Appendix D

Response to Comments

Introduction

The following appendix displays Forest Service responses to public comments on the Moonlight Roadside Safety and Hazard Tree Removal Project (MSRHTRP) released October 2007, Moonlight and Wheeler Fires Recovery and Restoration Project DEIS released June 2008, and Moonlight and Wheeler Fires Recovery and Restoration Project revised DEIS released in February 2009. This appendix includes (1) a table listing the name and location of the commenter, the organization or entity each commenter represents, and the date of the comment, and (2) a narrative of comment statements and Forest Service responses organized by resource as presented in chapter 3. The comment statement is taken from the comment letters. A complete copy of each letter received is available in the project record, hereby incorporated by reference.

Summary of Comments Received

The Responsible Official received verbal or written comments from two agencies, nine organizations, and two individuals. The Council on Environmental Quality (CEQ) regulation 40 CFR 1503.4 states that an agency preparing a final environmental impact statement shall assess and consider comments both individually and collectively, and shall respond by one or more of the means listed below, stating its response in the final statement. Possible responses are to:

1) Modify alternatives including the proposed action,
2) Develop and evaluate alternatives not previously given serious consideration by the agency,
3) Supplement, improve, or modify its analyses,
4) Make factual corrections,
5) Explain why comments do not warrant further agency response.

Table D-1 – Commenters on the Moonlight Roadside Safety and Hazard Tree Removal Project and Moonlight and Wheeler Fires Recovery and Restoration Project DEIS and Revised DEIS.

Comment ID Code	Commenter	Entity	Location	Date of Comment
Agencies				
EPA	Kathleen Goforth	U.S. Environmental Protection Agency	San Francisco, CA	**8/18/2008 (DEIS); 4/6/2009 (RDEIS)**
USDI	Patricia Sanderson Port	U.S. Department of Interior, Office of Environmental Policy and Compliance	Oakland, CA	**8/11/2008 (DEIS); 4/6/2009 (RDEIS)**
Organizations				
SPI	Brian Wayland	Sierra Pacific Industries	Quincy, CA	**8/11/2008 (DEIS); 3/4/2009 (RDEIS)**
AFRC	Bill Wickman	American Forest Resource Council	Quincy, CA	**10/23/2007, 10/26/2007, 11/19/2007 (MSRHTRP); 3/4/2009 (RDEIS)**
CNPS	Vivian Parker	California Native Plant Society	Kelsey, CA	**8/11/2008 (DEIS)**
JMP-Hanson	Chad Hanson, Director	John Muir Project	Cedar Ridge, CA	**1/29/2008, 11/2/2007 (MSRHTRP); 8/11/2008 (DEIS); 4/6/2009 (RDEIS)**
JMP-Rhodes	Jonathan Rhodes	Planeto Azul Hydrology, John Muir Project	Portland, OR	**8/8/2008 (DEIS); 4/6/2009 (RDEIS)**
JMP-Bond	Monica Bond	John Muir Project	Unknown	**8/11/2008 (DEIS); 4/6/2009 (RDEIS)**
JMP-Voss	Rene Voss	John Muir Project	Davis, CA	**04/06/2009 (RDEIS)**
Lazzarino	Mike Lazzarino	Sierra Access Coalition	Quincy, CA	**10/14/2007 (MSRHTRP)**
HLP	David Allen	Honey Lake Power	Redding, CA	**10/22/2007 (MSRHTRP); 4/3/2009 (RDEIS)**

Comment ID Code	Commenter	Entity	Location	Date of Comment
EREYMT	Ren Reynolds	Enterprise Rancheria Estom Yumeka Maidu Tribe	Oroville, CA	**10/30/2007 (MSRHTRP)**
GR	Michael DeSpain	Greenville Rancheria	Greenville, CA	**10/22/2007 (MSRHTRP)**
MITCR	Michael DeSpain	Mechoopda Indian Tribe of Chico Rancheria	Chico, CA	**3/2/2009 (RDEIS)**
Individuals				
Stewart	Frank Stewart	Counties' QLG Forester	Chico, CA	**10/27/2007 (MSRHTRP); 8/7/2008 (DEIS); 3/24/2009 (RDEIS)**
Panghorn	Hugh Panghorn		Susanville, CA	**10/26/2007 (MSRHTRP)**

Comments and responses on the Moonlight Roadside Safety and Hazard Tree Removal Project (MSRHTRP) released October 2007, Moonlight and Wheeler Fires Recovery and Restoration Project DEIS released June 2008, and Moonlight and Wheeler Fires Recovery and Restoration Project revised DEIS released in February 2009. These comments are sorted by comment number in order of appearance under chapter 3 "Affected Environmental and Environmental Consequences (E – Economics; FV – Forest Vegetation; FFA – Fire, Fuels, and Air Quality; WL – Wildlife; WT – Watershed (Soils and Hydrology); B – Botany; R-Range; G- General).

ECONOMICS (E)

1. **There is no narrative explaining the methodology used to derive the figures in the economic analysis.** (DEIS: Vivian Parker, CNPS, pp. 1and 2)

Response: Refer to the Moonlight and Wheeler Fires Recovery Project Revised FEIS, section 3.2 "Economics", Appendix A "Economic Analysis", and the Economic and Social Environment Specialist Report. The Moonlight and Wheeler Fires Recovery Project Revised FEIS, section 3.2 "Economics" displays the affected environment, and the direct, indirect, and cumulative effects on economics by alternative. Appendix A displays the site specific analysis and calculations including values and costs. The economic and social environment specialist report further explains the affected environment, measurement indicators, historical timber harvest trends, analysis scope and methods, and economic consequences.

2. **The agency failed to include an analysis of the market for logs on the Plumas NF relative to the downturn in the housing industry.** (DEIS: Vivian Parker, CNPS, pg. 2)

Response: Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS, section 3.2 "Economics" and Appendix A "Economic Analysis". The values used in the economic analysis are derived from current market values for salvage sawlogs. Salvage logs are still being accepted by local regional mills including those in Quincy, Chester, Oroville, Lincoln, and Anderson, California.

3. **The "net value" for alternative A is only $462,064. This figure is not likely to contribute to long term economic stability in the region.** (DEIS: Vivian Parker, CNPS, pg. 2)

Response: Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS, section 1.3.1 "Purpose 1: Contribute to the Stability and Economic Health of the Rural Communities" and section 3.2 "Economics". Measurement indicators used to evaluate the contribution to the stability and economic health of rural communities are displayed in the RFEIS, section 1.3.1 and the effects by alternative are displayed in section 3.2 "Economics". The commenter used the value for "Sawlog Net Value" which is not a measurement indicator. The Moonlight and Wheeler Fires Recovery Project RFEIS, section 3.2 "Economics", table 11 displays the comparison of economic effects by alternative.

In table 11, the total direct and indirect number of jobs and total employee-related income is displayed by alternative. These measurement indicators are more appropriate to display effects on long term economic stability in the region. Alternative A would produce approximately 2,106 direct and indirect jobs and approximately $90,558,562 in total employee related income. Alternative A maximizes return to the economic health of rural communities relative to alternatives B and C.

4. **There is no explanation for the variables that go into creating the line item "Total employee-related income". The economic analysis should include a detailed narrative that explains the agency's methodology.** (DEIS: Vivian Parker, CNPS, pg. 2)

Response: Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS, Appendix A "Economic Analysis". An explanation for calculating total number of direct and indirect jobs and total employee-related income was added to the appendix.

5. **An economic emergency situation determination and exemption is not authorized here.** (DEIS: Chad Hanson, JMP, pp. 20 through 26)

   Federal regulation 36 CFR 215.10 governs such circumstances and an economic "emergency situation" is defined by 36 CFR 215.2 as a substantial loss of economic value to the Federal Government that would result from any delay. However, the economic analysis shows that the NET value of the project would be -13,683,323. Since the federal government would lose nearly 14 million dollars if the project is implemented, this circumstance does not fall within the definition of an economic emergency, given that far more money would be made (zero revenue versus negative 13.7 million dollars) doing nothing whatsoever in the project area.

Response: 36 CFR §215.2 defines an emergency situation as "a situation on National Forest System lands for which immediate implementation of all or part of a decision is necessary for relief from hazards threatening human health and safety or natural resources on NFS or adjacent lands; or that would result in substantial loss of economic value to the federal government if implementation of the decision were delayed."

Delay of implementation will result in the timber deteriorating substantially before it can be removed, impacting the revenue that can be derived from the sale of sawtimber. Given current market conditions, the additional deterioration resulting from the delay greatly increases the risk that the timber may not sell at all. The ability of the Plumas National Forest to accomplish the purpose and need for the project is therefore strongly tied to the timing of the salvage harvest

treatments, which in turn is dependent upon the NEPA timeline. The estimated loss of timber value resulting from this delay is estimated at $6 million to $12 million, with the resulting economic loss of stumpage receipts to the government estimated at $356,467 to $712,934.

This value, while substantial, does not adequately reflect the importance of this project to the local community and to the larger picture of forest management on the Plumas National Forest. Due to litigation of HFQLG projects on the Plumas, very little National Forest timber has been available over the past few years to sustain the local economy. This project is vitally important to sustaining the local industry and infrastructure that we need to carry out our fuels reduction and forest health objectives.

6. **Salvage logging has no place in forest restoration and recovery and the DEIS fails to provide a credible argument for its use other than for profit and commercial uses.** (DEIS: Vivian Parker, CNPS, pg. 5)

Response: Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS Purpose and Need for Action including section 1.3.1 "Purpose 1: Contribute to the Stability and Economic Health of the Rural Communities" and section 1.3.2 "Re-establish Forested Conditions". This is consistent with the SNFPA ROD (2004, pg. 52) which states that "Salvage harvest of dead and dying trees may be conducted to recover economic value of this material and to support objectives for reducing hazardous fuels, improving forest health, re-introducing fire, and/or re-establishing forested conditions."

7. **Please accept these comments in support of Alternative A because this restoration project will generate urgently needed social, economic, fire protection, and environmental benefits to the citizens, communities, businesses, and local governments in Plumas county.** (DEIS: Frank Stewart, QLG Counties' Forester, pg. 1)

Response: Comment noted.

8. **Local contractors have been forced to get out of the logging contracting business completely, relocate to other regions of the west in hopes of finding work, or dramatically cutting back in equipment and employees due to appeals and lawsuits.** (DEIS: Frank Stewart, QLG Counties' Forester, pg. 1)

Response: Comment noted.

9. **Further delays will only contribute to the reduction in value of the potential salvage timber. With current depressed lumber markets, further delays from appeals and lawsuits will only reduce pine log values further due to bark beetle blue stain activities currently happening in stands.** (DEIS: Frank Stewart, QLG Counties' Forester, pg. 1)

Response: Comment noted.

10. **Why are you leaving 54 percent of the high intensity acres un-salvage, restored, and reforested?**

    Is there an opportunity to selectively salvage the high value burned trees in this area and enhance the economics of the total project? Why are you only salvaging 52 percent of the

acres in PAC areas that were fire killed when this is an opportunity to enhance the economics of the project? (DEIS: Frank Stewart, QLG Counties' Forester)

Response: Salvage harvest treatments would be limited to those acres proposed within the alternatives as described in the Moonlight and Wheeler Fires Recovery and Restoration Project RFEIS section 2.2.

