn now without some sort of pretreatment to remove smaller trees and brush, we can expect a fire that is much hotter and more damaging than those that occurred historically. We could lose many of the key ecosystem components that are highly valued, such as large old growth trees and streamside forests, and risk soil erosion and impacts to water quality.

Although both action alternatives reintroduce fire, I believe that Alternative 2 Modified best addresses the purpose and need for restoring old growth and riparian ecosystems including the important natural disturbance process of fire. My rationale for this is discussed above under the sections on old growth forest, riparian restoration, and reducing fire risk.

The Decision will Fulfill the Goals of the Partnership to Collaboratively Build Trust and Break Barriers to Achieve Ecosystem, Community, and Economic values

Throughout the planning process we have taken many out–of-the-ordinary steps to nurture our partner's bold collaborative idea to achieve ecosystem, community, and economic values. Hundreds of people have toured the area with our partners and our resource specialists to discuss the latest science and politics around old growth management. We have used data collected by volunteers on bird populations and native plants. Tribal members have assisted us in road and trail mapping and surveys for culturally use plants. People who make a living through aspects of the wood products industry have walked along side conservation group members and discussed options to meet restoration objectives. I believe my decision to modify Alternative 2 is responsive to these many voices and this project will provide a new template for collaborative restoration on public lands.

The economic viability of the wood products industry and communities that depend on wood products are a part of the sustainability triangle (ecology, social issues, economy). Forest restoration activities often require a substantial investment but have a long term benefit when they re-create more sustainable and resilient ecosystems. Forest restoration can also nurture a sustainable human relationship with the forest that provides employment for a skilled restoration workforce, such as stewardship contractors. It is also important to consider that the economic utilization of the wood by-products created through ecologically driven thinning are important to many local and national economies and can help offset the high costs of restoration. Therefore, while maximizing economic returns is not the purpose of this project, it is important for me to consider the economic reality of my decision.

My decision to implement Alternative 2 Modified produces an estimated 1.6 million board feet of sawlogs and 3,790 tons of biomass fiber, such as pulp or chip material. It is my intention that the value of these products will be used to offset the costs of restoration activities through stewardship contracting authorities. The estimated cost of implementing Alternative 2 Modified after applying the value of the wood products produced is $251,150. Alternative 3 would produce less sawlogs (approximately 1.3 million board feet) and less biomass fiber (1,935 tons). The estimated cost of Alternative 3 after applying the value of wood products created is $257,675. The relatively small difference in cost is because the thinning work in old growth areas under Alternative 2 is expensive and is offset by less wood product value created by Alternative 3. For these reasons I believe

Alternative 2 Modified helps sustain community economic values better than Alternative 3 because it accomplishes more beneficial restoration work, produces more utilizable wood by-products at a slightly lower cost and provides more employment to the skilled stewardship contractor workforce. Alternative 1 has no short term costs but by not re-investing in the recovery of a more resilient forest ecosystem there is a long term risk of higher fire suppression costs and the loss of the natural capital of clean air, water, wildlife, and wood that our forests provide to support our quality of life.

The Decision will not adversely affect Threatened, Endangered, and Sensitive Wildlife, Fish or Botanical Species

I have considered the effect of my decision on Threatened, Endangered, and Sensitive Species (TES) related to the Endangered Species Act. Based on the analysis presented in the EA and the project record, I have concluded that Alternative 2 Modified will not have an adverse impact to wildlife and fish species, including Management Indicator Species (MIS) outlined in the Deschutes Forest Plan.

My decision is consistent with the Deschutes Forest Plan and the Project Design Criteria Compliance Checklist for the Joint Aquatic and Terrestrial Programmatic Biological Assessment for Federal Lands in the Deschutes Basin.

Habitat for the Threatened or Endangered species, the northern spotted owl, the Canada lynx, the western big-eared bat (formerly Townsend's big-eared bat), and the Oregon spotted frog does not occur in the project area. Some potential habitat for sensitive species including the northern bald eagle, the bufflehead, and the Crater Lake tightcoil snail does occur, however, no impact to any of these species will occur if the project is implemented.

The Glaze Forest Restoration Project is consistent with the standards and guidelines outlined in the Deschutes Forest Plan for the following Management Indicator Species: northern goshawk, Cooper's hawk, sharp-shinned hawk, great gray owl, great blue heron, golden eagle, red-tailed hawk, osprey, red-tailed hawk, waterfowl, neotropical migratory birds, American marten, elk, mule deer, and cavity nesting birds, including woodpeckers.

No habitat is documented in the project area for the threatened fish species, the Columbia River Bulltrout or Mid-Columbia Steelhead trout. No Habitat is documented for the Chinook Salmon which is managed with consideration of essential fish habitat as designated by the Magnuson Stevens Act. The project does contain habitat for the Region Six Sensitive species the Interior Redband Trout. The project will cause short term disturbance to individual Redband Trout during the installation and removal of a temporary modular bridge over Indian Ford Creek. This bridge is being used to eliminate the need for road reconstruction on existing meadow road crossings which have been flooded by beaver activity. We are interested in maintaining the beaver's natural hydrological restoration. All in-stream work will occur outside of the Redband Trout's reproductive period, and the disturbance will be small scale and short term.

The Region Six Sensitive Plant species, Peck's Penstemon is found in the project area. This endemic wildflower is a fire dependent species and is expected to benefit from the project. To prevent loss of plants from ground disturbance associated with ground based equipment used in forest management I am requiring the area be thinned while the ground is frozen. Frozen ground and snow have been demonstrated to be an effective way to minimize soil disturbance that can affect these plants. This technique was first used successfully in the project area 19 years ago. With recommended mitigations the project will comply with the Peck's Penstemon Species Conservation Strategy and provide

acceptable protection for this species. The proposed action may impact individuals or habitat of Peck's penstemon but will not likely contribute to a trend towards Federal listing or cause a loss of viability to the population or species. There are no federally listed Threatened or Endangered plant species within the project area. Informal consultation with the US Fish and Wildlife Service was done (EA, page 227).

Summary of Effects to Wildlife and Plant Species

Species	Status	Effect
Northern Bald Eagle	Region Six Sensitive, Management Indicator Species	No Impact
Bufflehead	Region Six Sensitive	No Impact
Crater Lake Tight Coil	Region Six Sensitive	No Impact
Interior Redband Trout	Region Six Sensitive	May impact individuals or habitat but will not likely contribute to a trend toward federal listing or loss of viability to populations or species
Mid-Columbia Steelhead Trout	Threatened	No Effect
Peck's penstemon	Region Six Sensitive	May impact individual or habitat but will not likely contribute to a trend toward federal listing or loss of viability to populations or species

Source: Glaze Forest Restoration Project EA, Biological Evaluation for Threatened, Endangered, and Sensitive Wildlife Species (October 4, 2007) Aquatic Biological Evaluation for Threatened, Endangered, and Sensitive Species (February 8, 2008), and the Biological Evaluation for Sensitive Plant Species and Invasive Plant Species (March 19, 2008).

The Decision Complies with the Forest Plan and other related Planning Documents

My decision meets the requirements of the Deschutes Forest Plan, as amended by other applicable laws and regulations (EA, pages 16-19). Project implementation will incorporate all design criteria and mitigation measures as outlined in the assessment (EA, pages 45-61). By designing the project carefully and applying mitigation measures which have been effective on other similar projects located on the Sisters Ranger District, important natural resource and social concerns will be addressed. This EA is also tiered to a broader scale analysis, the Pacific Northwest Region Six Final Environmental Impact Statement for the Invasive Plant Program. This project complies for new management direction regarding invasive plant species. The entire project is located east of the "owl line." The standards and guidelines of the Northwest Forest Plan do not apply to the project.

Alternatives Considered

In addition to the selected alternative, Alternative 2 Modified (discussed above), I considered two other action alternatives. A comparison of these alternatives can be found in the EA on pages 62-67.

Alternative 1 - No Action. No change would occur in the management of the area. Current management plans would continue to guide actions performed in the project area. No thinning, mowing, or prescribed fire would be implemented. A Special Area Closure that restricts vehicle access for other than administrative reasons would remain in effect. A special use permit that allows guided horse riding trips would continue. Implementation of previous decisions such as fence removal and some invasive plant control by hand would also continue. Forests and Riparian Habitat Conservation Areas would remain at densities which pose a risk to the longevity of old growth trees and slow development of younger trees. Fuels would remain at levels which pose a moderate to high risk of losing key ecosystem components in the case of a wildfire

Alternative 2- The Proposed Action. This alternative applies ecologically driven tree thinning to second growth and old growth forest areas. Trees up to 21" dbh may be cut, however mitigation measures address public concerns regarding trees over 16" dbh. Fuels reduction is accomplished by removing thinned trees and slash, and mowing shrubs. Low intensity prescribed fire would be used to re-introduce this important ecological process. This alternative uses an accepted shade model to allow hand thinning of smaller trees in Riparian Habitat Conservation Areas next to Indian Ford Creek from 12 to 50 feet from the creek. Thinning with low impact equipment over frozen ground is allowed in areas farther than 50 or more feet from the creek. Aspen stands, meadows and other Riparian Habitat Conservation Areas are treated by removing conifers and introducing prescribed fire.

Alternative 3- This alternative addresses concerns raised by some members of the public about removal of trees of commercial size in old growth stands by limiting the diameter of trees removed to under 6" dbh (considered commercial size in Region 6). Second growth forests, aspen stands, and meadows are treated in the same manner as in Alternative 2. Alternative 3 also uses the accepted shade model for thinning in Riparian Habitat Conservation Areas but allows only hand thinning in Riparian Habitat Conservation Areas next to Indian Ford Creek.

The number of acres treated in both action alternatives is the same (approximately 1,200 acres), however the action alternatives differ in the intensity of thinning old growth and the method of thinning in Riparian Habitat Conservation Areas, as well as the costs of the work and the quantity of wood by-products created by forest restoration work.

Public Involvement

Because of this projects unique origin, it has enjoyed unusually active and broad based public involvement. In 2005, a partnership to support proactive, restorative management in the Glaze area was proposed to the Forest Service by Tim Lillebo of Oregon Wild (formerly called the Oregon Natural Resources Council) and Cal Mukumoto of Warm Springs Biomass Project LLC. The partners met with the District Ranger on many occasions to share their individual views and opinions. They also spoke to the Interdisciplinary Team at the beginning of the project to explain why they had initiated the partnership and provided background on their viewpoints. This type of interaction complies with the Federal Advisory Committee Act (FACA) which regulates Federal agency

establishment or utilization of a group to obtain consensual advice or recommendations. FACA defines when such a group can be considered an advisory committee and the process necessary for its formation and proper functioning. FACA does not apply to individuals or representatives of groups who meet with Federal officials (s) to give individual advice or share facts or information (41 C.F.R. 102-3.40(e & f).

A Challenge Cost Share Agreement was completed in 2006 to describe how the partners would cooperate to achieve mutual objectives with the Forest Service. Oregon Wild and Warm Springs Biomass Project LLC have done extensive outreach, recruited volunteers for field studies, led field tours for hundreds of people, and obtained grant funding to support the project.

The proposal was listed in the Deschutes and Ochoco National Forests Schedule of Proposed Actions (SOPA) on January 1, 2006. The proposal was provided to 412 public and other agencies for comment during scoping beginning on April 13, 2006. Media stories about the project have appeared in the Oregonian, The Bulletin, The Source, the Sisters Nugget, on local television, and on Oregon Public Radio.

In addition, as part of the public involvement process, the Forest Service and partners held over 70 field tours and meetings to discuss the project with local agencies and governmental interests, adjacent landowners, Tribal interests, timber industry and conservation interests, wildfire protection agencies and groups, university researchers, and other special interest groups.

Government-to-government consultation with the Confederated Tribes of Warm Springs, Oregon occurred in the form of a letter describing the project area and proposed action. The Forest Service and/or the project partners made numerous contacts with various branches of the Tribal government and enterprises including: the Confederated Tribes of Warm Springs Natural Resources Department, Government Affairs, and Planning Department, Geovisions, and Warm Springs Forest Products Industries. The Klamath Tribal Forester was also contacted. The Tribal business Warm Springs Biomass Project LLC is a partner in the project. Another Tribal business, Geovisions, contributed survey work and is the fiscal agent for a Title II Grant obtained by the partners in 2006 to pay for field work and analysis.