Areas proposed for salvage harvest were determined utilizing a number of factors including land allocation, size and scale of fire severity, vegetation type, stand volume and characteristics, logging system and transportation needs, economic feasibility, and resource concerns.

Reforestation of these areas are addressed under projects as discussed in the Forest Vegetation, Fuels, Fire, and Air Quality Report section 4.1.2 "Cumulative Effects common to all Alternatives". Refer to FV#29.

11. **Contractually required costs such as road maintenance, repairs, and preparation were not included in the appraisal.** (DEIS: SPI)

Response: The economic analysis is not a contract appraisal and is provided to compare the relative difference in alternatives and its effect on the economics and social environment of rural communities. Contract appraisals specific to timber sales would be completed during the implementation phase of the contract.

12. **Time is of the essence when dealing with perishable commodities such as timber.** (DEIS:)

    Delays in sale offering significantly jeopardize the DEIS objectives of economic health and rehabilitation due to product deterioration and loss of value.

Response: Comment noted.

13. **Utilizing a combination of logging systems to harvest fire killed timber is a feasible proposal.** (DEIS:)

    However, developing the proper balance to minimize logging costs and provide the greatest economic return is critical. Less expensive ground based methods must be included over a greater area to subsidize high cost logging methods such as helicopter, cable, and biomass operations. Timber subject to agreement, removal of biomass operations, and logging systems must be considered. Species, size class, area, or a combination of all options should be subject to agreement.

Response: Comment noted.

14. **Spending an excessive amount of money on unnecessary biomass treatment should be avoided. Today's market conditions make removal of biomass cost prohibitive.** (RDEIS: Brian Wayland, SPI)

Response: Comment noted.

15. **Please revise your pond values to be consistent with current economic conditions.** (RDEIS: Brian Wayland, SPI)

Response: The California Board of Equalization Yield Tax publishes information on timber values specific to our area with the understanding that the data is published every six months. The July – December 2008 values were used in the economic spreadsheet. The spreadsheet added the tractor cost to the yield tax values since the yield tax values subtract tractor log cost from the published values and then we took the log cost out as a Sawlog Total Cost in the spreadsheet. The economic analysis is not an appraisal but is a representation of the impacts that activities have on the economics of the project design. The economics help capture the affects of activities to the project design for the decision maker.

The Yield Tax values are delayed by six months and the use of another timber value still would not reflect the value of the timber due to the unknowns of value recovery, volume recovery, the ability to calculate planning timelines for implementing a decision and the significant cost of treatments changing over time.

Rather the economic analysis aids the user in determining the economic viability of the sale. Provides an indication of the desirability from an industry economic standpoint and provides an indication of its likelihood that the project will receive bids when offered.

This analysis started with the current known conditions and as the NEPA planning efforts progress over time then the information is updated. However, the economics becomes a snapshot as the NEPA planning is finalized and we move closer to implementation. When we prepare for implementation then an appraisal is developed using Region 5 Timber Evaluation Appraisal developed by the Region which uses Western Wood Products timber values along with the California Board of Equalization data.

16. **Once the level of decay is determined, harvest tree size and species can be made subject to agreement so that the purchaser will not be required to harvest trees with no value.** (RDEIS: Brain Wayland, SPI)

Response: Comment noted.

17. **Please modify the roadside salvage operations so that slope restrictions are consistent with the <35% timber harvest restrictions.** (RDEIS: Brian Wayland, SPI)

Response: Roadside hazard removal units have approximately 1200 acres with slopes greater than 35 percent slope. These areas will be treated by either extended endlining, use of winch and blocks or small yarder when the equipment can not leave the road due to the steepness of the cutbank or fillslope.

18. **Please revise statement in Table 4 to state that all new and temporary roads, landings, and skid trails pertinent to operations and designated by the sale administrator shall be sub-soiled following operations.** (RDEIS: Brian Wayland, SPI)

Response: The design statement corresponding with temporary roads and landings criterion in table 4 now reads, "Existing roads, skid trails, and landings would be utilized where possible to reduce the extent of detrimental disturbance to soils. To hasten restoration of disturbed soil areas, new temporary roads, skid trails, and landings would be subsoiled to a minimum of 18 inches in depth, reforested, and closed following the completion of harvest. Refer to appendix C for Best Management Practices (BMPs) and Standard Management Requirements (SMRs) specific to temporary roads and landings." (RFEIS, chapter 2, section 2.2.1.3, table 4, page 15).

19. **We support Alternative A. We believe in these economic times that job creation and employee income will be a strong measure of any forest recovery project.** (RDEIS: Max Merlich, CHI)

Response: Comment noted.

20. **The value is no longer there for this project as your analysis shows. However, this is not the result of helicopter logging cost it is the result of delay and deterioration**. (RDEIS: Max Merlich, CHI)

Response: Comment noted.

21. **Suggestion for stewardship contract with value of timber pays for most of the work and the rest paid for with dollars from government. We are confident that the USFS is receiving many hundreds of millions of dollars via Obama's stimulus bill.** (RDEIS: Maw Merlich, CHI)

Response: Comment noted.

FOREST VEGETATION (FV)

1. **The Project will create extreme fire risk which threatens current old forest habitat and remnant old Forest trees within and adjacent to the Project area.** (RDEIS: Rene Voss, JMP, p. 14)

Response: Refer to the RFEIS Section 3.3.2.1.1.3 Effects of post-logging slash treatments on fuel loading, and the Forest Vegetation, Fuels, Fire, and Air Quality report, Section 4.2.1 Direct and Indirect Effects of Salvage Harvest, Reforestation, & Roadside Hazard Treatments Common to All Action Alternatives-"Effects of Salvage Harvest and Reforestation on Fuels, Fire Behavior, and Air Quality", including table 4.9, and Section 5.1.5 Effects of post-fire logging and lop and scatter practices on surface fuels and fire behavior.

While surface fuel loads in lop and scatter material may contribute to an increase in total flame length (under 90th percentile weather conditions) and predicted percent of basal area killed (under 90th percentile weather conditions) immediately post harvest, this effect is not substantially different from the no action alternative within 10 years post harvest due to natural breakage of limbs and tops and snag fall of dead trees. In addition, Thompson et al (2007) offers that "young forests, whether naturally or artificially regenerated, may be vulnerable to positive feedback cycles of high severity fire, creating more early-successional vegetation and delaying or precluding the return of historical mature-forest composition and structure."

2. **The Forest Service must retain optimal levels of snags in severely burned forest.** (RDEIS: Rene Voss, JMP p. 15)

Response: Refer to the RFEIS Chapter 2, Section 2.2 Alternatives Considered in Detail. Snag retention levels for treatments under each alternative are described under the design elements. Under all alternatives snag retention levels comply with direction provided within the PNF LRMP (1988) as amended by HFQLG FEIS and ROD (USDA 1999a, 1999b, 2003b, 2003c) and the 2004 SNFPA ROD. In addition, snag retention levels under alternative D comply with direction provided within the PNF LRMP (1988) as amended by HFQLG FEIS and ROD (USDA 1999a, 1999b, 2003b, 2003c) and the 2001 SNFPA ROD.

The Forest Service is charged with managing the burned area for a variety of values and objectives including public safety, social and economic opportunities, recovery of mature forest conditions, and ecological values associated with the retention of snags in severely burned forest. The Forest Service examined the entire area affected by these fires and developed the alternatives to provide this balance, including leaving many areas untreated which would serve to meet the ecological needs of retaining areas with high densities of fire killed trees. Please refer to the RFEIS Section 3.3.2.1.1.9 including Table 35. Under all action alternatives 25 to 44 percent of areas that burned with high fire severity would be subject to post-fire harvesting treatments, depending on alternative. Conversely, under all action alternatives, 56 to 75 percent of areas that burned with high fire severity would be left untreated to provide high densities of fire-killed trees for ecological values.

3. **The RDEIS fails to ensure scientific accuracy and integrity in its assumptions regarding post-fire natural conifer regeneration.** (RDEIS: Rene Voss, JMP, p. 16)

Response: Refer to the RFEIS Section 1.3.3 Purpose 3: Re-establish forested conditions, Section 3.3.2.1.1.5 Effects of Reforestation on Fire Severity, and Section 3.3.2.1.1.7 Effects of Reforestation on Shrub Habitat, and the Forest Vegetation, Fuels, Fire, and Air Quality Report Section 3.1 Guiding Regulations, Section 3.2.3 Analysis Methods – Natural Regeneration Discussion and Assumptions, 4.2.1, Direct and Indirect Effects of Salvage Harvest, Reforestation, & Roadside Hazard Treatments Common to All Action Alternatives, and Section 5.1.6 Effects of reforestation on shrub habitat and future fire severity potential.

The RFEIS and Forest Vegetation, Fuels, Fire, and Air Quality report disclose scientific references, field observations, and assumptions regarding post-fire natural conifer regeneration. Also refer to comments #4, #11, and #12.

4. **Forests do not need intervention to reestablish forested conditions.** (RDEIS: Rene Voss, JMP p. 18)

Response: Refer to the RFEIS Chapter 1, Section 1.3.3 Purpose 3: Re-establish forested conditions, and Chapter 3, Section 3.3.2.1.1.5 Effects of Reforestation on Fire Severity, and Section 3.3.2.1.1.7 Effects of Reforestation on Shrub Habitat, and the Forest Vegetation, Fuels, Fire, and Air Quality Report Section 3.1 Guiding Regulations, Section 3.2.3 Analysis Methods – Natural Regeneration Discussion and Assumptions, 4.2.1Direct and Indirect Effects of Salvage Harvest, Reforestation, & Roadside Hazard Treatments Common to All Action Alternatives, and Section 5.1.6 Effects of reforestation on shrub habitat and future fire severity potential.

NFMA states that "it is the policy of the Congress that all forested lands in the National Forest System shall be maintained in appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans"

The Forest Vegetation, Fuels, Fire, and Air Quality Report, Section 3.2.3 Analysis Methods-Natural Regeneration Discussion and Assumptions discusses desired stocking levels, factors affecting natural regeneration, seed dispersal and seedling establishment, natural regeneration establishment in past local fires, and natural regeneration establishment in the Moonlight and Antelope Complex Fires. A strategy reliant solely on natural regeneration would likely not establish desired levels of stocking or desired species within acceptable temporal bounds considering the many variables that affect the success of natural regeneration. Considering this,

and the fact that naturally occurring regeneration may be damaged by salvage harvest operation proposed in the action alternatives, all action alternatives include reforestation treatments.

Reforestation activities would have a positive long-term effect by establishing forest vegetation types, such as Sierra Mixed Conifer Size Class 1, in areas that were forested prior to the fire. Without reforestation treatments, these areas would remain as non-forest vegetation types, such as montane chaparral, for substantially longer periods of time. Such reforestation efforts would contribute to landscape level plant and habitat diversity by re-establishing forested conditions while still retaining a notable shrub component for at least thirty years. In addition, reforestation treatments would comply with the NFMA in terms of the policy "to maintain appropriate forest cover in accordance with forest plans (16U.S.C. 1601 (d))".

5. **Roadside hazard reduction can be addressed by dealing with truly imminent hazards.** (RDEIS: Rene Voss, JMP p. 17)

Response: Refer to the RFEIS Chapter 1, Section 1.3.1 Purpose 1: Remove roadside safety hazards. The objective is to remove hazardous trees with structural defects likely to cause failure in all or part of the tree, which may fall and hit the road prism. It is important to remove these hazardous trees in a timely, efficient, and cost-effective manner so that safe access to affected areas can be restored and normal National Forest operations can be resumed.

The commenter asserts that "the forest service can adequately deal with any imminent roadside hazards by felling and leaving trees" as per the stipulation in the Moonlight Roadside Hazard litigation. The stipulation requires that the Forest Service shall be allowed to fell up to 50 trees in the Moonlight Roadside project area (approximately 4,389 acres along 123 miles of roads) in immediate danger of falling on roads or work areas provided that these trees have a major structural defect or severe lean toward the roadway or work area. In addition, the Forest Service shall provide a report to the plaintiff every two weeks identifying what, if any, trees were felled pursuant to this provision, where the trees are located in the project area, the dbh for each tree felled, and the reason why each tree was felled. If the limit of 50 felled trees is reached, the parties shall meet and confer if the Forest Service has need to fell additional trees.

Under the no action alternative, it is estimated that over 254,000 trees greater than 10 inches may fall within the 4,389 acre roadside area within the next two to three decades. Managing 123 miles of road under this stipulation, fifty trees at a time, would not facilitate removal of hazardous trees in a timely, efficient, and cost-effective manner so that safe access to affected areas can be restored and normal National Forest operations can be resumed.

6. **The Purpose and Need statements for the Moonlight-Wheeler Project is defined too narrowly because 1. Roadside hazard reduction can be addressed by dealing with truly imminent hazards; 2.Recovery of commercial value fails to acknowledge the need for protection and restoration; 3. Forests do not need intervention to reestablish forested conditions.** (RDEIS: Rene Voss, JMP, p. 17)

Response: Refer to the RFEIS Chapter 1, Section 1.3 Purpose and Need for Action. Action is needed to: (1) Remove roadside safety hazards, (2) Recover the value of fire-killed trees, and (3)Re-establish forested conditions. These needs for action are consistent with the PNF LRMP (1988) and the SNPFA ROD (2004).

(1) The Forest Service is required to maintain roads for access and safety, and the agency routinely removes hazardous trees as part of road maintenance (23 CFR 500.108, 36 CFR 212.4,

FSM 7700, FSH 6709.11, 27.62d, PNF Roadside/Facility Hazard Tree Abatement Action Plan 2008). It is important to remove these hazardous trees in a timely, efficient, and cost-effective manner sot that access to affected areas can be restored and normal National Forest operations can be resumed. In addition, refer to the FV#5.

(2) The Forest Service has a role to play in providing a wood supply for local manufacturers and sustaining a part of the employment base in rural communities (SNFPA 2004 ROD, page 4) and the SNFPA provides for salvage logging following wildfires for the objective of recovering economic value from fire-killed trees (SNFPA ROD 2004, page 52).

(3) The National Forest Management Act sets policy to maintain appropriate forest cover in accordance with forest plans. The Moonlight and Antelope Complex fires burned thousands of acres with high severity resulting in deforested conditions where seed source of desired species is insufficient to naturally regenerate these areas. As a result , shrub species would dominate these areas for decades and delay reestablishment of forested conditions. The early establishment of conifers through reforestation would expedite forest regeneration and the development of forested conditions. In addition, refer to FV#4.

7. **In its analysis, the Forest Service must consider the historic and current fire occurrence in the Sierra Nevada (Rene Voss, JMP p. 24-26) & High-severity fire occurrence, and montane chaparral habitat, have declined since fire suppression, and were more prevalent historically than they are now.** (RDEIS: Chad Hanson, JMP, p.7 through 9)

Response: The response to these comments (Voss and Hanson) is combined as the language in both comments is nearly verbatim.

Refer to the RFEIS Chapter 3, Section 3.3.1.1 Affected Environment – Forest Vegetation, Fuels, and Fire and to the Forest Vegetation, Fuels, Fire, and Air Quality Report, Section, 2.2 Post-fire conditions for discussion regarding the effects of the Moonlight and Antelope Complex Fires. Also, refer to Hanson (2007) expert witness in Case No. 2:06-CV-01740-FCD-KJM and Safford (2007) expert witness in Case No. 2:06-CV-01740-FCD-KJM and Safford (2008) expert witness in Case No. CIV-S-05-0205 MCE/GGH.

The submitted comments regarding "Historic and current fire occurrence in the northern Sierra Nevada" are nearly verbatim (with the exception of an added paragraph at the end regarding the Moonlight and Antelope complex fires and some additional references) from Hanson's 2007 expert witness in the Storrie Fire court case: United States vs. Union Pacific Railroad Company, Case No. 2:06-CV-01740-FCD-KJM in which he served as an expert witness for the Railroad company. In this expert report, Hanson uses the same argument to conclude that "the data do no indicate that the fire effects and patterns of the Storrie fire were outside the natural range of historic variability for this region. Indeed, the data indicate the opposite conclusion." The provided rationale and scientific literature presented were subsequently reviewed and responded to by the USFS Region 5 chief vegetation ecologist, Dr. Hugh Safford in his expert report for the same court case (Safford 2007, expert witness in Case No. 2:06-CV-01740-FCD-KJM). Safford's review "suggests that Hanson considerably exaggerates the extent of high severity" and Safford compares "data from the last two decades to show that the proportion of current fires burning at high severity is far higher that in the pre-settlement Sierra Nevada."
The real issue is whether the relative proportions of these severity classes are within bounds that allow for the retention and regeneration of sustainable forestland (including all of its seral stages), and that allow for the continued function of important ecosystem processes (water retention and

supply, soil processes, seedling dispersal, etc.). It is important to note that 2007 was a year with extraordinarily high fire severity, and the fires that occurred in Northern California were almost without precedent with respect to the area of fire that burned at high severity. Fire severity maps show that the Moonlight and Antelope Complex Fires burned at about 62% high severity. Another Northern California fire, the Angora, burned at about 52% high severity. In these cases, low and moderate fire severities were not predominant. (Safford 2008, personal communication).

The most current results in Miller et al. (2008) "provide the first broad-scale, quantitative demonstration that the extent of forest stand-replacing fire is increasing across the Sierra Nevada. Various lines of evidence suggest that contemporary fires in many low and middle elevation forest types in the study region burn at generally higher severities than before Euro American settlement (e.g.,Sudworth 1900; Leiberg 1902; Kilgore and Taylor 1979; Agee 1993; McKelvey and others 1996; Skinner and Chang 1996; Graham and others 2004; Arno and Fiedler 2005; Sugihara and others 2006; Beaty and Taylor 2007), and our data demonstrate that the magnitude of that departure is increasing with time."

In this particular project, the forest service's concern is with the sum of effects of extraordinarily high severity fires that occurred in the general project area. Concerning high severity patch sizes, recent large wildfires are very different from presettlement fires with respect to the average sizes of patches of high severity fire within the fire perimeter. High severity patches more than a few acres in size were unusual in fires in the Sierra Nevada before Euro American settlement (Show and Kotok 1924, Kilgore 1973, Stephenson et al 1991, Weatherspoon et al. 1992, Skinner 1995, Skinner and Chang 1996, Weatherspoon and Skinner 1996). Miller et al. (2008) have also shown that the average size of high severity patches in Sierra Nevada wildfires has increased by about 100% over the last 25 years. (Safford 2008 personal communication).

Considering the available science and when "assessed in the most ecologically relevant way" particularly the spatiotemporal extent of high severity fire effects, the Moonlight and Antelope fires are uncharacteristic of the "natural" fire regimes typically described for the dry Sierra Nevada forests. This is underscored by the fact that over 85 square miles burned within a three month period resulting in 75 to 100 percent basal area mortality of forest vegetation.

8. **Large snags take decades to fall and where any "hazard" tree removal is considered large snags do not pose any imminent hazard.** (RDEIS: Chad Hanson, JMP, p. 6)

Response: Refer to the RFEIS Chapter 2 Section 2.1 for Roadside Hazard Timber Harvest Treatment design elements for all action alternatives. Also, refer to the RFEIS Chapter 3 Section 3.3.2.1.1 Forest Vegetation, Fire, and Fuels, and the Forest Vegetation, Fuels, Fire, and Air Quality report Section 4.1.1Direct and Indirect Effects – Alternative B and Section 5.1.8 Snagfall Rates for discussion of the effects of roadside hazard tree removal treatments and snagfall rates.

Forest Service Handbook (FSH) 7709.58, FSH 6709.11, 27.62d, and the Plumas National Forest Roadside/Facility Hazard Tree Guidelines specify the need to remove hazardous trees with structural defects likely to cause failure in all or part of the tree, which may fall and hit the road prism or facilities, in a timely, efficient, and cost-effective manner. The Forest Service routinely removes hazard trees to maintain roads for access and safety. The Plumas National Forest Roadside / Facility Hazard Tree Abatement Action Plan (2008) and corresponding removal guidelines provides direction on hazard tree identification and abatement. It is reasonably anticipated that tree mortality associated with fire-injury may occur for years subsequent to the Moonlight Fire. Consequently, marking guidelines based upon tree mortality models from the latest scientific research by Fire Science Laboratory at the Rocky Mountain Research Station

(Hood et al. 2007) were developed for this project in conjunction with Pacific Southwest Region Forest Health Protection Staff and would also be used to identify dying trees because these guidelines are specifically designed for fire-injured trees.

Discussion, modeling, and effects of snagfall and roadside hazard tree removal are disclosed within the RFEIS. While it is generally recognized that larger snags have longer snagfall rates, it may be difficult to predict exactly when a particular snag may fall. Snag fall can be compounded by structural defects, site conditions such as slope and soil properties, as well as other biotic elements such as wind. This proved to be true in the Spring of 2009 when additional, large and small snags fell onto the travel routes within the project area. In addition, trees may fail entirely or in part; while snag fall rates usually focus on the entire stem of the tree; parts such as limbs, tops, and logs may fail much sooner than timeframes described under the literature for snag fall rates. Hazard tree removal guidelines recognize that failing limbs and tops have the capacity represent a hazard to the target as does the entire tree.

9. **Natural post-fire conifer regeneration is vigorous following high-severity fire, and artificial replanting is unnecessary.** (RDEIS: Chad Hanson, JMP, pp. 9 through 11)

Response: Refer to the FV #4 and #12. In addition, refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report Section 3.1 Guiding Regulations, Section 3.2.3 Analysis Methods – Natural Regeneration Discussion and Assumptions, 4.2.1Direct and Indirect Effects of Salvage Harvest, Reforestation, & Roadside Hazard Treatments Common to All Action Alternatives, and Section 5.1.6 Effects of reforestation on shrub habitat and future fire severity potential for further discussion.

The commenter bases his concerns on his analysis and expert testimony in the case: United States v. Union Pacific Railroad Company, No. 2:06-CV-01740 FCD/KJM) (Hanson 2007). The Forest Service's chief vegetation ecologist for the Pacific Southwest region reviewed this expert testimony (Safford 2007, Safford 2008) and found that "Hanson's sample is much too small to make any valid interpretations of patterns across the reforestation area."