Scoping on the proposed action (via newsletter) and discussions by the Interdisciplinary Team generated a number of issues. The two key issues of the project were identified as: 1) the size of trees removed, and 2) the intensity and method of riparian thinning. (EA pages 29-32). Thirteen other issues concerning social and natural resources were analyzed.

The legal notice to begin the 30-day comment period on the EA was published on March 21, 2008 with a legal notice in The Bulletin (Bend), the newspaper of record. The comment period ended on April 21st.

The public was invited to review and comment on the tree marking prescriptions before and during the public comment period as discussed above. A public field review on November 15, 2007 was attended by 30 people and a field review held on April 15, 2008 was attended by 7 people. My decision to modify Alternative 2 considers comments I received during those trips, as well as those that were conveyed throughout the planning process, or on other field trips, in letters, e-mails or by phone.

A total of 289 responses on the Environmental Assessment were received and a summary of the public comments and responses are documented in the *Response to Public Comment for the Glaze Forest Restoration Project Environmental Assessment* (attached as Appendix A). The majority of respondents (248) were from Oregon, although 17 were from California, 20 from other states, and 3 from foreign countries.

Two hundred and seventy three of the responses were e-mails supporting the project, from people responding through an Oregon Wild website. Sixteen other e-mails or letters were received which detailed specific comments. Concerns about the project primarily centered on the two key issues identified above. However, other comment categories included: the risk of fire, old growth, wildlife, snags, insects and disease, roads, education, economic impacts to the special use permittee, and editorial. In order to address these issues I decided to modify the Proposed Action, Alternative 2. My rationale is explained in the Decision portion of this document.

Finding of No Significant Impact

After considering the environmental effects described in the EA, I have determined that these actions will not have a significant effect on the quality of the human environment considering the context and intensity of impacts (40 CFR 1508.27). Thus, an environmental impact statement will not be prepared. I base this finding on the following:

1. My finding of no significant environmental effects is not biased by the beneficial effects of the action.

2. There will be no significant adverse effects on public health and safety. Risks to nearby communities and fire fighters from wildfire will be reduced. (EA, page 129).

3. There will be no significant effects on unique characteristics of the old growth area because no old growth trees will be removed, regardless of size, and the actions will serve to restore old growth conditions. No Wilderness, Wilderness study areas, National Recreation areas, Wild and Scenic Rivers, prime farm lands, or historic resources will be affected by the implementation of my decision (EA page 288).

4. The effects on the quality of the human environment are not likely to be highly controversial. My decision to implement Alternative 2 Modified has mitigations (EA, page 45) to address the key issues regarding the size of trees thinned and intensity and method for of riparian thinning. There is no known scientific controversy over the impacts of the project.

5. We have considerable experience with the types of activities to be implemented. The effects analysis shows the effects are not uncertain, and do not involve unique or unknown risk (EA, pages 69-289). The action is not likely to establish a precedent for future actions with significant effects, because these types of projects are common in the region and do not lead to significant effects to the human environment. There are no significant effects associated with the project (EA, pages 69-289).

7. The cumulative impacts are not significant (see EA pages 69-289).

8. The action will have no significant adverse effect on districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places because the project will mimic natural processes and will not impact structures, roads, or objects in the project area (EA, pages 261-

263). The action will not cause loss or destruction of significant scientific, cultural, or historical resources because heritage sites will be protected. (EA, pages 261-263, letter to SHPO dated 7/5/06).

9. The action will not adversely affect any endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species act of 1973, because none are found in the project area (see EA pages 135-240

10. The action will not violate Federal, State, and local laws or requirements for the protection of the environment. Applicable laws and regulations were considered in the analysis (EA, pages 14-18). The action is consistent with the Deschutes Forest Plan as amended by other applicable laws and plans (EA pages 14-18).

Findings Required by Other Laws and Regulations

My decision to implement Alternative 2 Modified is consistent with the intent of the Deschutes Forest Plan's long term goals and objectives listed on pages 4-1 through 4-30 of the Deschutes National Forest Plan Land and Resource Management Plan, as amended by other applicable laws and plans (EA pages 16-19). The project was designed in conformance with land and resource management plan standards and incorporates appropriate land and resource management plan guidelines for wildlife, plant, and fish habitat, scenery, cultural site protection, recreation management, and soil and water quality protection (EA, pages 14-19, and the Deschutes Forest Plan, pages 4-173, and 4-197.

Implementation Date

If no appeals are filed within the 45-day time period, implementation of my decision may occur on, but not before, five (5) business days from the close of the appeal filing period. When appeals are filed, implementation may occur on, but not before, the 15th business day following the date of the last appeal resolution.

Administrative Review or Appeal Opportunities

The 30-day legal notice to comment on the EA was published on March 21, 2008.

This decision is subject to appeal pursuant to 36 CFR 215. Any written notice of appeal of the decision must be fully consistent with 36 CFR 215.14, "Appeal Content." The notice of appeal must be filed hard copy with the Regional Forester, ATTN: 1570 APPEALS, 333 S.W. First Avenue, P.O. Box 3623, Portland, Oregon, 97208-3623, faxed to (503) 808-2255, sent electronically to appeals-pacificnorthwest-regional-office@fs.fed.us, or hand delivered to the above address between 7:45AM and 4:30PM, Monday through Friday except legal holidays. The appeal must be postmarked or delivered within 45 days of the date the legal notice for this decision appears in The Bulletin. The publication date of the legal notice in The Bulletin is the exclusive means for calculating the time to file an appeal and those wishing to appeal should not rely on dates or timeframes provided by any other source.

Electronic appeals must be submitted as part of the actual e-mail message, or as an attachment in Microsoft Word, rich text format or portable document format only. E-mails submitted to e-mail addresses other than the one listed above or in other formats than those listed or containing viruses will be rejected. Only individuals or organizations who submitted substantive comments during the

comment period may appeal. This project may be implemented 50 days after this legal notice if no appeal is received. If an appeal is received the project may not be implemented for 15 days after the appeal decision.

Contact

For additional information concerning this decision or the Forest Service appeal process, contact Maret Pajutee, Project Leader, Sisters Ranger District, PO Box 249, Sisters, OR, 97759, (541) 549-7727, e-mail: mpajutee@fs.fed.us.

/s/ William Anthony *5/9/2008*

WILLIAM ANTHONY **Date**
District Ranger
Sisters Ranger District

APPENDIX 1

Glaze Forest Restoration Project

Environmental Assessment

Response to Public Comments

April 15 Field Review group in old growth area

Thank you for reviewing information on the Glaze Forest Restoration Project and taking the time to send us your comments. The following is a summary of the public comment we received at the Sisters Ranger District regarding the environmental analysis (EA) for the project. The EA was made available for a 30-day comment period, on March 21, 2008 under the provisions of the National Environmental Policy Act (40 CFR 1500-1508) and Notice, Comment, and Appeal Procedures for National Forest System Projects and Activities (36 CFR 215). The comment period closed on April 21, 2008.

Content analysis is a method for analyzing public comment. This process strives to identify all the relevant issues people raise in their reviews. The intent is to represent the public's viewpoints and concerns as fairly as possible, and to present those concerns in such a way as to assist the decision maker and the Interdisciplinary Team in responding effectively. It is important to recognize that the consideration of public comment is not a vote counting process in which the outcome is determined by the majority opinion. Relative depth of feeling and interest among the public can serve to provide a general context for decision-making. However, it is the appropriateness, specificity, and factual accuracy of comment content that serves to provide the basis for modifications to planning documents and decisions. For ease of reference, comments are arranged by topic.

Comments were received from 289 people. The majority of respondents (248) were from Oregon, although 17 were from California, 20 from other states, and 3 from foreign countries. Two hundred and seventy three of the responses were e-mails supporting the project, from people responding through an Oregon Wild Website. Sixteen other e-mails or letters were received which detailed specific comments. Concerns about the project primarily centered on the two key issues 1) the size of trees to be removed, and 2) the intensity and method of riparian thinning. However, other comment categories included: the risk of fire, old growth, wildlife, snags, insects and disease, roads, education, economic impacts to the special use permittee, and editorial.

Six people submitted e-mails from the Oregon Wild website in support of the project that were received after the comment period closed. These comments were considered but the respondents do not have standing in the CFR 215 appeal process. Only individuals or organizations who submitted substantive comments during the comment period may appeal.

All page numbers cited refer to the Glaze Forest Restoration Project Environmental Analysis (EA)

Project Design / Alternatives / Analysis

Comment: ***I have been familiar with the area for many years now and, though it was designated as old growth forest, I wondered how some of it could ever produce the type of growth most of us associate with the "old growth" label. The analysis of the various ecological environments, the planning of the diverse treatments to the different areas seems to answer that question. I was especially appreciative of the thought given to the aspen growth and the elk habitat. (#3-1)***

Comment: ***This project will most likely end up with widespread support, advance through the NEPA process without gridlock or legal challenge, deliver modest wood products to local manufacturers, and most importantly, restore compromised landscapes in the Indian Fork Creek watershed near the community of Sisters. (#7-2)***

Comment: ***I …strongly support the objectives and the proposed implementation of the project (Alternative 2 of the Environmental Assessment), including protection and restoration of old-growth ponderosa pine, aspen, riparian areas and meadows, while also making the area more resilient to disturbance. (#16-1)***

Comment: ***I support the proposed Alternative 2, because it would result in a more natural open old-growth stand condition than Alternative 3. (#11-1)***

Response: We appreciate these comments. The Interdisciplinary Team has worked hard to be responsive to resource concerns and opportunities and design a thoughtful plan.

Comment: ***My preferred alternative is Alternative 2…with modifications…The major modifications consist of: (1) leaving a larger percentage of treatment units as dense forest, to provide wildlife habitat and visual diversity; (#2-55)***

Response: The chosen alternative (Alternative 2 Modified) will leave additional dense areas. Approximately 30% of project area will remain at higher densities after thinning.

Comment: ***On page 21, what is the "Desired Future Condition" for Second Growth Areas? I note that presently these areas have "few large trees or snags and are lacking down wood"… (#2-2)***

Response: The Desired Future condition for second growth areas is that they become old growth. This is described on page 20 of the Environmental Assessment.

Comment: ***The impacts of logging aren't fully analyzed in anything approaching a worst case scenario, with the many mitigation measures all assumed to be effective in preventing unplanned damage. The more reliance on mitigation is necessary to avert impact from a proposed action, the less the project is true ecological restoration, which should do no harm. (#1-4)***

Response: The majority of the actions described in the Environmental Assessment on pages 45-61 are not mitigation measures to reduce or eliminate effects but rather design criteria. We tried to design the project to have few effects so mitigation would not be needed. Where mitigation is required we have rated the expected effectiveness (page 45). All mitigation measures were rated as having moderate or high effectiveness.

Comment: ***Designate some more very small sized small tree (0-40 yrs old) leave patches in old growth and near riparian and aspen areas…(#8-2)***

Response: The District Ranger has modified Alternative 2 to address this concern and leave small patches of small trees in these areas.

Risk of Fire

SUPPORT FOR FUELS REDUCTION

Comment: ***I am writing to express my support for the Black Butte/Glaze Restoration project. I recognize the need to reduce the risk of fire to homes in many parts of eastern Oregon and am glad to see the Forest Service carrying out this goal in a way that restores the forest and protects old growth. (#9-1)***

Comment: *Fire risk reduction should be a major factor for this project given the number of dwellings that are in and around this area. (#13-6)*

First entry prescribed fire after thinning in second growth pine stands in the Glaze project area in 1992

Comment: ***It is encouraging that the Forest Service is pursuing a project that reduces the risk of fire while also restoring the forest to a more natural state. (#9-2)***

Response: We agree that by restoring forests and adjacent areas to a more fire resilient condition this can reduce risk to nearby communities and is a benefit of the project. It is discussed as a part of the purpose and need of the project on pg 25. The project will lower the risk of moderate to high intensity wildfires to nearby communities, private properties, and special natural places as well as improve public and fire fighter safety as recommended in the Greater Sisters Country Community Wildfire Protection Plan.