In addition, the commenter cites Shatford et al. (2007) in finding abundant conifer regeneration far distances from the nearest live seed tree, however, this research also recognized that "the establishment of conifers after wildfire was highly variable from year to year, and place to place, resulting in high variation in tree density and size." These findings are consistent with Forest service studies in past fire areas looking at how much seedling regeneration is actually occurring within burned landscapes. These studies underline "the extreme variability in postfire conifer regeneration that burned areas experience in California" and display that "Hanson's statement that conifer regeneration is highly abundant in most burned areas is not supported by the data" (Safford 2008).

Considering this and project specific analysis, along with numerous site visits by district, forest, and regional forest service personnel specializing in reforestation, a strategy reliant solely on natural regeneration would likely not establish desired levels of stocking or desired species within acceptable temporal bounds due to the many variables that affect the success of natural regeneration.

10. **The Forest Service's proposed activities, including "salvage" logging and resulting large-scale elimination of montane chaparral habitat, would be ecologically devastating. (Rene Voss, JMP p. 29-31) & Artificial replanting is unnecessary and is**

ecologically destructive to montane chaparral habitat. (RDEIS: Chad Hanson, JMP, p.9 through 11)

Response: Refer to the FV#4, and #11. In addition, refer to the RFEIS Chapter 3, Section 3.3.2.1.1.5 Effects of Reforestation on Fire Severity, and Section 3.3.2.1.1.7 Effects of Reforestation on Shrub Habitat for the effects of reforestation treatments on non-forest vegetation such as montane chaparral habitat.

The commenters raise concerns that salvage logging and artificial replanting is ecologically destructive to montane chaparral habitat. Prior to the fires, the montane chaparral habitat type accounted for 1,338 of all national forest lands, and after the fires, the montane chaparral habitat type accounts for 39,023 acres of all national forest lands within the fire areas.

Reforestation treatments would occur on approximately 34 (alternative C) to 42 percent (alternatives A, D, and E) of all public and private lands that burned in the Moonlight and Antelope Complex fires. The remaining lands within the fire areas (58 to 66 percent, depending on alternative) would recover naturally without any reforestation activities. In these areas, shrub habitat would develop where basal sprouts or seed source occurs, thus contrary to the commenter's statement, there will be abundant montane chaparral habitat for several decades in the project area. In addition, it is reasonably expected that reforested areas would continue to have substantial shrub components characteristic of montane chaparral, particularly for the first twenty to thirty years of growth, and potentially longer in the absence of release treatments, or in locations of low tree survival.

11. **Region 5 has failed to move beyond outdated management standards for reforestation. For example, some reforestation policies written in the 1980's call for tight spacing between trees consistent with the agency's timber focus…and many procedures do not reflect emphasis on ecosystem health. Plantations create an unnatural forest structure that contributes to increased fire hazards throughout the Sierra Nevada, and their high presence through the forest makes it all but impossible to permit a return to the natural fire return interval.** (DEIS: Vivian Parker, CNPS)

Response: The Moonlight and Wheeler Fires Recovery and Restoration Project is in compliance with management standards for reforestation in Region 5 as described in the Forest Service Handbook (FSH) 2409.26b.

Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS section 3.3.2.1.1.6 and to the Forest Vegetation, Fuels, Fire, and Air Quality Report section 3.2.3 "Natural Regeneration Discussion and Assumptions", section 4.2.1 "Effects of Reforestation on Forest Vegetation", section 4.2.2 Cumulative Effects of Action Alternatives, and section 5.1.6 Effects of reforestation on shrub habitat and future fire severity potential.

Under all action alternatives, treatment units would be reforested with a mixture of species native to the ecological stand type as described in the Forest Vegetation Report section 4.2.1 utilizing the wide-spaced cluster planting design. This cluster planting is designed to establish planted seedlings in order to meet desired stocking levels or desired species within acceptable temporal bounds while allowing for any natural regeneration that may occur. This would enhance re-establishment of forested conditions while allowing for and mimicking the heterogeneity and pattern of a naturally occurring forest.

Under the reforestation design for all action alternatives, clusters of three trees per cluster would be spaced 25-33 feet apart, resulting in a stocking of approximately 100-200 trees per acre. Typical high density plantations that have close spacing would burn under high severity (Stephens and Moghaddas 2005b; Thompson et al. 2007) and this is acknowledged. High density plantations would not be established under any action alternatives, though variable density stands of naturally regenerated conifers would likely occur on sites favorable for natural regeneration and would also be susceptible to burning under high severity (Thompson et al. 2007).

Trees planted utilizing the wide-spaced cluster arrangement are expected have a lower likelihood of propagating a high severity crown fire under 90th percentile weather conditions as their live crowns would be well separated. One to two years following planting, a manual release would occur around the clusters to reduce competition with grasses and brush and enhance tree survival and growth. This reduction of fine shrub, grass, and associated surface fuels around the planted clusters would break up the continuity of shrub and surface fuels, and would contribute to a reduction in flame lengths and rates of spread in the immediate vicinity of planted trees, leading to decreased potential for torching of individual trees.

12. **The agency's proposal of salvage logging and reforestation negatively impacts early seral shrub species habitat. The agency's proposal leap frogs over approximately 30-50 years of the most productive period of time during forest development, after fire, thereby contributing to declines in plant diversity and wildlife habitat. This is a cumulative impact that contributes ultimately to the demise of species.** (DEIS: Vivian Parker, CNPS)

Response: Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS section 1.3.3 "Purpose 3: Re-establish Forested Conditions", Chapter 3, Section 3.3.1.1, and the Forest Vegetation, Fuels, Fire, and Air Quality Report Section 2.2 including Figures 2.1, 2.2, and 2.3, section 4.2.1 Direct and Indirect Effects of Salvage Harvest, Reforestation, & Roadside Hazard Treatments, and Section 5.1.6 Effects of reforestation on shrub habitat and future fire severity.

The Moonlight and Wheeler Fires Recovery Project RFEIS section 1.3.3 "Purpose 3: Re-establish Forested Conditions" discusses the objective and need for reforestation activities.

The effects of high fire severity within the Moonlight and Antelope Complex fires resulted in drastically changing forest vegetation type, structure, and density within the burned area as shown in figures 2.1, 2.2, and 2.3 of the Forest Vegetation Fuels, Fire, and Air Quality Report. This change in vegetation type, structure, and density is further quantified in Table 2.3 of the Forest Vegetation, Fuels, Fire, and Air Quality Report. Across the analysis area for forest vegetation, nearly 52,000 acres of forested stands pre-fire were converted to non-forest vegetation types as a result of the fire.

Tables 4.13 and 4.14 in the Forest Vegetation, Fuels, Fire, and Air Quality Report display percent of acres cumulatively affected by the proposed and current post-fire harvest treatments and reforestation treatments for all alternatives. Refer to comment #12.

In addition, the Forest Vegetation, Fuels, Fire, and Air Quality Report discusses the effects of reforestation on shrub habitat and future fire severity (Section 5.1.6). The total cumulative reforestation activities would be approximately 44 percent (under alternative C) to 56 percent (under alternatives A, D, and E) of all lands within the Moonlight and Antelope Complex fire areas that burned under high fire severity (table 4.14). The remaining public lands within the Moonlight and Antelope Complex fires area that burned would recover naturally without any

reforestation activities. In these areas, shrub habitat would develop where basal sprouts or seed source occurs.

Reforestation activities would have a positive long-term effect by establishing forest vegetation types, such as Sierra Mixed Conifer Size Class 1, in areas that were forested prior to the fire. Without reforestation treatments, these areas would remain as non-forest vegetation types, such as montane chaparral, for substantially longer periods of time. Such reforestation efforts would contribute to landscape level plant and habitat diversity by re-establishing forested conditions while still retaining a notable shrub component for at least thirty years. In addition, reforestation treatments would comply with the NFMA in terms of the policy "to maintain appropriate forest cover in accordance with forest plans (16U.S.C. 1601 (d))".

The FEIS (Section 3.4.2.5.3) and the Management Indicator Species Report (pgs. 15, 17) summarize and discuss the impacts to early seral habitat and associated species as a result of implementing the proposed action and alternatives. Due primarily to reforestation efforts, implementation of all action alternatives would result in a decline in montane chaparral habitat in the analysis area (MIS Report, Table 4). While reforestation activities would enhance the re-establishment of open canopy forested conditions and enhance the development of mature forest conditions, it is reasonably expected that these plantations would continue to have substantial shrub components, particularly in the first twenty to thirty years of growth (FEIS, Section 3.4.2.5.3). Consequently, it was determined that the cumulative change in the distribution and amount of this early seral habitat type will not alter the existing trend in the habitat nor will it lead to a change in the distribution of associated wildlife species across the Sierra Nevada bioregion (MIS Report, pg. 17).

In addition, please refer to comment FV #4 and #22.

13. **The likelihood of future management reliance on herbicides to eliminate native non-commercial species competition in tree plantations and the resulting impacts on declining wildlife was not addressed in the DEIS.** (DEIS: Vivian Parker, CNPS)

Response: Refer to the Moonlight and Wheeler Fires Recovery and Restoration Project RFEIS Chapter 2, Section 2.2 Alternatives Considered in Detail. The Moonlight and Wheeler Fires Recovery Project does not propose to apply herbicides or to eliminate native non-commercial species competition in tree plantations. Reforestation activities include a manual grubbing and/or removal of competing vegetation down to mineral soil five feet in diameter around the planting site. Refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report Section 5.1.6 Effects of reforestation on shrub habitat and future fire severity potential. Assuming 100 to 200 trees per acre would be planted and grubbing would occur around these planted seedlings, manual removal of grasses, forbs and shrubs could occur on 18 to 36 percent of each planted acre. This effect is expected to be negligible as grass, forbs, and shrub vegetation would remain on 64 to 82 percent of each planted acre. In addition, the effect of grubbing would be short-lived as vegetation re-colonizes the grubbed area. However, the long-term beneficial effects of these treatments include enhanced survival and growth of planted tree seedlings.

In addition, please refer to the RFEIS, Appendix B: Past, Present, and Reasonably Foreseeable Future Projects. Currently, there are no proposals for herbicide use. Future management proposals for planted conifer seedlings will largely depend on variable factors such as seedling survival, establishment of shrub species, and funding, which are unknown at this time. Any future management actions that are proposed beyond of the scope of reasonably foreseeable projects

would undergo appropriate project design and evaluation to comply with NEPA and other laws, policy, and regulations. This would include analysis of effects to resources.

14. **The DEIS failed to utilize ecological information regarding the benefits of fire for forest ecosystem health and ecology.** (DEIS: Vivian Parker, CNPS)

Response: Refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report sections 2, 2.1, and 2.2.

The ecological benefits of fire for forest ecosystem health are recognized particularly within areas that burned with low to moderate fire severity, as well as patches that burned with high severity, which would be characterized by a low to mixed severity fire regime typically described for the Northern Sierra Nevada forests. However, as discussed in the affected environment section (section 2, 2.1, and 2.2) of the Forest Vegetation, Fuels, Fire, and Air Quality Report and the RFEIS (section 3.3.1), over 54,000 acres or 62 percent of the total area of the fires burned under high severity. This is equivalent to over 85 square miles that burned at high severity within a three month period resulting in 75 to 100 percent basal area mortality of forest vegetation. While the occurrence of fire on the landscape is a natural disturbance that is essential to ecosystem function, the large scale of these fires, including the vast areas that burned under high severity under such a short timeframe, are well outside the natural range of variability in fire size and severity experienced on the Plumas National Forest in the past and are uncharacteristic of the "natural" fire regimes typically described for the dry Sierra Nevada forests (Miller et al. 2008, Safford 2007, Safford et al. 2007 , Moody and Stephens 2002, Beatty and Taylor 2007, Gruell 2001, McKelvey et al. 1996, Weatherspoon 1996, Weatherspoon and Skinner 1996, Skinner and Chang 1996, McKelvey and Johnston 1992, Leiberg 1902).

In addition, proximity and adjacency of these two fires and similar severity effects has had a major effect on this landscape. The Forest Vegetation, Fuels, Fire, and Air Quality report displays and quantifies these landscape level impacts as a result of these fires in section 2.2, and the discussion of the No-Action alternative in section 4.1 displays how the occurrence of such large spatial scale of high severity fire within such a short temporal timeframe has negative environmental effects.

The Moonlight and Wheeler Fires Recovery Project FEIS and the Biological Assessment/Biological Evaluation discuss the benefits of burned forests to wildlife species, in particular for early post-fire specialists such as the black-backed woodpecker, olive-sided flycatcher, and other cavity nesting species. Refer to the Moonlight and Wheeler Fires Recovery Project FEIS Chapter 3, sections 3.4.1.3.1 and 3.4.2.5.3. In addition, refer to the Moonlight and Wheeler Fires Recovery Project Migratory Bird Report, pg. 7.

Refer to FV #20 and #25.

15. **The DEIS contained no analysis of the impacts on the project upon climate change, and the role of climate change relative to future fires and reforestation**. (DEIS: Vivian Parker, CNPS)

Response: The Moonlight and Wheeler Fires Recovery Project RFEIS and the Forest Vegetation, Fuels, Fire, and Air Quality Report discuss the effects on Air Quality as a result of proposed activities. Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS Chapter 3, section 3.3.1.2 "Air Quality", and section 3.3.2.1.2 "Air Quality". In addition, refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report sections 2.3 "Air Quality Current Conditions",

3.2 "Methodology", 4.1 "No Action Alternative: Alternative B", 4.2.1 Effects of salvage harvest and reforestation on fuels, fire behavior, and Air Quality, Table 4.10 "Predicted emissions for all piles burned in the analysis area", and 5.1.1 Effects of burning and pos-fire logging on air quality and dust production.

The Forest Vegetation, Fuels, Fire, and Air Quality report section 3.2 discusses the analysis area for air quality resources. The air quality analysis considers potential impacts to communities within 20 miles of the project area as these are the communities that would be impacted by activities within the alternatives.

The impacts of the project upon climate change and the role of climate change relative to future fires and reforestation is outside the scope of this project.

Refer to FV #30.

16. **The Plumas NF EIS must disclose direct, indirect, and cumulative effects of the use of borax on tree stumps, as well as the role that continued salvage logging and plantation implementation is having on the spread of the disease and the impact on forest ecology. An alternative should be considered that utilizes inoculation of stumps with beneficial, competitive fungus as is practiced in the UK and Europe.** (DEIS: Vivian Parker, CNPS)

Response: Refer to the Moonlight and Wheeler Fires Recovery and Restoration Project RFEIS Chapter 2, Section 2.2 Alternatives Considered in Detail. The Moonlight and Wheeler Fires Recovery and Restoration Project does not propose to apply borax to stumps.

Also, refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report section 4.2.1 Effects of Reforestation on Forest Vegetation for the discussion on *Heterobasidion annosum* and impacts on forest vegetation.

An alternative that utilizes inoculation of stumps with a competitive, nontoxic fungus (*Phlebiopsis gigantea*) as is practiced in the UK and Europe may not be a viable treatment. The Phlebiopsis fungus is not available or registered for use in California and may not be a viable treatment due to seasonality, cost, and concerns regarding the introduction of a nonnative organism into the ecosystem. In addition, the effectiveness of these practices has not been established in forests in the western United States.

17. **The creation of clearcuts followed by herbicide promotes the growth of gooseberry and currants, which are vectors of sugar pine or white blister rust. The EIS must address and analyze the spread of blister rust.** (DEIS: Vivian Parker, CNPS)

Response: Refer to the Moonlight and Wheeler Fires Recovery and Restoration Project RFEIS Chapter 2, Section 2.2 Alternatives Considered in Detail. The Moonlight and Wheeler Fires Recovery and Restoration Project does not propose to apply herbicides. In addition, forest practices proposed under the Moonlight and Wheeler Project would not promote vectors of white pine blister rust; In fact, reforestation activities propose to plant rust-resistant sugar pine seedlings which would have long term beneficial effects in terms of limiting the spread of the disease within the project area.

18. **The Forest Service misrepresents the acceptable scope of analysis and alternatives by misrepresenting the National Forest Management Act (NFMA). The DEIS**

claims (p. 2) that the areas burned at high severity have been "deforested". First, the DEIS does not explain how this assertion applies to areas with, for example, 50-75% tree mortality, which are also proposes for salvage logging, despite the fact that they have many surviving trees. The DEIS's characterization of the areas burned at 50-100 percent mortality as having been "deforested" is a blatant factual inaccuracy. (DEIS: Chad Hanson, JMP)

Response: Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS section 1.3.3 "Purpose 3: Re-establish Forested Conditions" and the Forest Vegetation, Fuels, Fire, and Air Quality Report sections 2.2 "Post-fire conditions", 3.1"Guiding Regulations – National Forest Management Act", 3.2.3 "Analysis Methods – Natural Regeneration Discussion and Assumptions", and 3.2.4 "Design Criteria".

The Moonlight and Wheeler Fires Recovery Project RFEIS section 1.3.2 "Purpose 3: Re-establish Forested Conditions" describes the Objective ("Re-establish forested conditions") and the Need for Action.

The National Forest Management Act (NFMA) of 1976, including its amendments to the Forest and Rangeland Renewable Resources Planning Act of 1974 state that it is the policy of the Congress that all forested lands in the National Forest System be maintained in appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans (16 U.S.C. 1601 (d)).

The rapid satellite based assessment does consider the severity class 50 to 100 percent Basal area mortality to be in deforested condition (Landram 2008, personal communication; Moonlight and Antelope Adjunct Silviculturist BAER reports 2007). The areas described as being in a deforested condition within the project area do not have enough surviving trees to be considered forested or to contain appropriate forest cover.

As discussed below, much of the moderate fire severity (50 to 75 percent basal area mortality) occurs around the edges ("the rind") of large areas of high fire severity (75 to 100 percent basal area mortality) or as small islands within these large areas of high fire severity where the vast majority of trees were killed by the fire (Forest Vegetation, Fuels, Fire, and Air Quality Report section 2.2 "Post fire Conditions").

The treatment units were designed to encompass large areas of high severity where the vast majority, if not all, trees within the stands are dead and economic recovery treatments are appropriate. These units include small inclusions of areas that burned with moderate fire severity (50 to 75 percent basal area mortality) which occur around the edges ("the rind") or as islands around/within larger areas that burned with high fire severity. However, the emphasis of the salvage and reforestation treatments are focused on the larger areas that burned with high severity. Within salvage harvest units that have 50 to 75 percent basal area mortality, only fire-killed trees would be harvested within the silvicultural prescription.

Refer to FV #19 and #26.

19. **The Forest Service misrepresents the acceptable scope of analysis and alternatives by misrepresenting the National Forest Management Act (NFMA). NFMA contains no requirement to salvage log and artificially replant (with conifers) post-fire areas within 5 years. There is no requirement in NFMA to reforest areas within 5 years**

post-fire in severely burned areas. (American Forest Resource Council v. Conroy, 2005 WL 771577 (D. Or.) The court found that, even if section 1601(d)(1) was enforceable (which the court did not find), there is no deadline for reforestation in the NFMA language for post-fire areas (unlike in areas that have been clearcut—see 16 U.S.C. 1604g—which should be reforested within 5 years, generally). Since the Forest Service cannot establish that these areas would never reforest naturally, since there is no timeline in the statute, and since there is no caselaw finding that the language in section 1601(d)(1) is enforceable, there is no requirement to replant heavily burned areas with conifers, and natural conifer regeneration is allowed under the statute. (DEIS: JMP)

Response: Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS section 1.3.3 "Purpose 3: Re-establish Forested Conditions" and the Forest Vegetation, Fuels, Fire, and Air Quality Report sections 2.2 "Post-fire conditions", 3.1"Guiding Regulations – National Forest Management Act", 3.2.3 "Analysis Methods – Natural Regeneration Discussion and Assumptions", and 3.2.4 "Design Criteria".

The Moonlight and Wheeler Fires Recovery Project RFEIS section 1.3.3 "Purpose 3: Re-establish Forested Conditions" describes the Objective and the Need for Action. In addition, the Forest Vegetation, Fuels, Fire, and Air Quality Report displays in section 3.1 the guiding NFMA regulations including relevant excerpts from NFMA.

It is acknowledged that NFMA contains no requirement to salvage log and plant fire areas. However, NFMA sets policy to maintain appropriate forest cover in accordance with forest plans (16 U.S.C. 1601 (d)) and requires best effort to reforest within 5 years after harvest (16 U.S.C. 1605 (g) (3) (e)). As it relates to wildfires (or any other natural disturbance) that create openings in the forest that need reforestation, it is agency policy to consider salvage harvest the functional equivalent of a regeneration harvest and to make a best effort to recover forested conditions within 5 years after harvest (FSM 2470).

In addition, 16 USC 1601 requires an annual report to Congress showing areas in need of reforestation treatment. The purpose of this report is to provide for timely reforestation treatments to maintain lands in appropriate forest cover. This statute also requires treated areas to be examined in the first and third years following treatment and for any areas that are not certified following these exams to be scheduled for prompt treatment. This language conveys clear Congressional intent that reforestation treatments to restore appropriate forest cover be done promptly so as to prevent the development of a backlog. The intent behind section 1601(d)(1) required needs report is to understand the magnitude of areas that need reforestation and allow consideration of budget appropriations for that purpose. While this section of NFMA installed a planning requirement, the court ruling in Sierra Club v. Cargill, 732 F. Supervisor. 1095 (D. Colo. 1990) judged that the statute requires the Forest Service to "use its best efforts and judgment to assure that restocking occurs within five years."

The commenter's inferred alternative (let nature take its course) would run counter to this expressed intent on those areas where management intervention is needed to restore appropriate forest cover. Time is of the essence in restoring appropriate forest cover; Prompt action is needed to insure that desired species can be propagated before these growing sites are occupied by other species that will make it harder for desired species to become established. The commenter's "let nature take its course" strategy is a recipe for making the job of restoring appropriate forest cover more complex and costly because of the increased difficulty in getting desired vegetative species reestablished.

Refer to FV #4, #9, and #18. .