THINNING CAN INCREASE FIRE RISK

Comment*: Reducing canopy density is not well justified by science actually reflecting results on the ground regarding fire risk reduction, nor by our own field experience in post-fire forest areas. More closed canopy provides shade and moister ground conditions and lessens wind speeds through the stand, potentially decreasing fire intensity, as documented in a well known Sierra Nevada study not cited by the Forest Service for this project. (#1-2)*

Comment: …***over-logging thinning based upon basal area formulas can increase rather than decrease the risk of severe fires. Excessive logging formulas that significantly reduce forest canopy closure create the conditions for future severe fires by:..Opening extensive areas of the forest floor to solar exposure, resulting in loss of soil and vegetative moisture retention – creating dry surface fuels and reduced moisture retention for area trees during the seasonal dry periods in these fire-ecology forests. (#12-5)***

Response: We agree that reducing canopy cover can result in increased wind speeds, higher temperatures and lower humidities and we discuss this indirect effect of thinning on page 129 of the EA.

In frequent low intensity fire regime forests, such as ponderosa pine ecosystems, this effect can be beneficial in creating conditions resembling the historic range of variability in forests. This can be helpful in restoration efforts with the reintroduction of the natural process of low intensity fire. As we explain in the EA, on page 129, lowering fine fuel moisture can help spread a low intensity surface fire (such as a prescribed fire) and consume surface and ladder fuels. This creates conditions which are discussed in Brown, et. al. 2004 and cited on page 124 of the EA as "Principles of Fire-Resilient Forests (ie. Reduce surface fuels to reduce potential flame length, making fires easier to control with less torching). It also decreases the probability of a crown fire which was historically uncommon in these types of forests and can cause loss or damage to key ecosystems components such as large trees, soil, and native species. Without having the specific reference, we cannot address which "well known Sierra Nevada study" is referred to in the comments above.

Comment: … ***over-logging thinning based upon basal area formulas can increase rather than decrease the risk of severe fires. Excessive logging formulas that significantly reduce forest canopy closure create the conditions for future severe fires by: Reducing viable habitat for forest canopy dependent wildlife species, especially cavity nesters and other species that predate upon forest insects such as bark beetles. Increased tree mortality, resulting from unchecked insect population increases due to lack of forest woodpeckers and other interior forest wildlife species in the project area, will result in incrementally increasing fuel loads and more extensive areas of the forest floor exposed to solar drying over time, increasing the likelihood of future severe fires. (#12-6)***

Response: Habitat and viability of woodpeckers will not be harmed by the project (EA, pages 135-209). A goal of the project is to increase habitat for ponderosa pine obligate woodpeckers. As discussed below in the sections on woodpeckers and snags, it is impossible to manage for every species on every acre. Our intent is to provide a variety of habitat conditions across the landscape that sustain many species. Approximately 1/3 of the Sister Ranger District has burned in stand replacing wildfires since 2003 which provides vast areas of prime woodpecker habitats on the landscape within 5-10 miles of the project area. Also a large beetle infestation within the lodgepole pine plant community is occurring near Black Crater, about 5 miles south. There is no shortage of excellent habitat for woodpeckers on the Sisters Ranger District or in the project area.

THINNING SLASH CAN INCREASE FIRE RISK

Comment: ***During and after thinning excessive fuel loads on the forest floor significantly increase the risk of severe fires. The project must address measures taken to ensure thinning fuels do not result in severe destructive fires should logging or human caused fire, or wildfire, occur in the project area before fuels are removed. (#12-8)***

Comment: ***Logging is often the cause of many severe fires, resulting in the destruction of large areas of public and private lands, including residences. Logging this area to decrease fire risk carries an inherent increased fire risk of its own. (#12-9)***

Response: We agree that thinning slash, if left untreated, can increase wildfire risk. The project design includes rapid slash cleanup of slash generated from thinning. This is also a required mitigation to protect scenery and recreation quality in the project area (EA, page 59-60). The thinning will occur in winter so there is a low risk of logging starting a fire. A goal of the project is to increase utilization of small woody material for biomass energy production. Stewardship proposals will be evaluated on how well and how quickly they utilize and remove this material.

Comment: ***The fuel condition modeling for the old growth stands [in Alternative 3] shows almost exactly the same effects as for Alternative 2 (p. 132, top). Why, then do the results indicate a "low risk of torching and crown fire initiation where crown base heights are at 30' or less" under Alternative 2, but constitute fire behavior which "could easily engulf small trees 8" in diameter and larger and carry fire into the tree canopies" under Alternative 3? (#2-23)***

Response: The model shows identical fire behavior in terms of fire spread, fire flame length, and fire scotch heights. The difference is that under Alternative 2 small trees have generally been thinned and removed and are not there to catch fire. In Alternative 3 many small trees remain and can catch fire because they have crowns low to the ground.

The Size of Trees Removed

Comment: ***Diameter limits are not a good method to manage by. Health, vigor and density should be used more to meet the long term goals. (#13-3)***

Response: We agree diameter limits can be an arbitrary way to manage forests. However, we understand that some people feel that because so many big trees have been cut by past logging, all live large trees should be retained to become the next cohort of old trees. There is also a concern that without diameter limits, forest thinning under the veil of restoration or fuels reduction may be motivated by economics rather than ecology (EA, page 84-85).

Building public trust in the science of ecologically applied silviculture to develop and protect old growth forests is a major purpose of this collaborative project. Ecologically based forestry includes the factors mentioned above, as well as considering habitat objectives for focal species, legal requirements, and specific measures to address sensitive resources. We have tried to address concerns about diameter limits by designing the project to address this key issue (all old growth trees regardless of size are retained, thinning retains the largest trees in any location, mosaic thinning can retain large trees as clumps if they occur that way, EA, page 46). We have tried to further address concerns by test marking trees with flagging and allowing public review and comment. The District Ranger has worked hard to address specific comments regarding this issue in his decision.

Comment: ***It is imperative, for this proposed project to attain its purpose and need goals, that the project: a. Retain all trees with mature and old characteristics, and trees with habitat values and inherent fire resistance regardless of size. (#12-10)***

Response: As discussed above all old growth trees regardless of size are retained and thinning retains the largest trees in any location. All trees have habitat value for something. Many smaller pine trees have fire resistant characteristics. After over a hundred years of fire suppression which has allowed so many trees to grow unchecked, some must be removed to move forests toward more sustainable densities and toward the structure more common in historic fire maintained forests (EA, pages 82-83).

Comment*: Our main concerns include: planned logging of trees up to 21" dbh, the next generation old-growth, despite many members of the public requesting a lower diameter limit (most requesting 16" dbh or lower) and despite a professed goal of the project being to restore lost old growth structure (lost to logging.) There is a need to retain all 15"-21" dbh trees to replace lost old growth, provide mature forest habitat and maintain carbon sequestration. (#1 -1)*

Comment: ***…the current project design needs further modification to provide for the retention of more mature size trees above 14" dbh, especially along edge areas near the meadows and near aspen stands. (#12-1)***

Comment: ***Under "Issues", I think the agency correctly identified the two key issues, i.e., (a) size of trees removed and (b) intensity and method of riparian thinning. However, if "most people" (including myself), requested a 16" dbh limit on trees cut or removed, why was this not part of the proposed action? (#2-3)***

Comment:…***I remain unconvinced that logging the estimated 1% of trees in the 16-21" dbh size range will have any beneficial effects which could not be achieved by leaving these trees in place. There should have been a "mini" alternative that analyzed this possibility, especially with respect to "upper management zone" percentages. (#2-17)***

Comment: ***We favor Alternative 3 with …changes [captured in other comments], including conifer removal only up to 7" dbh in old growth areas and only up to 15" dbh with the norm being only up to 10" dbh in second growth and only pre-commercial thinning with hand-thinning and hand-piling only within riparian zones and wetlands. (#1-13)***

Comment: ***Our concern is that too many larger trees will be left keeping the basal area still too high for this area. (#13-1)***

Comment: …***a few larger trees should be taken with the small ones to help restore the viability of the aspen clones. (#13-2)***

Comment: …***we support Alternative 2 by thinning up to 21"dbh instead of 16"dbh in order to reduce stand density when needed. Don't just restrict yourself to the 16" and under diameter proposals. (#13-5)***

Response: We understand that many people want a variety of diameter limits to be identified for the size of trees to be cut because they are concerned that large trees will be removed for commercial rather than ecological reasons. This was identified as a key issue for the project that we worked to

address (EA, page 29, 46). Other people are concerned about having any arbitrary diameter limits at all.

Building public trust in the science of ecologically applied silviculture to develop and protect old growth forests is a major purpose of this collaborative project. Estimates from stand exams indicate the majority of trees (approximately 99%) which need to be removed for ecological based density management are smaller than 16 inches diameter. There is no ecological need to remove the vast majority of larger trees and many ecological and silvicultural reasons to keep these legacy trees which were part of older stands and provide important genetic and structural diversity. Approximately 80% of the trees which would be removed are estimated to be smaller than 8 inches in diameter (EA, page 29).

A goal of the project was to advance this conversation beyond fear or positions by letting people review tree marking. This was so we can share and discover a common vision of the forest after thinning. During two field reviews of demonstrated marking attended by about 30 people in November and seven people in April, comments were favorable. People liked the look of mosaic thinning. They appreciated that the way the largest trees and all old growth trees regardless of size were retained. Some people felt more larger trees should be cut to improve forest health, some felt less should be cut in certain areas. Alternative 2 has been modified to address comments raised on the April 15th field review (see Decision Notice).

MOSIAC THINNING AND HISTORIC RANGE OF VARIABILITY

Comment: ***It is imperative, for this proposed project to attain its purpose and need goals, that the project: c. Restoration thinning extent be revised so this is based upon optimal site-specific historic natural range of variability (HNRV) conditions found across the area, rather than basal area formulas or non-site-specific assumptions. Basal area formulas where used should be variable and strive to retain as many trees as ecologically appropriate for area PAGs, definitely retaining more than currently marked during our April 15th field trip review.(#12-12)***

Comment: ***We think the mosaic thinning approach is brilliant. It should result in a healthier forest that more closely resembles what the forest would have looked like if man had not intervened. (#10-2)***

Response: The prescriptions for mosaic thinning developed by the Interdisciplinary Team and consultant Darin Stringer (EA, page 83) recognize and emulate the structure of historic forests that were full of gaps, patches and clumps of trees of various sizes and ages (cohorts). We decided to use this new concept in the project because it has been tried on the nearby Deschutes Land Trust Metolius Preserve in similar forest types and received widespread support from people in both conservation groups and the timber industry.

The Historic Range of Variability (the range of conditions and processes likely to have occurred prior to European settlement) is the basis of mosaic thinning prescriptions. Moving toward this historic range of conditions is the reason we are doing this project (EA, pages 76-78). Basal area is a tool to measure tree density that is easy and quick to do in the field. Basal areas are used as a guide to vary tree densities and are based on research done in old growth pine forests that have not been logged or thinned. The prescription is site specific and considers the biological site potential (i.e. how many trees can the soil and moisture support). In mosaic thinning, the densities of trees left fluctuate widely around a density goal. Mosaic thinning works with the pattern that exists in the forest and accentuates it.

The District Ranger has considered comments he received on the April 15th field trip and modified Alternative 2 to address the specific concerns raised (see Decision Notice).

Comment: …***over-logging thinning based upon basal area formulas can increase rather than decrease the risk of severe fires. Excessive logging formulas that significantly reduce forest canopy closure create the conditions for future severe fires by: More open forests are more subject to the ravages of extreme weather events, resulting in increasing fuel loads from windthrow and edge effect tree mortality. (#12-7***)

Response: Mosaic thinning prescriptions will not create the "excessive logging formulas" discussed above with abrupt edges like the ones which occur with clear-cuts. Some edge mortality is desired in areas which are along meadows and aspen groves to provide more snags and down wood for wildlife habitat.