20. **Moderate and high severity patches are not only natural in Sierra Nevada forests, but are also some of the most ecologically rich, biodiverse, and rare FOREST habitat types in the Sierra Nevada. Burned forests are exceptionally important wildlife habitat that must be conserved. The DEIS fails to recognize this habitat type (moderate and high severity burned stands) as being important to maintain across the landscape at levels. It is critically important not only to maintain existing natural montane chaparral habitat, but also to increase this habitat type across the landscape.** (DEIS: Chad Hanson, JMP)

Response: Refer to the Moonlight and Wheeler Fires Recovery Project RFEIS section 1.3.3 "Purpose 3: Re-establish Forested Conditions", section 3.3.1.1, tables 13 and table 17, and the Forest Vegetation, Fuels, Fire, and Air Quality Report section 2.2 "Post-fire conditions" including Figures 2.1, 2.2, and 2.3, section 4.2.3 "Cumulative Effects Common to all Action Alternatives", Section 5.1.1 Effects of post-fire logging of fire-killed trees in high severity areas, Section 5.1.2 Effects of post-fire logging on changes in diversity of fire effects across the landscape, and, section 5.1.6 Effects of reforestation on shrub habitat and future fire severity

It is acknowledged and recognized that moderate and high fire severity patches are part of the fire regime of the Sierra Nevada forests (Beaty and Taylor 2001, Beaty and Taylor 2007); However, within the context and scale of the Moonlight and Antelope Complex fires, the proportion of high fire severity that occurred is well outside the range of natural variability as discussed in the RFEIS section 3.3.1.1 and the Forest Vegetation, Fuels, Fire, and Air Quality report section 2.2 (Also refer to FV #25). Considering this, and NFMA direction to maintain lands in appropriate forest cover (Refer to FV #18 and #19), the purpose and need for the Moonlight and Wheeler Fires Recovery and Restoration project includes re-establishing forested conditions (Moonlight and Wheeler Fires Recovery Project RFEIS section 1.3.3).

Refer to FV #10 and #12. Montane chaparral habitat increased dramatically due to the post-fire effects; under all action alternatives, large untreated areas on public lands would allow for the persistence of natural montane chaparral habitat on the landscape level.

The Moonlight and Wheeler Fires Recovery Project FEIS and the Management Indicator Species Report analyzes the direct, indirect, and cumulative effects of the action alternatives on the black-backed woodpecker, a post-fire specialists that is closely associated with unharvested fire-killed large tree stands. Refer to the FEIS, Chapter 3, sections 3.4.2.1.2.1, 3.4.2.3.2.1, 3.4.2.4.2.1, and 3.4.2.5.2.1. While the fires created habitat for some early seral species, it also decreased habitat for late-seral habitat associated species such as the California spotted owl, northern goshawk, and mesocarnivores. As the historic fire regime is thought to have been one with smaller patch sizes as described above, it's reasonable to assume that wildlife have adapted to smaller patches of high severity and not the large landscape high severity patches found in the Moonlight and Wheeler fires. Please refer to WL #1 and WL #2.

Refer to FV WL1 and WL3.

21. **The Forest Service underestimates natural conifer regeneration. As part of my (the commenter's) expert testimony in an ongoing case (United States v. Union Pacific Railroad Company, No. 2:06-CV-01740 FCD/KJM), I (the commenter) evaluated the Forest Service's assumption that these high mortality forest stands would have**

little or no natural post-fire conifer regeneration. Contrary to the Forest Service's assumptions, I (the commenter) found abundant natural conifer regeneration in the areas mapped by the Forest Service as having 80% and 100% mortality. The Forest Service plans to essentially clearcut thousands of acres of snag forest habitat…also destroying much if not most of the current natural conifer regeneration due to the ground-disturbing mechanical activities that would occur. (DEIS: Chad Hanson, JMP)

Response: Refer to comment #9.

In addition, the Forest Vegetation, Fuels, Fire, and Air Quality Report section 3.2.3 "Analysis Methods- Natural Regeneration Discussion and Assumptions," discusses desired stocking levels, factors affecting natural regeneration, seed dispersal and seedling establishment, natural regeneration establishment in past local fires, natural regeneration establishment on the Moonlight and Antelope Complex fires, and natural regeneration assumptions. This discussion includes information from scientific literature, and field observations and experience from Forest Service professionals regarding forest development after past local fires.

During the summer of 2008 and spring of 2009, numerous Forest Service professionals, including foresters, culturists (reforestation specialists), and botanists have covered thousands of acres of the Moonlight and Antelope Complex fires through the course of project assessments, unit preparation, and surveys. Many of these professionals have noted the lack of natural regeneration of conifers, particularly within the large areas that burned with high fire severity where few surviving trees exist

In addition, please refer to comment FV #9. The Forest Service's chief vegetation ecologist for the Pacific Southwest region reviewed this expert testimony (Safford 2007, Safford 2008). Safford (2007) found that Hanson bases his conclusions on "a small field study he carried out in the spring of 2007" and that "Hanson's field sampling covered a miniscule part of the Storrie Fire, and did not come within an order of magnitude of the sample size requirement necessary to be able to make statements about fire effects with any statistical certainty." Consequently, Safford found that "Hanson's sample is much too small to make any valid interpretations of patterns across the reforestation area."

It is acknowledged that natural regeneration will occur; however, dependent on the factors that affect natural regeneration, and the variability of these factors, a strategy reliant solely on natural regeneration may or may not establish desired levels of stocking or desired species within acceptable temporal bounds. Considering this and the fact that naturally occurring regeneration may be damaged by salvage harvest operations proposed in the action alternatives (Donato et al. 2006), all action alternatives include reforestation utilizing a wide spaced low density cluster planting. The cluster planting is designed to establish minimum stocking levels of desired species appropriate for the native ecological forest type at a density which is high enough to meet desired stocking levels, but low enough to compliment any natural regeneration that may occur.

22. **The DEIS fails to ensure scientific accuracy and integrity in its assumptions regarding post-fire natural conifer regeneration, fails to provide hard data or methodologies to support its assumption that natural post-fire conifer regeneration will not occur adequately or at all in high severity burn areas, and/or that post fire logging followed by shrub eradication and artificial conifer replanting is the only effective way to re-establish conifer stands within the next several decades, and fails to respond to dissenting scientific opinion (both my [the commenter's] own and the**

scientific studies and commentary described above and below). (DEIS: Chad Hanson, JMP)

Response: Refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report sections 3.2.3 "Analysis Methods- Natural Regeneration Discussion and Assumptions", 4.2.1 "Direct and Indirect Effects of Salvage Harvest and Reforestation Treatments Common to All Action Alternatives", section 5.1.5 Effects of post-fire logging and lop and scatter practices on natural regeneration, surface fuels and fire behavior Also, refer to Hanson (2007) expert witness in Case No. 2:06-CV-01740-FCD-KJM and Safford (2007) expert witness in Case No. 2:06-CV-01740-FCD-KJM.

The Forest Vegetation, Fuels, Fire, and Air Quality Report sections 3.2.3 "Analysis Methods-Natural Regeneration Discussion and Assumptions" for analysis methodology, assumptions, scientific literature, and information from field observations and experience from forest service professionals regarding forest development after past local fires including 2008 and 2009 observations from the Moonlight and Antelope Complex fires.

The RFEIS does not assert that natural post-fire conifer regeneration will not occur at all in high severity burn areas nor does it propose "shrub eradication". Within the Moonlight and Antelope Complex fires, natural regeneration does exist; however, this natural regeneration is limited in large areas of high fire severity, and is highly variable dependent on the degree and size of fire severity and number and proximity of surviving trees capable of producing viable seed. In addition, based on past local fires of similar scale and degree of severity, observed forest development confirms that relying on natural regeneration alone may not produce adequate stocking levels of desired species to maintain appropriate forest cover across much of the areas that burned with high fire severity.

The Moonlight and Wheeler Fires Recovery Project does propose under all action alternatives to implement wide-spaced low density cluster planting. The cluster planting is designed to establish minimum stocking levels of desired species appropriate for the native ecological forest type at a density high enough to meet desired stocking levels, but low enough to compliment any natural regeneration that may occur. The cluster arrangement is also designed to be congruent with variable seedling survival to produce a planting that mimics the heterogeneity and pattern of a naturally occurring forest.

The Forest Vegetation, Fuels, Fire, and Air Quality Report Sections 3.2.3, 4.2.1, and 5.1.5, discuss the relevance of the scientific literature, comments, and minor issues raised and how it relates to the project. In addition Safford (2007) reviews and responds specifically to the commenter's opinion with regards to natural conifer regeneration. Please refer to response to comments FV #9 and #21 and to Safford (2007) expert witness in Case No. 2:06-CV-01740-FCD-KJM.

23. **The Forest Service's planned activities would destroy the natural successional processes already occurring. The Forest Service plans to essentially clearcut thousands of acres of snag forest habitat destroying the standing snags. The Forest Service's plans would not facilitate forest recovery (Thompson et al. 2007) and are the most ecologically damaging things that could be done on these lands (Hutto 2006, Noss et al 2006). A letter signed by nearly 600 of the nation's top forest, fire, and wildlife scientists states in no uncertain terms that post-fire felling of snags and artificial replanting are extremely damaging ecologically, and that no scientific**

studies support such activities ecologically, while numerous studies strongly recommend against such activities. (DEIS: Chad Hanson, JMP)

Response: Refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report sections 4.2.3 "Cumulative Effects of Action Alternatives", Section 5.1.1 Effects of post-fire logging of fire-killed trees in high severity areas, section 5.1.2 Effects of post-fire logging on changes in diversity of fire effects across the landscape, section 5.1.3 Effects of post-fire logging on recruitment of large woody debris,5.1.4 Effects of yarding and temporary road and landing construction, 5.1.5 Effects of post-fire logging and lop and scatter practices on natural regeneration, surface fuels, and fire behavior, and section 5.1.6 Effects of reforestation on shrub habitat and future fire severity.

Refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report sections 4.2.3 "Cumulative Effects of Action Alternatives". McIver and Starr (2001) explain that "two distinct types of environmental effects occur after a harvest operation: activity effects owing directly to the logging operation itself, and structural effects from the removal of merchantable material." Activity effects to forest vegetation owing directly to the logging operation itself are described under section 4.2.Action Alternatives and activity effects to forest vegetation concerning the silvicultural prescription for harvesting and reforestation are described in section 4.2.1 Direct and Indirect effects of Salvage Harvest, Reforestation, and Roadside Hazard Treatments common to all action alternatives.

The removal of dead trees through salvage logging and reforestation through planting has been documented in published literature and syntheses to have adverse long term effects on residual forest structure by removing the "biological legacy" component and subsequent recruitment important for habitat and ecosystem diversity (McIver and Starr 2001; Franklin and Agee 2003; Beschta et al. 2004; Dellasala et al. 2004; Hutto 2006; Karr et al. 2006; Lindenmayer and Noss 2006; Reeves et al. 2006; Noss et al 2006). Such biological legacies include standing snags (both large and small), live fire-injured trees, and large down woody debris that serve as important components to habitat and ecosystem structure. However, "biological legacies differ by orders of magnitude in natural forests" (Franklin and Agee. 2003), and consequently, treatment effects on biological legacy components should be reconciled with scale and context of site specificity. As noted in Franklin and Agee (2003): "uncharacteristic stand-replacement fires in dry forests can produce uncharacteristic levels of postfire fuels, including standing dead and down trees" and suggest that "removing portions of that particular biological legacy may be appropriate part of an intelligent ecological restoration program and not simply salvage."