Old-Growth

Comment: ***I specifically support the provision in the plan that protects all old-growth trees in the 1,200 acre project. Leaving these fire-resistant trees is the best way to accomplish the goals of forest health and resiliency. It is also providing and protecting habitat for various species. (#9-3)***

Comment: …***by leaving and protecting this old-growth stand, you will be enriching the ecosystem by the diversity of wildlife that flourishes in these environments, especially birds. Also these old growth stands would contribute positively to your goal of reintroducing a historic fire regime.***

Response: Protecting and restoring old growth is the purpose of the project. There are a lot of reasons to protect old growth found both in science and society, because people greatly value this rare habitat and many wildlife and plants depend on it (EA, page 18- 20).

Comment: ***Designate some old growth leave patches where there is no planned cutting. (#8-1)***

Tim Lillebo stands by a clump of old growth trees. Old growth pine forests are "gappy, patchy, clumpy".

Response: This is part of the chosen Alternative 2 Modified. Approximately 10% of thinning area was marked first as retention areas for wildlife. Further leave areas are being identified as the area is evaluated in field work. Areas in the old growth stands that were thinned and burned in the last decade need no further thinning. Approximately 29% of the project are will remain at higher densities (EA, page 62, 91).

Comment: ***In old growth, where not in desired gaps, designate some small sized small tree (0-40 yr old) thickets to be heavily thinned rather than entirely removed. (#8-3)***

Response: This is part of the chosen Alternative 2 Modified.

Activities in Riparian habitat Conservation Areas / Hydrology

Comment: ***Our main concerns include: …the high potential for riparian impacts: There is no need to "increase tree growth" by thinning everywhere –especially not in riparian areas where existing trees are contributing shade and cover. Small tree thinning up to 7" dbh should be enough to favor aspen and riparian shrubs and should be done by hand to avoid soil compaction and creation of hydrophobic soils within riparian zones and wetlands, with hand piling outside the riparian zone. (re: Units 7, 8, 11, 12, 13, 15, 16, 17 and possibly more). (#1-5)***

Riparian area next to Indian Ford Creek. Some careful thinning and prescribed fire can release aspen and help small pines grow larger.

Comment: ***Consider possible further hand thinning in riparian areas to encourage increased deciduous component and growing "large wood" for instream recruitment. (#8-5)***

Response: The partners of the project, Oregon Wild and Warm Springs Biomass LLC, encouraged us to find careful ways to restore riparian areas which lack large trees and diversity because of past logging and fire exclusion (EA, page 31). However, very limited actions are possible because of the sensitivity of these areas. Detailed criteria are outlined in the EA on page 46-58. The trees that can be removed near the stream are very small (less than 20 feet high, generally 1-5"dbh). Frozen conditions and designated skid trails will help prevent soil impacts.

Comment: ***On p. 99, Table H-2, why isn't E. Coli a water quality parameter for water contact recreation? This parameter would seem to be a concern, especially with cattle grazing and the discharge of sewage effluent in the area. (#2-19)***

Response: The table in the EA on page 99 only lists parameters that will be analyzed for effects to water quality from the Glaze Forest Restoration project. E. Coli was not analyzed as a water quality parameter that could be affected by the Glaze Forest Restoration Project because no ground disturbing activities that would release fecal matter into the stream would occur near Indian Ford Creek.

Comment: ***There should be no removal of any shade-contributing trees in the RHCA for the Indian Ford Creek. It is not clear from the model given (see Table 3, EA p. 47 & Figure 11, p. 49) and related discussion that no shade contributing trees in the primary or secondary shade contributing zones will be taken. This is a very important concern as Indian Ford Creek is 303(d) water quality-listed for water temperature already. (#1-6)***

Comment: ***Since Indian Ford Creek is a listed stream for temperature, no shade contributing trees in the RHCA should be removed. (#14-3)***

Comment: ***The temperature modeling study used (USDA Forest Service and BLM 2005) is based on Northwest Forest Plan streams which are often denser mixed conifer forest than conditions by Indian Ford Creek. So conclusions of that study may not apply. Removing shade-contributing trees and thereby increasing the water temperature of a 303(d) listed creek listed for temperature exceedances endangering its resident listed Redband trout would violate the Oregon Clean Water Act and must be avoided. (#1-7)***

Response: Indian Ford Creek is a 303(d) listed stream because stream temperatures exceed the State water quality standard; therefore, any activities that would increase water temperature are prohibited. No trees that provide shade will be removed.

As described in the EA (p. 100), Indian Ford Creek emerges at springs on Black Butte Ranch at approximately 43º F and becomes heated to above 64º F (the State standard) before it leaves Black Butte Ranch, approximately a mile downstream. Stream impoundments for the creation of golf course ponds, willow removal, and low flow water diversions within this mile are responsible for the solar heating of the water in Indian Ford Creek. Although shade on USFS lands is not the limiting factor affecting water temperature in Indian Ford Creek, activities proposed on USFS lands cannot reduce stream shade because it could further increase water temperature.

As described in the EA on pages 19 and 22, the existing riparian forests do not meet the desired conditions of diverse conifer forests with large trees, hardwoods, snags, down wood and aspen.. The project aims to improve the long-term health of the Riparian Habitat Conservation Areas along Indian Ford Creek. Much of the riparian vegetation such as aspen are being encroached upon by small conifers as a result of fire suppression.

In addition, the development of big ponderosa pine is being suppressed from an over abundance of small trees. Restoring the aspen and big pines would improve long-term stream shade, increase biodiversity, and provide important wildlife and aquatic habitat. Thinning was proposed in understory vegetation in the aspen areas along Indian Ford Creek to help release aspen and allow the development of larger, bigger canopy trees.

To insure that stream shade would not be affected by the aspen and large tree restoration efforts, the NWFP Temperature Implementation Strategy, which has been approved by the USFS Region 6 Office, ODEQ, and BLM, was used to develop the thinning prescription in the RHCA of Indian Ford Creek (EA, p. 47). By using this strategy, no stream shade producing vegetation would be removed along Indian Ford Creek, thus meeting the requirements of the Clean Water Act. Although this study was developed for NWFP areas, the same concepts apply to the Glaze Forest Restoration Project area.

To explain why, there are several parameters that affect stream shade such as tree height, orientation, the sun's zenith and azimuth, solar radiation for a given hour, terrain slope, angular canopy density

(ACD), stream width, and tree distance from the channel. The only parameter that thinning changes is stand density or ACD. The Temperature Strategy demonstrates that if the primary shade zone is protected, then thinning in the secondary shade zone will not change ACD. This occurs because trees in the secondary shade zone would be blocked by a tree in the primary shade zone (tree-behind-a-tree concept) and would therefore, not contribute to ACD. The Temperature Strategy cites the 1972 Brazier Brown study (1972), and a more recent study funded by Environmental Protection Agency (EPA) and Oregon Department of Environmental Quality (ODEQ) (Park et al. 2006), and shade modeling to support the tree-behind-a-tree concept. The intent of the EPA and ODEQ funded study was to add to the 1972 Braizer and Brown ACD data set and to verify that ACD remains unchanged after thinning by applying the specified no treatment width as demonstrated in the Northwest Forest Plan Temperature Strategy (Park et al. 2006). The study concluded that ACD does not change with thinning if the primary shade zone is protected.

In order for the NWFP Temperature Strategy to be applicable in the Glaze Forest Restoration Project Area, the width of the primary shade zone needs to be comparable (Park, as per comm.). Field verification with a solar pathfinder was conducted at four sites (2 sites with a North-South orientation and 2 sites with an East-West orientation) along Indian Ford Creek in the proposed treatment area to determine which trees were providing shade to the stream. The width of Indian Ford Creek within the treatment area ranges between 5 and 12 ft. At all sites, only trees within 30 to 40 ft were providing shade to Indian Ford Creek.

Looking into the primary shade zone of Indian Ford Creek from the bench above the creek

Typical primary shade zone in the Indian Ford Riparian Habitat Conservation Area.

Therefore, the width of the primary shade zone used in the NWFP Temperature Strategy (50 ft) is more than adequate for protecting shade along Indian Ford Creek. In addition, the width of the primary shade zone along Indian Ford Creek was expanded in most areas to 70 to 100 ft to incorporate topographic features, thereby providing even more insurance that shade producing vegetation would not be impacted (EA, p. 48).

Within the primary shade zone understory conifer trees (mostly between 1-5" dbh in the Indian Ford Creek primary shade zone), as allowed under the NWFP Temperature Implementation Strategy, would be hand-felled and piled and burned 100 ft away from

Indian Ford Creek (EA – p. 47-50). The removal of small understory conifers in the primary shade zone would help release aspen and big trees, while not reducing stream shade. Trees in the secondary shade zone of Indian Ford Creek (i.e. > 50'ft from stream or bench) would be not be providing effective shade because they would be hidden behind a tree in the primary shade zone (tree behind a tree concept); therefore, their removal would not affect stream shade.

Comment: ***The desired future condition requires full hydrological restoration. The Forest Service needs to fully analyze the impacts of current water diversions and start a discussion with Black Butte Ranch managers and residents with the goal of reducing water use from the headwaters springs and restoring natural hydrological functioning in Big Meadow and downstream…(#1-12)***

Response: We have been having discussions with Black Butte Ranch about the temperatures of Indian Ford Creek since the mid 1990's and searching for collaborative solutions. Some improvements have been made. Black Butte Ranch helped fund the study which mapped water temperatures on the creek. Further work will be done as we begin the water quality recovery plan that is required by Oregon Department of Environmental Quality for waterways which do not meet Clean Water Act standards (EA, page 107).

CONCERN ABOUT INVASIVE PLANTS AND COMPACTION

Comment: ***I am entirely supportive of the aspects of this project which restore aspen stands, riparian areas, and meadows, but am concerned about cheatgrass introduction and trampling/soil compaction in riparian areas…(#2-58)***

Response: Mitigations to prevent the introduction and spread of invasive plants like cheatgrass are in place (EA, page 56). These include requiring clean equipment, minimizing soil disturbance by logging over frozen ground, and not burning in meadows until cheatgrass patches are reduced in size. The project is designed to prevent soil compaction by careful and limited thinning in riparian areas over frozen ground with low impact equipment (EA, page 46- 52)

CONCERN ABOUT WOOD RECRUITMENT IN RIPARIAN AREAS

Comment: ***We share the concerns…that removal of large trees in the Riparian Habitat Conservation Areas and other critical wetlands is a bad idea not only for the disturbance factors but also the critical need for instream wood recruitment and shade. Thinning by hand with minimal disturbance would be acceptable. (#14-2)***

Comment: ***My preferred alternative is Alternative 2…with modifications…The major modifications consist of: … (3) leaving trees 12"-16" in diameter in place in the primary wood recruitment zone, 50'-100' from the creek. (#2-57)***

Comment: ***The "Large Wood Recruitment Area" section (p.48) is confusing. The first sentence states that under Alternative 2, trees less than 16" diameter may be removed between 50 and 100 feet from the creek. However, the second sentence states that no large wood greater than 12" in diameter will be removed from this "primary wood recruitment zone. The diameter limit for removal should be 12", regardless of the alternative chosen. Please clarify this in the Record of Decision [Decision Notice]. (#2-7)***

Comment: …***the redband trout is the only fish species which currently has habitat within this stretch of Indian Ford Creek….Alternative 3 is preferable because it leaves upland trees in the 12"-16" diameter size class 50'-100' from the creek, a distance where microclimate and wood recruitment still influence stream conditions. (#2-48)***

Response: As stated on p. 48 in the EA, trees currently could be considered large wood (any tree over 16"dbh) would not be removed from the large wood recruitment area. Thinning small trees in the large wood recruitment area (0-100 ft from Indian Ford Creek) improves the likelihood of growing large trees that can later be recruited into the stream for large wood habitat.

For a tree to be considered "large wood" under INFISH the portion of the tree that is within the active channel has to be larger than 12" in diameter. Only understory trees that would not be considered "large wood" can be removed between 0 ft and 50 ft from the stream. Between 50 ft and 100 ft from Indian Ford Creek, under Alt. 2, only trees less than 16" diameter at breast height (dbh) would be removed. Trees less than 16" dbh that are located at least 50 ft from the stream would have tops that are less than 12" in diameter. Therefore, if a 16" dbh tree between 50 ft and 100 ft from Indian Ford Creek were to fall into the stream, the portion of the tree that is within the active channel would be less than 12" in diameter and would not be considered large wood.

OTHER CONCERNS ABOUT RIPARIAN THINNING

Comment: ***The parameters for measuring permeability rates (bottom, p. 100) warranted some explanation. – (#2- 58).***

Permeability rates for the soils in the Glaze Forest Restoration project area were taken from the Soil Resource Inventory for the Deschutes National Forest (1976). The 2 year, 30-min rainstorm intensities were calculated by converting the 2 hr, 6-hr rainstorm intensities obtained from the NOAA Atlas 2 (NOAA 1973) the Glaze project area to 2 year, 1 hr storms using equations in NOAA Atlas 2, Volume X – Oregon, Table 12. These values were used to derive 30 minute rainfall amounts in inches using the Arkell and Richards ratios for the interior northwest (1986).

Comment*: With respect to roads, the project description on p. 52 states that only .4 miles of roads in Riparian Habitat Conservation Areas will be used. On page 110, that figure is "1 mile of haul". Please clarify this in the Record of Decision [Decision Notice]. (#2-21)*

In the EA, page 52, it states that "Between 2 and 3.4 miles of **temporary roads** would be used to access treatment areas, with 0.4 miles in Riparian Habitat Conservation Areas." This statement is only referring to the miles of temporary road in the Riparian Habitat Conservation Area. On page. 110 it states, "Only 1 mile of haul would occur on **existing system and temporary roads** in Riparian Habitat Conservation Areas and effects would be mitigated." This statement is referring to the total miles of road used for haul (i.e. both existing roads and temporary roads) in the Riparian Habitat Conservation Area.

Thinning and other Activities

Comment: ***For Alternative 2, one of the "effects" of thinning and creating more open conditions is increased access for off-road vehicles…It is very important to me that this "effect" be addressed directly through signage and enforcement. It makes no sense to spend $250,000 and many hours of effort to restore this area, only to have OHVs destroy what has been restored. (#2-52)***

Response: The EA states on page 277 that the entire project area is under a special closure that prohibits vehicle access, except as authorized, and that the closure has been generally effective since its inception in 2000. Violation of the closure is a Federal violation punishable by a $5000 fine and /or 6 months imprisonment. Continued enforcement and education is planned. Increased public use in the Glaze area can help us by reporting violations.

PRESCRIBED FIRE

Comment: ***If thinning is more effective than prescribed fire in moving species composition towards ponderosa pine (p. 87, top), it should be a preferred treatment, since it avoids the risk of losing large trees/snags as well as the introduction of an invasive species (cheat grass). Thinning is also preferable because it can reduce the risk of bark bettle [beetle] infestation in high density stands, where prescribed fire is not effective (at density reduction) (p. 87, bottom). (#2-15)***

Comment: ***I like the adaptive management aspect of preventing invasive species proliferation with respect to prescribed burns (p. 56). I am concerned that the positive aspects of prescribed burning will be countered by the proliferation of cheatgrass. (#2-11)***

Comment: ***My main concerns are the inadvertent spread of cheatgrass, and the loss of snags/CWM in forested environments. Any prescribed burning should be narrowly focused, with mitigations employed to prevent cheatgrass introduction and protect snags/CWM. (#2-49)***

Comment: ***The seasonal and wet weather restriction on equipment (p. 258) to reduce impacts to soils, as well as limitations on prescribed burns (cool, moist conditions) should be implemented for the benefit of other resources as well. (#2-50)***

Response: Low intensity fire is a key ecological process in old growth pine forests and has untold benefits to many wildlife and plants (EA, pages 73-74, 119- 135, 230-234). We believe that using both thinning and prescribed fire is the best way to restore old growth pine forests. Fire is an important natural disturbance process that introduces randomness, and helps emulate historic patterns (EA, page 87).

Mitigations to prevent the introduction and spread of invasive plants like cheatgrass are in place (EA, page 56). These include requiring clean equipment, minimizing soil disturbance by logging over frozen ground, and not burning in meadows until cheatgrass patches are reduced in size. Also see discussion on snags below.

Comment: ***The effects analysis reinforced my reservations with respect to the use of prescribed fire. The same study cited for snags showed 50% of down logs were consumed during prescribed fires. Thus, the use of this treatment method should be avoided in areas where this habitat component is a natural component of the ecosystem, and at low levels. (#2-30)***

Second growth area with abundant small down wood

Response: We have not experienced that half of snags or down wood is lost during spring burning because of higher moistures. This is one reason we do first entry burns in the spring rather than the fall when conditions are drier. Mitigation measures are in place to protect snags and down wood during burning (EA, page 53-54). However, we want some snags to burn and fall to add down wood. Also down wood levels are extremely variable. Some dense areas where trees are dying from insects and disease areas have abundant down wood and we want to reduce the levels with some consumption during prescribed fire to a more natural/historic amount (see photo).

HANDTHINNING

Comment: ***With respect to "Specific Criteria" (p. 48), the seasonal/condition restrictions on equipment use for Alternative 2 (i.e., frozen ground) actually make this the more attractive option. As an added design feature, I would also like to see hand thinning restricted to frozen ground conditions (this would allow coordination with other thinning activities and avoid seasons of high recreational use). (#2-8)***

Response: Our experience with hand thinning (people walking around and thinning small trees with a chain saw) over thousands of acres of the Sisters Ranger District has shown it does not cause detrimental soil impacts. If areas are very wet (generally early spring) they would be not be entered.

MOWING

Comment: ***We are concerned by proposed shrub mowing within riparian concerns and wetlands regarding impacts to Neotropical songbird habitat and other riparian and shrub-associated wildlife. (#1-8)***

Comment: ***My main concern with mowing brush with ground-based equipment is that it is less sensitive to wildlife disturbance and/or habitat features. Restricting use to frozen ground conditions addresses this concern, but hand mowing only should be used in sensitive areas. Hand mowing should also be restricted to frozen ground conditions to minimize soil impacts and disturbance to wildlife (pp. 49-50) and intermittent streams/wetlands. (#2-9)***

Response: Mowing is done before burning if needed in areas with large amounts of brush. It helps reduce flame heights and scorching trees in first entry burns (the first time fire has been reintroduced into an area in recent history). It is generally done in the fall so that birds will not be nesting in the area. Wet areas are not entered with machinery (EA, page 48, 49). Mowing is done in a mosaic so that some areas are left un-mowed to provide habitat complexity. Patches of untreated ground vegetation that can provide foraging habitat are retained. It is not anticipated that much hand mowing will be needed. It was included in case some bitterbrush in a drier upland area with equipment restrictions needed to cut to aid the re-introduction of fire. Our experience is that people walking around with hand equipment do not cause detrimental soil compaction.

OTHER CONCERNS

Comment: … ***Heritage resources (p. 59), these sites should all be marked, as well as plant species of cultural significance. Winter treatments are preferable because they would minimize impacts of plants; on the other hand, these species are harder to identify without leaves, flowers, berries, etc. (#2-12)***

Response: The project aims to re-create more historic conditions which benefit the many plants and animals that live in this area. Plants that exist in ponderosa pine forest, including cultural use plants are fire adapted and need the light disturbance that is created by fire to seed and thrive. Heritage sites will be protected by over snow thinning or avoidance (EA, page59).

Comment: …***scenic resources, leave trees should not be painted at all, nor cut trees if they are not to be harvested in the near future. Paint marking desecrates the trees and is a blight on trees after treatments are completed (and disposed of properly). It is also extremely important to confer with recreational users on "scenic" aspects of treatments, as this may not coincide with agency perspectives. (#2-13)***

Comment: …***scenic integrity could be adequately improved without removing any trees in the 16"-21" diameter size range. (#2-51)***

Response: Painting trees is a legal requirement to prevent theft or tampering with thinning prescriptions. Flagging can be removed or moved. In our demonstrations, we flagged trees that would be left to help people visualize the forest after thinning. By marking trees to be cut, no paint is left after thinning is completed. The mitigations and criteria to protect scenic and recreation address these concerns (EA, pages 59-60). We understand that protecting scenery is crucial and the project will improve scenery (EA, page 264-277).

Comment: ***Prescribed burning can have considerable adverse health effects, in addition to diminishing scenic and recreational "values". These potential impacts should have been addressed. (#2-24)***

Response: The effects of smoke are addressed on page 53 (legal requirements to protect air quality) and on page 133-135). Spring and fall prescribed burns produce far less smoke than summer wildfires. Most people in Sisters do not enjoy the temporary smoke from prescribed burns but tolerate it because they have also experienced many large wildfires in the past few years that have smoked out areas for weeks in the heat of the summer. Sensitive individuals can be informed of upcoming prescribed fires if they call and ask us to notify them of prescribed fire activity in their area (541)- 549-7700.

IMPACTS FROM MACHINERY

Comment: ***I am concerned about the impact of machinery on "leave trees" (bark/roots) and the removal of larger (up to 16"dbh) trees 50'-100' from the creek. Under Alternative 3, this area would be hand thinned, and all trees greater than 12" in diameter would be retained. This area is within the primary wood recruitment zone so it would seem advisable to retain the 12"-16" dbh trees as well as a future source of down wood. Hand thinning would better protect the leave trees from bark or root damage which can occur from the use of ground-based equipment. (#2-22)***

Response: Equipment operators use care not to injure remaining trees and are evaluated on this by Forest Service sale administrators. Equipment is kept on specific trails and does not roam freely. Operating over frozen ground has been shown to be effective in protecting soils and trees roots (EA, pages 241- 261).

Wildlife

THINNING, MOWING, BURNING AND NEOTROPICAL AND GROUND NESTING BIRDS

Comment: ***The term forest fuel can also be termed undergrowth habitat. The intensity and speed of fires depends more on the terrain and other factors. Keep good wildlife habitat with your plans. (#5-1 and #6-1)***

Comment: ***Greater retention throughout to better provide for wildlife habitat needs, and the incorporation of seasonal nesting and fledging season restrictions on projects actions for neotropical migrant and native avian species is also needed. (#12-2)***

Comment: ***Any spring-burning should be done before the reproductive season, which starts as early as mid-March for Neotropical songbirds. Fall burns are more natural and could employ line buffers around large snags and down wood. (#1-9)***

Comment: ***With respect to wildlife, my main concern is that mowing not occur (as well as prescribed burning) while ground-nesting birds are occupying habitat slated for this treatment. The mitigation measure on p. 55 needs to be clarified in the Record of Decision [Decision Notice]. Mowing activities should be scheduled after the nesting season only, i.e., no earlier than June 15….prescribed burning may be limited to early spring, prior to establishment of nests on the ground. (#2-10)***

Comment: …***mowing/burning should be staggered over time so that sufficient foraging habitat/prey is preserved. Mowing should be restricted seasonally so that it never occurs while ground birds are nesting or fledging. (#2-41)***

Response:

The mosaic marking prescription allows wildlife biologists to walk through the areas to be thinned before anyone else and identify the dense no-treatment wildlife areas. A mosaic of conditions is a goal. We do not want to remove all shrubs. This project will have no intentional take of any neotropical migratory birds (EA, page 207-209). In order to safely reintroduce fire, the project will mow bitterbrush if needed, in dry forest areas surrounding wetlands and in upland areas within the Riparian Habitat Conservation Area of Indian Ford Creek. No riparian vegetation will be mowed.

Pre-treatment with mowing is generally implemented in the fall, therefore shrubs are gone by spring and areas are less likely to be utilized by ground nesters. Mowing occurs in a mosaic to retain shrub habitat for ground nesters. By pre-treating shrubs, flame lengths are lower and this reduces the risk of losing important snag habitats. When possible, prescribed fire will be implemented prior to March 15 or after June 30 (EA, page 55).