Refer to tables 4.11 and 4.12 in the Forest Vegetation, Fuels, Fire, and Air Quality report. Project design and treatment design criteria provide for both large amounts of untreated areas, and retention of snags and logs within treated areas which in turn maintain biological legacies across the landscape for habitat and ecosystem function. All action alternatives are designed to exclude salvage logging (including other hazard tree removal and fire salvage projects) entirely from 73 percent (under alternative A) to 88 percent (under alternative E) of public lands within the analysis area (the Moonlight and Antelope Complex fires). Action alternatives where salvage harvest is proposed would only treat 11 (under alternative E) to 35 percent (under alternative A) of the public lands that burned with high severity (tables 4.11 and 4.12).

Consequently, large areas of unsalvaged and untreated areas would exist under all action alternatives maintaining forest stand structure that would provide for biological legacy values as described by Lindenmayer and Noss (2006) and others (Franklin and Agee 2003; Beschta et al. 2004; Dellasala et al. 2004; Hutto 2006; Karr et al. 2006; Noss et al 2006). In addition, snag

retention areas within salvage harvest units and exclusion of salvage harvest from low to moderate burn severity patches would provide for biological legacies within and outside the proposed treatment perimeters such as fire-killed and fire-damaged trees and large live and dead trees that have high habitat value (Lindenmayer and Noss 2006). Equipment restriction zones (in units where ground-based logging is proposed) and snag retention guidelines within RHCAs are designed to provide for protection of aquatic ecosystems and retain and recruit structure such as large down woody debris within riparian areas (Lindenmayer and Noss 2006; Reeves et al. 2006).

Lastly, action alternatives are designed to facilitate recovery through re-establishing forested conditions (Moonlight and Wheeler Fires Recovery Project RFEIS section 1.3.3 "Purpose 3: Re-establish Forested Conditions"). Wide spaced cluster plantations as proposed under all action alternatives were designed to address issues as described by Thompson et al. 2007 (Refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report section 5.1.6 Effects of reforestation on shrub habitat and future fire severity). Thompson et al. (2007) suggests that "young forests, whether naturally or artificially regenerated, may be vulnerable to positive feedback cycles of high severity fire" and recognizes that "there are several reasons one might choose this management system [salvage harvest and reforestation], including recouping economic losses through timber sales and ensuring the reestablishment of desirable tree species."

Refer to FV #11, #12, #20, #21, and WL1.

24. **The Forest Service has improperly segmented this proposal, which has the effect of concealing the full scope of the adverse impact and cumulative effects.** (DEIS: Chad Hanson, JMP)

Response: Refer to the Moonlight and Wheeler Fires Recovery project RFEIS section 3.3.1.1, tables 17, 22, and 23, RFEIS Appendix B, and the Forest Vegetation, Fuels, Fire, and Air Quality Report sections 4.1.2 "Cumulative Effects Common to All Alternatives", 4.1.3 "Cumulative Effects- Alternative B", and 4.2.3 "Cumulative Effects Common to All Action Alternatives". The cumulative effects analysis includes the effects of all the projects mentioned in the comment letter. These projects include the Moonlight and Wheeler Fires Recovery Project which includes the Moonlight Roadside Hazard Tree Removal project, the four roadside hazard projects on the Antelope Complex fire, the North Moonlight project on the Lassen National Forest, and the Camp 14 project on the Beckwourth Ranger District of the Plumas National Forest. These projects are all located within the analysis area and were analyzed under cumulative effects in addition to the additional past, present, and reasonably foreseeable future projects located within the analysis area as described in the RFEIS, Appendix B, but not mentioned in the comment letter. Consequently, the full scope of cumulative effects have been addressed and disclosed, and the commenter is incorrect.

25. **"Historic and current fire occurrence in the northern Sierra Nevada": High severity fire was not rare in historic Sierra Nevada forests, as some have assumed. In light of this information, the effects in the Moonlight and Antelope fire areas should not be seen as "catastrophic" or ecologically harmful.** (DEIS: Chad Hanson, JMP)

Please refer to the response to comment FV #7.

The submitted comments regarding "Historic and current fire occurrence in the northern Sierra Nevada" are nearly verbatim (with the exception of an added paragraph at the end regarding the Moonlight and Antelope complex fires and some additional references) from Hanson's 2007 expert witness in the Storrie Fire court case: United States vs. Union Pacific Railroad Company,

Case No. 2:06-CV-01740-FCD-KJM in which he served as an expert witness for the Railroad company. In this expert report, Hanson uses the same argument to conclude that "the data do no indicate that the fire effects and patterns of the Storrie fire were outside the natural range of historic variability for this region. Indeed, the data indicate the opposite conclusion." The provided rationale and scientific literature presented were subsequently reviewed and responded to by the USFS Region 5 chief vegetation ecologist, Dr. Hugh Safford in his expert report for the same court case (Safford 2007, expert witness in Case No. 2:06-CV-01740-FCD-KJM). Safford's review "suggests that Hanson considerably exaggerates the extent of high severity" and Safford compares "data from the last two decades to show that the proportion of current fires burning at high severity is far higher that in the pre-settlement Sierra Nevada."

In addition, please refer to the response to comment FV #7. The most current results in Miller et al. (2008) "provide the first broad-scale, quantitative demonstration that the extent of forest stand-replacing fire is increasing across the Sierra Nevada. Various lines of evidence suggest that contemporary fires in many low and middle elevation forest types in the study region burn at generally higher severities than before Euro American settlement (e.g.,Sudworth 1900; Leiberg 1902; Kilgore and Taylor 1979; Agee 1993; McKelvey and others 1996; Skinner and Chang 1996; Graham and others 2004; Arno and Fiedler 2005; Sugihara and others 2006; Beaty and Taylor 2007), and our data demonstrate that the magnitude of that departure is increasing with time."

In this particular project, the Forest Service's concern is with the sum of effects of extraordinarily high severity fires that occurred in the general project area. Miller et al. (2008) have also shown that the average size of high severity patches in Sierra Nevada wildfires has increased by about 100% over the last 25 years. (Safford 2008 personal communication). Considering the available science and when "assessed in the most ecologically relevant way" particularly the spatiotemporal extent of high severity fire effects, the Moonlight and Antelope fires are uncharacteristic of the "natural" fire regimes typically described for the dry Sierra Nevada forests. This is underscored by the fact that over 85 square miles (an area nearly the size of the city of Sacramento, CA) burned with high fire severity within a three month period resulting in 75 to 100 percent basal area mortality of forest vegetation.

Lastly, please also refer to FV #12, #14, #26, and #27.

26. **As for fire severity, current patterns indicate that low and moderate severity fire are, overall, predominant in contemporary fires (Odion and Hanson 2006, Odion and Hanson 2008 in press in Ecosystems).** (DEIS: Chad Hanson, JMP)

Response: The real issue is whether the relative proportions of these severity classes are within bounds that allow for the retention and regeneration of sustainable forestland (including all of its seral stages), and that allow for the continued function of important ecosystem processes (water retention and supply, soil processes, seedling dispersal, etc.). It is important to note that 2007 was a year with extraordinarily high fire severity, and the fires that occurred in Northern California were almost without precedent with respect to the area of fire that burned at high severity. Fire severity maps show that the Moonlight and Antelope Complex Fires burned at about 62% high severity. Another Northern California fire, the Angora, burned at about 52% high severity. In these cases, low and moderate severity fire were not predominant. (Safford 2008, personal communication).

Refer to FV #7, #25, and #27.

27. **The available scientific evidence indicates that the average annual extent of high severity fire in the northern Sierra Nevada is currently less than historic rates; Nor were pre-fire-suppression high severity patches all small, as has often been assumed. In light of this information, the effects in the Moonlight and Antelope fire areas should not be seen as "catastrophic" or ecologically-harmful. Though the proportion of high severity effects in the Moonlight/Antelope fire was higher than average for current Sierran fires, and was surely higher than the average proportion of high severity effects in individual pre-suppression fires, the TOTAL OCCURRENCE of high severity effects, is nevertheless LESS now than it was prior to fire suppression, when assessed in the most ecologically-relevant way, namely, the spatiotemporal extent of high severity fire effects.** (DEIS; Chad Hanson, JMP)

Response: Refer to FV #7, #12, #14, #25, and #26. Also refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report section 2.2 including the narrative, tables, and figures.

The most current results in Miller et al. (2008) "provide the first broad-scale, quantitative demonstration that the extent of forest stand-replacing fire is increasing across the Sierra Nevada. Various lines of evidence suggest that contemporary fires in many low and middle elevation forest types in the study region burn at generally higher severities than before Euro American settlement (e.g.,Sudworth 1900; Leiberg 1902; Kilgore and Taylor 1979; Agee 1993; McKelvey and others 1996; Skinner and Chang 1996; Graham and others 2004; Arno and Fiedler 2005; Sugihara and others 2006; Beaty and Taylor 2007), and our data demonstrate that the magnitude of that departure is increasing with time."

In this particular project, our concern is with the sum of effects of extraordinarily high severity fires that occurred in the general project area. Concerning high severity patch sizes, recent large wildfires are very different from presettlement fires with respect to the average sizes of patches of high severity fire within the fire perimeter. High severity patches more than a few acres in size were unusual in fires in the Sierra Nevada before Euro American settlement (Show and Kotok 1924, Kilgore 1973, Stephenson et al 1991, Weatherspoon et al. 1992, Skinner 1995, Skinner and Chang 1996, Weatherspoon and Skinner 1996). Miller et al. (in press) have also shown that the average size of high severity patches in Sierra Nevada wildfires has increased by about 100% over the last 25 years. (Safford 2008 personal communication).

Considering the available science and when "assessed in the most ecologically relevant way" particularly the spatiotemporal extent of high severity fire effects, the Moonlight and Antelope fires are uncharacteristic of the "natural" fire regimes typically described for the dry Sierra Nevada forests. This is underscored by the fact that over 85 square miles burned within a three month period resulting in 75 to 100 percent basal area mortality of forest vegetation.

28. **Areas that the Forest Service considered to be burned at high severity immediately after the fires may actually have been burned at moderate or even low severities. I observed that the BAER fire severity map and the RdNBR severity map (from satellite imagery), frequently overestimated fire severity in terms of tree mortality, given that many areas that had little to no green foliage immediately after the fire nevertheless continued to produce green foliage from surviving buds in the upper portions of the tree crowns.** (DEIS: Monica Bond, JMP)

Response: Refer to the Forest Vegetation, Fuels, Fire, and Air Quality Report sections 2.2 "Post-fire Conditions" including Table 2.4.

The fire severity of each fire was mapped utilizing Landsat TM satellite imagery and RdNBR classification; a fire severity mapping method commonly used throughout the scientific literature on the subject (Miller et al. 2008, Miller 2007, Miller and Thode 2007, Safford et al. 2007). This mapping method classifies 30 meter pixels by fire severity (in this case, percent basal area mortality) an appropriate scale for stand level severity classification; it does not classify severity on an individual tree basis.