Comment: ***Since the chipping sparrow is a ground-nester that feeds on grasses and herbaceous annuals, it is important that moving and prescribed burning occur only when this species is not nesting/fledging, and that treatments be staggered to preserve sufficient habitat. The Proposed Action as described does not meet the Biological Objectives for this species. At least 20% of each unit should be left untreated to provide an adequate shrub layer, if not more. A necessary mitigation measure, not mentioned, is seasonal restrictions on mowing. (#2-45)***

Response: See the discussion above for seasonal patterns of mowing to avoid conflicts with nesting birds. We are not sure where the respondent finds the recommendation of 20%. As discussed in other sections there will be more than 10% of the area left untreated when all areas are added.

BUFFLEHEADS

Comment: ***The existing condition for bufflehead states that they "nest in natural cavities or abandoned northern flicker holes in mixed coniferous-deciduous woodlands near lakes and ponds," but the effects analysis refers to snags, not "natural cavities". …the description of habitat and effects analysis should have referred to the same habitat features. Surveys should be done for this species before the project is implemented. (#2-25)***

Response: Woodpeckers, like northern flickers, are primary cavity excavators, and excavate conifer snags with heart rot for food and to create nesting sites. If and when these cavities are abandoned, they can be secondarily utilized by the bufflehead. Because this project avoids the pond areas and will not be removing any snags or deciduous trees containing natural cavities around the ponds the project will not impact bufflehead or their habitat.

There is currently no regionally accepted survey protocol for this species. We rely upon our historic sightings database to determine presence or absence within the project area, and by reviewing the habitat within the project area determine if suitable habitat is available. The EA discloses this on page 142.

BATS

Comment: ***Are the Townsend's and Big-eared bat one and the same? ([please explain] pp. 164-165).(#2-34)***

Response: Yes. The name of Townsend big eared bat has been changed to Western big-eared bat. Both names should have been referenced.

WOODPECKERS

Comment: ***The Black-backed woodpecker is a species actually favored under the "No-action" alternative scenario, with its higher tree densities, more fire-intolerant species, dead trees, and possibly post-fire conditions. The Proposed Action should ensure that enough suitable habitat is left for this species after prescribed treatments, even though this habitat is left for this species after prescribed treatments, even though this habitat is not part of the "Desired Condition". (#2-35)***

Comment: ***The "Effects" analysis is objective in recognizing that, at least in the short term, wildfire and insect infestations would provide benefits to these species [Woodpeckers]. To the degree that any of these species need denser forests, these residual areas should comprise at least of 20% of the treated stands, if not more, to provide adequate foraging habitat (and nesting habitat, in the case of the black-backed woodpecker). (#2-36)***

Response: It is difficult to impossible to manage for every species on every acre. That's why we have moved from single species management to managing for a suite of species that require certain common habitats and considering certain focal species that represent the needs of many others (focal species, EA page 194). There is a limited amount of habitat for Black-backed woodpeckers in the project area (a small isolated pocket of lodgepole pine, with active bark beetles within an aspen area). The black-backed woodpecker is a species that is dependent on densely stocked conifers and will not benefit from treatments proposed in the Glaze project area (EA, page 168-171). The black-backed woodpecker is identified as a focal species within old growth lodgepole pine, but is sometimes found at lower elevations in ponderosa pine stands during mountain pine beetle outbreaks or following a stand replacing wildfire.

It has been determined that thinning will reduce foraging habitat for this species by removing lodgepole that has grown in the absence of fire and is outside the historic range of natural variability, (EA, page page 168-171). Although some foraging habitat will remain it is not likely that the species will utilize the project area as it once did. However, approximately 1/3 of the Sister Ranger District has burned in stand replacing wildfire since 2003 which provides a large areas of prime habitat on the landscape for this species within 5-10 miles of the project area. Also a large beetle infestation within the lodgepole pine plant community is occurring near Black Crater, about 5 miles south. There is no shortage of excellent habitat for the black-backed woodpecker on the Sisters Ranger District.

Comment: ***Under "Cumulative Effects", it was not clear which of these species if any, besides the white-headed woodpecker would benefit from other fuel reduction projects. It was also unclear which species would be adversely affected by a reduction in foraging habitat. The table on page 172 was confusing, as it left out the black-backed woodpecker and referred to other species not previously discussed. …not removing snags, big trees, etc. does not guarantee that a density requirement will be met. What was the source of these objectives? The snag density is very low, and in the text a[n] 8" dbh tree does not qualify as a snag. In the second growth areas, there are on average less than 0.7 snags per acre greater than 25" dbh, so I don't understand how the action alternatives "meet" this objective. (#2-37)***

Response: Snag habitats are dynamic across watershed sized landscapes and come and go from large and small disturbances. Not every acre is capable of providing habitat for every species (see discussion above). Under each alternative the analysis describes the effects to species as result of the associated actions. Because these species utilize areas across the entire Deschutes National Forest in similar habitat types and because this project is not removing snags that are needed for nesting in the

short term, it was determined that cumulatively, this project will not likely cause a trend toward federal listing of any species analyzed. The project proposes to maintain existing old-growth habitat and promote the development of second growth habitat, into future old growth. Proposed activities will remove some trees under 21" dbh that provide foraging habitat for white-headed woodpecker, pygmy nuthatch, and Williamson's sapsucker (all focal species) but the numbers of green trees that remain will provide abundant foraging habitat. The project will not preclude use of the area by these species in the short-term, and in the long-term it will promote the development of more old growth which will be utilized for nesting and foraging.

Also see the discussion on the black-backed woodpecker above. This species was not included in the table on page 172 because it is not a species that would benefit from thinning ponderosa pine stands. Historically the project area did not provide black-backed woodpecker habitat. Because of the large amount of habitat nearby in wildfire areas, the project would not cause a trend toward federal listing of this species.

NORTHERN GOSHAWK

Comment: ***Two goshawks exhibiting nesting behavior were seen in the project area in 2007. Since there was no goshawk survey done in 2007, a survey should be done during the spring 2008 goshawk nesting season and any occupied nest zone and post-fledgling area not thinned above 7"dbh and not during the reproductive season. (#1-10)***

Response: Goshawk surveys were completed to Region 6 standards in FY 2005 and 2006 (EA, page 175). Under this protocol surveys are valid for 2 years. Goshawks do use the area and it is hoped they will nest there again as habitat improves in the aspen groves they once favored. Incidental sightings of goshawks have been documented this spring by Forest Service personnel. Spot calling will occur in 2008 to again look for nesting birds.

Comment: …***the northern goshawk, my main concern was maintaining sufficient canopy closure (over 60%) within the Project Area for nesting habitat after these stands are thinned. Retention clumps within the old-growth that provide suitable nesting sites should comprise 20-30% of these stands. Likewise, mowing and burning should be staggered over time to leave sufficient foraging habitat/prey species in place. Particular attention should be paid to the nesting area used by this species in the past, even though it is not specifically protected. (#2-39)***

Response: The 458 acres of old growth provides nesting habitat for the goshawk. The project proposes "thinning from below" to reduce the competition from the understory and prolong the life of the old growth trees. Thinning from below will leave the structure of the overstory canopy intact and it will continue to provide nesting habitat for the goshawk after treatment.

Mowing is done before burning if needed in areas with large amounts of brush. It helps reduce flame heights and scorching trees in first entry burns (the first time fire has been reintroduced into an area in recent history). Mowing is done in a mosaic so that some areas are left un-mowed to provide habitat complexity. Prescribed fire is also done in a mosaic. Patches of untreated ground vegetation that can provide foraging habitat are retained. In addition, 10% of the project area will be retained as wildlife clumps, although in reality the percentage in the old growth area is much higher because it has been thinned and burned in the past decade and needs no further thinning except by periodic fire. Surveys were conducted in the area of the historic nest. Surveys will be repeated this year. Continued

monitoring will occur prior to implementation to ensure that a goshawk has not nested in the area. We hope the project will restore goshawks nesting in the Glaze forests.

COOPERS'S AND SHARP-SHINNED HAWKS

Comments: ***Cooper's and sharp-shinned hawks favor dense second growth stands of mixed conifer/ponderosa pine for both foraging and nesting, so the Proposed Action will not promote the habitat requirements of these species. The "Effects" analysis incorrectly states that 458 acres of potential habitat exists for these species; it is 416. These species also require stands with 60-65% canopy closure, but can utilize younger stands than the goshawk. Therefore, some of the second growth stands, left un-thinned, presently provide habitat for these hawks. These denser stands should be left un-thinned, and also un-mowed/not burned to provide nearby foraging. These retention clumps should comprise at least 20% of the second growth stands, and be of fairly large size. (#2-40)***

Response: Thank you for your clarification, you are correct 416 acres of habitat exists for this species. Although these stands provide habitat, the EA also states on page 179 that existing canopy closures are below what the literature states is suitable for these species. Therefore, their primary habitat is provided by clumps of trees that provide security rather than contiguous stands that provide 60-65% canopy closure. After thinning, stands will be "Gappy, Patchy, Clumpy", more closely resembling a historic fire maintained forest. Patchy/Clumpy areas will provide pockets of trees containing security for Coopers' and sharp-shinned for nesting and foraging. Also, 10% of the 416 acres will be left untreated to provide nesting and foraging habitat.

GREAT GRAY OWL

Comment: ***Great gray owls…the Project Area seens [seems] to provide suitable habitat for this species. An effort should be made to save any old structure trees around the meadow as smaller conifers are removed, and leave some multi-story old growth as well. Apparently, this is the only great gray owl habitat within the entire 100,000+ acre Eastside Screens area, so it should be cultivated with this species in mind. (#2-42)***

Response: We agree that great gray owl habitat is rare on the eastside because meadows like Glaze Meadow are rare. The project will improve great gray habitat by removing conifer encroachment in meadows that these owls use for foraging and protecting and growing more big trees they use for nesting (EA, page 182-185). Small patches of multi-storied stands and all snags will be retained. Alternative 2 Modified will also keep some higher densities of trees on meadows edges that may provide snags in the future.

FLAMMULATED OWL

Comment: …***the [flammulated] owl, at least 20% (not 10%) of treatment units should be left un-thinned, to provide the dense, brushy thickets of sapling/pole trees required by this species. (#2-47)***

Response: Also see the discussion under snags below. Flammulated owls will benefit from the protection of large trees and growth of more large tree habitats (EA, page 203-204). We're not sure why the respondent cites 20% as a target. Many second growth area have little dense understory to leave, old growth areas have many good patches retained. See pictures next page.

Second growth forest area with little understory

Old growth area w/ understory patch that could be left for wildlife

RED TAILED HAWK

Comment: ***The analysis with respect to the red-tailed hawk was faulty. The habitat requirements do not even include large trees for nesting. The effects analysis is not specific to this species, and the next to last paragraph under "Cumulative Effects" does not make sense for the action alternatives. (#2-38)***

Response: Red-tailed hawks are generalists and are able to utilize a variety of habitat types. As the EA states on page 172, they prefer open woodland areas associated with forest edges for nesting. Although the habitat discussion does not single out large trees for nesting, within the project area a historic nest occurs in an old growth ponderosa pine adjacent to Glaze Meadow. Within the project area old growth trees provide the best perch and nest sites. This is because the old growth trees are close to the meadow and because red-tailed hawks are big birds and need big branches to perch on. Thinning will maintain the existing old growth characteristics in the short-term, maintaining red-tailed habitat, while accelerating the development of more old growth in the project area to be utilized by red-tailed hawk in the future. Cumulatively on the district regardless if the stands are old growth or not, our thinning projects in ponderosa pine forests retain the largest trees by thinning from below. Therefore, cumulatively the Glaze project will not cause incremental impact to red-tailed hawk or its habitat.

CRATER LAKE TIGHTCOIL SNAIL

Comment: ***The Crater Lake Tightcoil, known to occur in the area, can inhabit areas up to 10 meters (33 feet) from open water, and can be negatively impacted by activities such as prescribed fire and equipment use. Before any "treatments" occur within 33' of the creek, any potential habitat should be re-examined for this species, especially before these areas are covered by snow. (#2-26)***

Response: Riparian areas on the eastside can often be very narrow. Approved survey protocols identify habitat for this species as being within riparian vegetation which is perennially wet (EA, page 144). Perennially wet areas associated with Indian Ford Creek are generally far less than 33 feet or 10 meters from the water. No treatments will occur in perennially wet areas that could harm snails (EA, page, 145). (Also see pictures of riparian areas above).

MULE DEER AND ELK

Comment: *…mule deer and elk, I did not understand why meadows and black bark stands were excluded from the calculation of hiding cover acres within the project area (p. 189). On a larger scale, cover does occur within both second and old growth stands, and retention clumps are called for in black bark stands. I was also confused by the reference to "winter range" under "Cumulative Effects"; I thought this area was summer/ transition range. Even though only 10% retention clumps are required, 20% might be better since these denser "clumps" will provide habitat for other species as well. (#2-43)*

Glaze meadow has no hiding cover for deer or elk

Response: Eastside meadows have short grasses and do not provide hiding cover for big game. Black bark stands of young trees tend to self-prune (drop) their lower branches, so they do not provide good cover. The project area is deer summer range and transition range (EA, page 188). Winter range is mentioned because it is within the "zone of influence" that was used to assess cumulative effects (EA, page 190, 191). It is unclear why this respondent cites the number 20%. The Deschutes Forest Plan requires 10% wildlife clumps for deer cover be left in black bark tree thinning. We have left more than this minimum by leaving wildlife clumps in old growth areas and elsewhere in the project.

BEAVER

Comment: ***There should be no manipulation of the beaver ponds for fear of disturbing and driving out the beaver, who are accomplishing goals of this project in a more natural way with far less impacts than human manipulations. (#1-11)***

Comment: ***As you are probably well aware, beaver are a keystone species critical to aquatic health…Any manipulation which might impact the beaver and their habitat is completely unacceptable…(#14-1)***

Response: Beaver are a key natural disturbance agent along Indian Ford Creek. We have been monitoring beaver activity within the project area and have designed the project to protect the "beaver engineers" hydrological restoration activities. This is discussed on page 40 of the EA as part 6 of the proposed action, - installing a temporary bridge to eliminate the need to use roads which cross newly flooded meadows. We know where the beaver ponds and dams are and will avoid disturbing them with thinning activities. They are building new dams each year in different locations and new wet areas will be encountered and avoided as needed.

OTHER WILDLIFE AND PLANTS

Comment: *…for this project to attain its purpose and need goals …Care [should] be taken to protect beavers in the area, protect the area's dependent avian and wildlife species of concern, protect rare plants including but not limited to Peck's Penstemon, and protect the hydrology and soils of the area forests and meadows. Only light-on-the-land low impact equipment should be used. (#12-13)*

Response: Beaver will not be impacted by the project (see above discussion). We have designed the project to protect hydrology, soil, wildlife and plants (See Design Criteria and Mitigations, (EA pages, 45-61). Soils criteria (EA, page 56-57) address equipment and how to minimize impacts. Stewardship contractors will address and compete in how they best provide restoration services. Stewardship contractors can provide a variety of low impact equipment that is light on the land.

Snags / Coarse Woody Debris (CWD)

Comment: ***In areas of higher density medium sized trees (16"-20.9" dbh), which occur in higher productivity areas, some aspen areas, and some meadow edges, retain a larger number of these medium sized trees and/or create snags. (#8-4)***

Response: The District Ranger has modified Alternative 2 to address this concern and leave more trees in moist meadow/aspen edges.

Comment: ***Because of the current low snag density, it is not sufficient to just protect existing snags. …any tree over 16" in diameter, and many trees in the 13"-14" diameter category, should either be topped to create a snag or cut and retained as down wood. The selection of trees to become either snags or CWD will depend in part on surrounding tree density; snags created should not interfere with the accelerated growth of nearby large ponderosa pine. Under this scenario, snag creation would not occur at the expense of live trees, since these trees are slated for cutting anyway under the Proposed Action. This is a win-win alternative, since it provides for more snags in the short-term while promoting the retention and growth of large snags in the future. (#2-29)***

Comment: ***In old-growth areas …retain all cut trees between 16"-21" dbh as down wood or snags, depending upon which is needed more. …these would provide needed habitat and avoid the appearance of large trees being cut for commercial gain. (#2-6)***

Comment: ***Trees in the 14"-22" diameter size class are not worth much more [economically] than 8"-14" diameter trees, and there are not many of them in the Project Area. Therefore …these trees might be "worth more" as snags/CWD rather than timber removed from the site. The reduced revenue would be offset by the reduced cost of not removing these trees (Table E-3, E-4). (#2-54)***

Comment: ***In secondary-growth treatment units, retain all cut trees over 16" dbh as either CWD or snags. Retain larger trees as snags (i.e., just top them) which may be of value to wildlife (cavity-nesting birds). These trees need not be 16" in diameter. (#2-5)***

Comment: ***My preferred alternative is Alternative 2…with modifications…The major modifications consist of:…(2) leaving 16"-21" diameter trees in place, and/or topping them to create snags, or cutting them and leaving them as CWD;…(#2-56)***

Comment: … ***the Lewis woodpecker, it is notable that this species uses snags less than 21". Nest trees can be as small as 17" diameter, and one of the "Biological Objectives" in old forest habitat is numerous snags per acre greater than in 9"in diameter. …my suggestion to top and leave some of the tress in the 10"-21" diameter range that are marked for removal, especially in the old-growth stands, would seem to benefit this species. …20% of the shrub understory should be left to benefit***

this species, perhaps by staggering mowing/burning treatments….The olive sided flycatcher would also appear to benefit from the creation of snags…(#2-44)

Comment: ***The text states that the flammulated owl can nest in medium to large snags 6.2-51.6" in diameter, and that the brown creeper uses nest trees ranging from 16"-42" in diameter. Assuming the 6.2" should be 16.2", both of these species can utilize snags smaller than 21". Therefore some (if not all) of the 16"-21" diameter trees marked for removal in old growth stands should be topped and left in place as snags. (#2-46)***

Response: Snag creation by people has not been demonstrated to provide quality habitat for cavity nesters. Mother Nature does a better job than we do. Trees excavated by woodpeckers generally have another condition such as heart rot, which helps woodpeckers as they create cavities in the softer dead wood. Similarly, trees that die naturally often succumb to beetle attacks, providing abundant food for woodpeckers. When we create snags out of healthy trees, there is no assurance that these trees will be utilized by beetles and provide foraging habitat for woodpeckers. There is also no assurance they will contract the fungus which causes heart rot and allows for the trees to be excavated for nesting.

The wildlife objectives for the project are not associated with economic purposes but to provide habitat for the various species that need ponderosa pine old growth, meadows, aspen, and riparian areas. The purpose of the project is to restore old-growth forest conditions by moving forested areas toward the structural attributes typical of fire maintained old growth ponderosa pine forests. Green trees in the project area can become snags and down wood as we reintroduce fire. Through time insects and diseases will also recruit snags in a natural arrangement. Approximately 29% of the project area will remain at higher densities and these areas will be more likely to produce snags at a higher rate as trees compete.

Three of the four woodpeckers analyzed within the project use green trees for foraging (white-headed woodpecker, Williamson's sapsucker, and pygmy nuthatch, EA pages 167-171) and although the literature describes a range of size classes they may use for nesting, they prefer to inhabit old growth stands that provide this variety. Thinning will not preclude use of these stands by these species and in the long-term will provide old growth with the range and variety in sizes of trees they prefer.

As the EA discusses on page 194, two species are old growth ponderosa pine obligates and depend on large trees and large snags (the white headed woodpecker and pygmy nuthatch). The EA, page 155 displays that for these two species second growth stands are providing habitat within the 30% tolerance level range for pygmy nuthatch and 80% tolerance level for the white- headed woodpecker.

As stated in EA on pg 152-153, DecAid is a planning tool intended to review snags and down wood levels on a landscape scale, not for an acre by acre assessment. We utilized it to compare existing condition to what DecAid research recommends for a landscape scale. Although we do not meet recommendations on the landscape within this project, the Proposed action will promote the development of recommended densities over time.

Comment: ***The [snag] data would have been better presented had Table W-5 and Table W-6 been combined for comparison purposed. …the snag density in the project area is low, such that the tolerance level is only 30% for various cavity-nesting birds. These birds are particularly important ecosystem components as many eat insects, a destructive force in these forests. Thus, a tolerance level of 80% should be the objective, in both the short-term and more distant future. (#2-27)***

Response: As stated in the EA, page 153 "DecAid was intended to review snags and coarse wood material on a landscape scale as it applies to watershed-sized landscapes. DecAid was used for the Glaze project solely as a comparison to describe the existing condition of snags and coarse woody material in the project area. DecAid was also used to compare the existing condition of the project area with habitat needs for species reflected in current research." These snag levels are not intended to be provided for every species listed within this project area as habitat does not favor every species, but to disclose what levels an area the size of watershed should provide in better suited habitat across a landscape.

The focal woodpecker species analyzed under this EA (white-headed Williamson's sapsucker, black-backed, and pygmy nuthatch) and occur within the project area, the black woodpecker is the only species purely dependent on forest insect outbreaks. The other woodpeckers favor old growth ponderosa pine habitats that will be maintained, including existing snags and CWM. Where old growth ponderosa pine habitats do not exist the intent of the project is to maintain most existing snags and down wood. We hope to provide more habitat for these species that are ponderosa pine obligates and need a variety of size classes as well as old growth trees and snags for foraging and nesting.

Comment: ***Under "Cumulative Effects", the statement "Within the old growth stands there is sufficient snag habitat that provides habitat for various primary and secondary cavity excavators and nesters" (p. 162) is flatly contradicted by table W-5 and W-6, as well as the author's own statements (a 30% tolerance level is not good enough). (#2-31)***

Response: Under the Deschutes Land and Resource Management Plan as amended by the Eastside Screens we must manage stands at 100% potential population levels. Managing snags for biological potential does not include foraging habitat. 100% potential population levels for snags equates to 3 snags per acre >10"dbh and 1 snag per acre > 20"dbh. Plot data for old growth stands showed that stand consisted of 4.61 snags per acre and of those 1.8 per acre were greater than 20" dbh. In EA units 5 and 7 one hundred percent tallies determined that those units contain 3.4 snags per acre with 1.5 snags per acre being greater than 20"dbh. Between the two sets of data it has been determined that old growth stand are representative of 100% of potential population.

The project does not propose to remove any snags but maintain old growth stands and promote the development of future old growth to provide habitat in the long-term. We do not recall or find where we state that "the 30% tolerance level is not good enough". The tolerance levels and snag habitat disclosed from the research based DecAid advisor is purely a comparison of the projects existing condition to snag levels disclosed from the research of various species use of habitat across the landscape. The DecAid advisor displays variations of snag use and densities by species across the landscape. It is not intended to be a measure of implementing snags level within a project are this small but to determine if the desired future condition of the project would provide habitat for ponderosa pine old growth dependent species through time.

Comment*: In the effects analysis, the potential loss of large snags to prescribed fire concerned me in this snag-deficient area (p. 157; 20% loss). For this project, mitigation measures therefore should include (1) protecting large snags during burn treatments (as if they were live trees), and (2) avoiding prescribed burning entirely in areas where there are significant snags. In addition, project design features should avoid the necessity of felling snags for safety or operational reasons. A "large" snag need not be over 20", as subsequent species discussions show; any snag which could potentially be used by any bird species for nesting/roosting should be protected. (#2-28)*

Response: Within the Environmental Assessment we have developed mitigation measures to minimize the loss of snags through implementation of the project (EA pages 53, 54). To minimize felling of snags that pose a safety hazard, the project will apply a buffer of live trees that will not be removed around existing snags to minimize the need to bring equipment close to snags that may pose a safety hazard. Snags >10" dbh are those that this mitigation measure applies.

Large soft snags are those types that we will generally lose during prescribed fire operations, therefore to mitigate this, we will consider creating fire line around those that we feel are at risk. Lastly, the project will consider implementing early spring fire when soil moistures are high to decrease the chances of losing snags during spring burns.

Comment: ***I was not convinced that the Proposed Alternative meets WL-37, which states "snags will be maintained to provide 100% of potential population levels of cavity nesting species." (p. 163). What tolerance level does 100% potential population levels correspond to? Also a certain number of snags will be lost due to prescribed fire, safety concerns, and design features. However, this project does not create any snags to make up for these losses. (#2-32)***

Response: This project will maintain snags as they currently exist by not targeting any for removal. The purpose of the project is to restore old-growth forest conditions in these areas by thinning, shrub mowing and prescribed fire.The project will provide a variety of size and structure of habitat over time which meets the intent of the WL-37. 100% potential population levels for snags equates to 3 snags per acre >10"dbh and 1 snag per acre > 20"dbh. The plot data for the project area determined the old growth stands consisted of 4.61 snags per acre and of those 1.8 per acre were greater than 20" dbh. In EA units 5 and 7 one hundred percent tallies determined that those units contain 3.4 snags per acre with 1.5 snags per acre being greater than 20"dbh. Within the mid seral stands plot data showed that 3.82 snags per acre exist with .42 snag per acre being >20" dbh. Between the two sets of data it has been determined that old growth stands are representative of 100% of potential population. It was noted within the EA that plot data was a conservative estimate and therefore under represents what exists. The project likely exceeds 100% potential population levels. Eastside Screens standards are to be met on a per unit basis. Because we are not targeting any snags or down wood to remove, we meet the intent of the screens.

Comment: ***With respect to W-38, the fact that all CWM (coarse woody material) will be retained does not ensure that the 20-40 lineal feet per acre density requirement will be met. The data presented in this section does not indicate that it presently exists. What are the mitigation measures, besides, spring burning, that ensure the required lineal feet of CWM will remain post-prescribed fire? (#2-33)***

Response: We are leaving higher densities of trees to recruit more snags and down wood over time. As trees grow in size they will provide larger more desirable snags and down wood. The decision maker has modified Alternative 2 to address this concern.

Insects and Disease

Comment: ***The Forest Service needs to move away from giving the "upper management zone" concept priority over all other concerns to justify logging of any stands denser than or approaching the density of this magical figure theoretically indicating the advent of bark beetle attack. As far as we know, this whole concept rests on only one study and does not necessarily apply universally. Nor should bark beetle be prevented at all costs as they are a natural disturbance in forests, unlike logging, which causes many additional impacts. (#1-3)***

Response: **Response**: We feel that the "upper management zone" concept is a good concept for characterizing susceptibility to bark beetles (see page 79 in the Glaze EA). This concept was described by Cochran et al in 1994 and was developed from pertinent published literature and his local research over the past decades correlating stand densities and stand growth and development with bark beetle attack. We don't not seek or desire, to prevent bark beetle attacks at all costs. We understand that bark beetles are natural disturbance agents and are an essential part of the ecosystem in the Glaze Project area. We expect bark beetles to be active in the areas that remain above the upper management zone even after treatment (no treatment clumps, riparian reserves and in other areas where diameter limits or retention of all "pre-settlement/old growth" trees cause the areas to remain above the upper management zone). We also expect bark beetles to be active in the older trees that are at the end of their natural life.

Comment: ***Under the second "measure" (p. 91), I can understand how reduced tree density would make older pines more resistant to bark beetles, but not growth rates. A discussion of how and why growth rates make these trees more resistant to bark beetles, with documentation, would have been relevant to any discussion of forest health. (#2-18)***

Response: Stand densities and its correlation to tree/forest health (e.g., susceptibility to bark beetles) is discussed in the EA on pages 78, 79, 86 and in the measures to evaluate alternatives (pages 88-97). To further clarify, tree growth is used as a surrogate to determine if trees have enough resources (water, nutrients and light) available to fight insect and disease attacks. Growth rates are a way to measure the health and vigor of trees. The rate of growth is an indication of the amount of resources that are available for trees to live, grow and provide defense mechanisms against insects and diseases.

In general, trees allocate their photosynthates (foods produced from photosynthesis) according to the following priorities (Oliver and Larson, 1996- EA reference): 1) maintenance respiration of living tissues, 2) production of fine roots and leaves, 3) flower and seed production, 4) primary growth (height growth, lateral branch growth and root extension) and 5) diameter growth and development of resistance mechanisms to insects and diseases. Diameter growth and development of resistance mechanisms to insects and diseases are approximately equal in priority and last in the hierarchy of photosynthate allocation, consequently, if trees can get enough resources for good diameter growth then, in general, we can expect that they will have enough resources to not be susceptible/vulnerable to insects and diseases, or have enough resources to defend themselves against insects and diseases.

Roads

Comments: …***we support the use of the proposed temporary modular "Acrow" Bridge across Indian Ford Creek that would eliminate some road reconstruction. However, utilize the existing roads for harvesting and other related project activities as much as possible. (#13-4)***

Response: All roads used for removing wood products are existing roads (EA, pg 26).

Comments: ***With respect to the "Existing Condition", it was unclear to me whether existing road density included both authorized and unauthorized roads, and if so , how the project would reduce this 4-mile density to the 2.5 miles allowed under Forest Plan guidelines. The Proposed Action (p. 26) description states "Temporary roads in the old growth stands would be subsoiled to eliminate them after work is completed". This aspect of the project should have been described and analyzed in the "Effects" section for Alternative 2. (#2-53)***

Response: Existing road densities calculations consider authorized roads. However, we have mapped all existing roads and plan to close unauthorized roads after project activities are complete to move toward the goal of lower road densities. Removing old roads and restoring them to a more natural condition is beneficial for hydrology, botany, wildlife and soils. Mitigation measures for weed and Heritage resources are included (EA, page 59, 56).

Education

Comment: ***Install educational "nature/management" trail. (#8-6)***

Response: Continued education and explorations of the project area are an interest of the partnership and we have applied for a grant that would install some educational signing.

Comment: …***noting that 70% of the fires in ponderosa pine forests were human caused as of 1998 (p.18) education (i.e., prevention) should also be an element of any WUI-related project. (#2-1)***

Response: Fire prevention education is on-going. After experiencing 6 wildfires in the past 6 years, 2 homes burning on the Ranch, and 2 evacuations, many people at Black Butte Ranch are highly aware of the issues of fuels reduction and have cleaned up their lots.

Permittee Use

Comment: ***(conversation record) re: the potential conflict between permitted recreation use in the project area and timing of harvest operations. He is concerned about public safety and timing of harvest operations. His season of use is between May and September. He believes there is little opportunity to reroute his use in the area based on his traditional use of loop trails in the area. He is also concerned about lost revenue. (#4-1)***

Response: Thinning (winter) and prescribed burning (spring or fall) will occur outside the permittees operating season in the summer. The permittee can monitor his use numbers (how many people go on guided horse rides). If his numbers are lower than expected, he can request "non-use" of his permit days as late as August and not be charged for them. The EA discusses mitigations on page 59-60 to

reduce impacts to the permittee and protect scenery. This also includes providing educational material to the permittee on the project and its goals to share with clients. A goal of the project is to improve views, scenery and the recreational experience.

Editorial / Technical

Comment: ***Under Alternative 3 description, there is a mistake under Unit 11, which is "Old Growth". Treatment should read "Old Growth Mosaic Thinning up to 6". (#2-4)***

Response: You are correct. This is a typographical error (typo).

Comment: ***The "Impacts to Soils" portion of the table (p. 67) was confusing. Alternative 1 states that 40% of the project area has detrimental soil conditions (roughly 440 acres), whereas Alternative 2 states that 70 acres of detrimental soil conditions exist. This needs to be clarified in the Record of Decision [Decision Notice]. (#2-14)***

Response: You are correct. This is a typographical error (typo). Forty percent of the area has sensitive soils (EA, page 244). None of the project area currently has evidence of detrimental soil conditions caused by natural disturbance (EA, page 246). Based on table 5-2 (EA, page 247) the amount of detrimental soil conditions currently existing after past treatments is 10.35 acres.

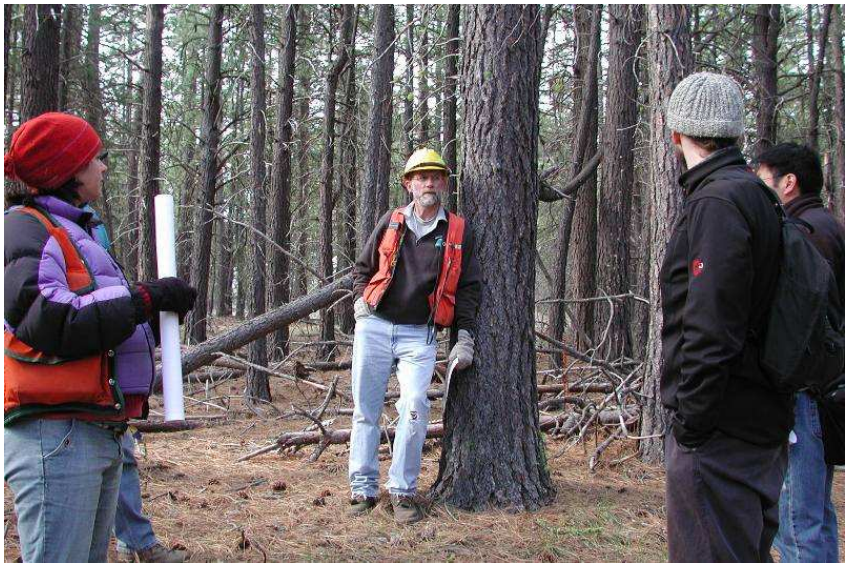
Comment: ***The first bulleted item on p 89 is, I believe, a significant typographical error. To make sense, it should read "(less than 21" diameter)". (#2-16)***

Response: You are correct. This is a typographical error (typo).

Comment: ***On p. 109, the statement "The project proposes treatment on managed stands that are pre-settlement" is not accurate; many of the managed stands in the Project Area are of recent origin. (#2-20)***

Response: You are correct. This is a typographical error (typo).

Collaboration



Comment: …***the Glaze Project is one that will likely enjoy widespread support due to both its collaborative nature and the expected end result. We believe this is the way forest and watershed management should be prioritized on the Deschutes National Forest. (#7-1)***

Comment: ***This project shows the greatest benefit of collaboration between multiple parties. An open process, where many people have a***

voice in determining a plan of action for our forests leads to better projects that benefit more stakeholders and lead to less controversy down the road. (#9-4)

Comment: ***We were very impressed with the level of collaboration among the various parties. We hope this can become a new model for other projects to follow. (#10-1)***

Response: We have enjoyed and greatly benefited from the collaboration. The collaboration is a purpose of the project as discussed on pages 12, 13 and 25. As the African proverb says "If you want to go quickly, go alone. If you want to go far, go together."

Comment: ***It is imperative, for this proposed project to attain its purpose and need goals, that the project: …Develop cooperative measures to be taken simultaneously on project vicinity private lands;…(#12-11)***

Response: Fuels reduction efforts on private land especially Black Butte Ranch are on- going. The Forest Service has cooperatively assisted Black Butte Ranch with this effort since the 1996 Black Butte ranch Fuels Reduction project addressed on page 122 of the EA.

Miscellaneous

Comment: …***we incorporate by reference all of our previous comments on this project, and the ecological and scientific content from comments on related thinning projects in the Deschutes region. (#12-3)***

Response: Previous comments provided on this project were used in developing key issues and alternatives. However, as per Title 36, Code of Federal Regulations, section 215.2 (36 CFR 215.2) "comments within the scope of the proposed action, specific to the proposed action, have a direct relationship to the proposed action, and include supporting reasons for the responsible official to consider."

Comment: ***We also incorporate the comments by LOWD-Blue Mountains Biodiversity Project as ecologically and legally we share many of these same concerns. (#12***-4)

Response: We have answered both sets of comments. Officially under Title 36, Code of Federal Regulations, section 215.6(a)(3)(v) it states, "Individual members of an organization must submit their own substantive comments to meet the requirements of appeal eligibility; comments received on behalf of an organization are considered as those of the organization only."

References:

Arkell and Richards. 1986. Short Duration rainfall relations for the western United States. Conference on Climate and Water Management – A Critical Era and Conference on the Human Consequences of the 1985's Climate, August 4-7, 1986, Asheville, NC.

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Sisters District Ranger Bill Anthony in Glaze old growth area