Subsequent field observations and stand exams verify the accuracy of the fire severity map. Table 2.4 in the Forest Vegetation, Fuels, Fire, and Air Quality report quantifies the amount of live versus dead trees by low to moderate (less than 50 percent basal area mortality) and moderate to high (greater than 50 percent basal area mortality) by site class. For the purpose of the analysis, a live tree was considered as any tree with green needles. Stand Exam data indicates that, within stands that burned with moderate to high severity (greater than 50 percent basal area mortality), there are an average of approximately 10 to 12 live trees per acre and an average of approximately 238 to 435 dead trees per acre. Such high levels of mortality underscore the severity of these stands and verify the accuracy of these areas.

It should also be noted that while trees with green needles may exist within stands that burned with moderate and high severity, there is a probability that a sizeable portion of these trees may die due to delayed conifer mortality post-fire as a result of fire-incurred injuries (Hood et al. 2007; Filip et al. 2007).

Refer to FV #18.

29. **SPI strongly supports the re-establishment of forested conditions over the entire burned area. Maintaining our National Forest land in a healthy fully stocked condition is not only mandated by law, but benefits the community. Reestablishing forest cover within the high intensity burn area must be recognized as the single most important factor in rapid habitat development. The Multiple –use Sustained Yield Act of 1960 and the National Forest Management Act of 1976 require action to be taken to rehabilitate this massive understocked area.** (DEIS: Brian Wayland, SPI)

Response: Comment noted. NFMA states that "it is the policy of the Congress that all forested lands in the National Forest System shall be maintained in appropriate forest cover with species of trees, degree of stocking, rate of growth, and conditions of stand designed to secure the maximum benefits of multiple use sustained yield management in accordance with land management plans". The Forest Service examined the entire area affected by these fires and developed the reforestation treatments to provide for re-establishing forested conditions where appropriate in accordance with land management plans. Please refer to the RFEIS Section 3.3.2.1.1.9 and table 36. Under the action alternatives, approximately 44 to 56 percent of areas that burned with high fire severity would be reforested. Portions of the burned area would be left untreated due to the prior existence of non-forest, montane chaparral, or hardwood vegetation types, operability and feasibility constraints, protection of cultural resources, and to allow for areas of natural recovery.

FIRE, FUELS, AND AIR QUALITY (FFA)

1. **Include an air conformity determination in the FEIS, if applicable. Plumas County is in non-attainment status for particulate matter less than or equal to 10 micrometers and particulate matter less than or equal to 2.5 micrometers (Portola Valley only). Data in Table 20 appear to indicate smoke production from pile burning may result in particulate matter emissions greater than the General Conformity de minimis threshold of 100 tons per year (Table 20 does not state whether the data are for a year or not). Furthermore, the DEIS does not appear to evaluate the potential particulate emissions generated by log hauling, harvest activities, temporary road and landing construction, or equipment emissions.** (EPA)

Response: Refer to the Forest Vegetation, Fuels, Fire and Air Quality Report sections 2.3 "Air Quality Current Conditions", 4.2.2 "Direct and Indirect Effects of Salvage Harvest and Reforestation Treatments Common to All Action Alternatives", and 5.7 "Burning would cause short-term production of smoke and reduced air quality".

Predicted emissions from table 4.10 of the Forest Vegetation, Fuels, Fire, and Air Quality report are for all piles burned in the analysis area and do not represent a yearly emissions amount (table 20, RFEIS, section 3.3.2.1.1.2). Emissions from piles would likely be spread over two to three years depending on the number of favorable ignition opportunities. Piles would be burned under approved prescribed fire burn and smoke management plans developed in close coordination with the local Air Quality Management District staff to prevent smoke impacts to surrounding communities and other smoke sensitive areas.

Per 40 CFR, Chapter 1, Part 93, Subpart B, 93.153 "Applicability" (c) "The requirements of this subpart shall not apply to the following Federal actions", (4) "Actions which implement a decision to conduct or carry out a conforming program such as prescribed burning actions which are consistent with a conforming land management plan".

WILDLIFE (WL)

1. **The Forest Service must recognize that burned forests are exceptionally important wildlife habitat.** (RDEIS: Rene Voss, JMP, pp. 26 through 29)

Scientists have recently recommended that forest managers should ensure the maintenance of moderate and high severity fire patches to maintain populations of numerous native bird species positively associated with fire (Hutto 1995, Hutto 2006, Kotliar et al. 2002, Noss et al. 2006, Smucker et al. 2005, Hanson and North 2008, Hutto 2008). At the landscape level, high severity habitat (unlogged) is among the most underrepresented, and rarest, of forest habitat types (Noss et al. 2006). (RDEIS: Rene Voss, JMP, pg. 26)

The Project area, including the low severity, moderate severity, and high severity patches, is an ecosystem, and a very important one. It is the diversity of fire effects, in fact, that facilitates and maximizes native biodiversity (Connell 1978, Noss et al. 2006). It is, in fact, the unlogged high severity patches that are most in deficit in Sierra Nevada forests, probably more than any other single forest habitat type. The fires in the Project area were a significant step toward remedying this deficit, and any post-fire logging would only un-do the fire's benefits. (Rene Voss, JMP, pg. 29)

Response: The Moonlight/Wheeler RFEIS (Section 3.1.1) recognizes that burned forests provide important wildlife habitat. Most of the area that burned in the Moonlight/Wheeler Complex

would not receive salvage harvest treatments: approximately 68,408 acres of national forest lands lie within the Moonlight/Wheeler Fire Complex. The Moonlight/Wheeler Project proposes (under Alternative A) salvage or roadside hazard harvest on approximately 14,755 acres (approximately 22 percent of the national forest lands in the fire area), leaving approximately 53,600 acres of national forest lands within the fire perimeter in an untreated condition (Moonlight/Wheeler RFEIS, Chapter 3, Table 33, pg. 57).

A total of approximately 47,800 acres of national forest lands experienced moderate to high vegetation burn severity effects in the Moonlight/Wheeler Fire Complex (Moonlight/Wheeler EIS, Chapter 3, Table 28, pg. 50). Of this total, approximately 13,000 acres (27 percent of the national forest lands experiencing moderate (50-75% basal area mortality) to high (>75% basal area mortality) vegetation burn severity effects are included within the proposed action's salvage or roadside harvest treatment areas (Moonlight/Wheeler RFEIS, Chapter 3, Table 33, pg. 57). Hence, the proposed action would retain 28,900 acres of high vegetation burn areas (70 percent of the national forest acreage) and 5,950 acres of moderate burn severity areas (91 percent of the national forest acreage) in an unsalvaged condition, providing habitat for wildlife species that depend on these conditions.

Environmental effects analyses presented in Chapter 3 of the Moonlight/Wheeler RFEIS (and detailed in the supporting Moonlight/Wheeler BA/BE as well as the Management Indicator Species Report) evaluate the direct, indirect, and cumulative effects of snag removal via salvage harvesting and hazard tree removal on habitats for a wide variety of wildlife species that depend, either wholly or in part, on burned habitat conditions as well as snags. The project is designed to treat a small portion of these habitats relative to the amount of suitable habitat that would *remain* untreated within the fire perimeter. In addition, management requirements that are part of all action alternatives (except for Alternative E, the Roadside Hazard alternative) call for snag retention areas throughout 10 percent of treatment areas where no harvesting of dead trees would occur. (Refer to the management requirements for Alternatives A, C, and D in Chapter 2 of the Moonlight/Wheeler RFEIS)

Refer to WL#3, WL#11, FV#14 and FV#20.

2. **The snag retention standards used by the Forest Service are inapplicable to post-fire forest habitat, and the species that depend upon it.**
   (DEIS: Chad Hanson, JMP, pg. 15)

On Sierra Nevada national forests, current policy is that only 10% of a burned area is to be retained in an unlogged state (USFS 2004), but none of this 10% is required to be high severity burned forest (snag forest habitat), and the 10% standard is written as discretionary, not mandatory. (DEIS: Chad Hanson, JMP, pg. 6)

Response: The commenter is correct in his statement that current policy direction is to leave unsalvaged at least 10 percent of the total area affected by fire (USDA 2004b, pg. 52). The cumulative effect for each action alternatives, as stated in the RFEIS, Sections 3.4.2.1.1.3, 3.4.2.3.1.3, 3.4.2.4.1.3, 3.4.2.5.1.3, would leave from 73% (alternative A) to 92% (alternative E) of the total Moonlight-Wheeler fire area in an untreated state. To further address the commenter's concern of snag retention standards in relation to species that depend on snag forest habitat, the analysis for the BBWO in the RFEIS (Sections 3.4.2.1.2.1, 3.4.2.3.2.1, 3.4.2.4.2.1, 3.4.2.5.2.1) shows that heavily burned forest habitat (CWHR 4M/4D/5M/5D that burned at 50-100% basal area mortality) would remain from 62% (alternative A) to 89% (alternative E) untreated.

In response to RTC WL#4 in this document, Table 1 shows that, under the preferred alternative (A), 59% of high severity (75% or greater BAM) snag forest habitat acres within the fire area would remain untreated and available for species that depend on it.

In conclusion, the analysis presented in the RFEIS and the specialist reports (BA/BE, MIS) for each of the action alternatives clearly shows that the current snag retention policy standard is being far exceeded in favor of species associated with post-fire untreated snag habitat.

Refer to WL#4, and FV#2.

3. **Post-fire montane chaparral (MCP) habitat is a vitally-important part of snag forest ecosystems and more, not less, of this habitat is needed on national forest lands.** (DEIS: Chad Hanson, JMP)

Response: We agree with the commenter that MCP habitat is valuable. Table 24 of the FEIS (pg.47) summarizes the amount of MCP pre and post fire within the analysis area. Prior to the fire, MCP made up about 2 percent of the vegetative component within the analysis area (NF lands); post fire MCP makes up about 57 percent. Table 4 of the MIS Report (pg. 13) summarized the effects of the action alternatives on this habitat type. The cumulative effects discussion on page 15 of the MIS Report concluded that 13,349 acres (Alt A) or 22,065 acres (Alt C) of MCP would be left untreated in the analysis area. Thus, over the long term, FS land within the analysis area would support more MCP than prior to the fire (19 percent of the analysis area under Alt A, 32 percent of the analysis area under Alt C). Over long periods of time many of these acres will undergo vegetative succession and tend to recover to tree dominated habitats depending upon tree seed sources and future disturbances like wildfires

Refer to WL#17, FV#2, FV#10, and FV#20.

Black-backed Woodpecker

4. **Black-backed Woodpecker (BBWP) habitat and projected losses.**

1. The Moonlight/Wheeler RDEIS *assesses impacts to the black-backed woodpecker (BBWO) based upon the incorrect assumption that moderate-severity areas with 50-75% tree mortality are suitable habitat…[In] a recent study that I authored regarding Black-backed Woodpeckers specifically in the Sierra Nevada, I found that, 3-5 years post-fire, this species only used unlogged high-severity patches, and did not find them anywhere with less than 90% tree mortality (Hanson and North 2008).* (RDEIS: Chad Hanson, JMP, pp. 1 through 2, similar comment received for DEIS: Chad Hanson, JMP, pg. 16)

2. The RDEIS (p. 92) cites Russell et al. (2006) for the proposition that BBWOs depend upon "moderately high" or high severity areas. However, this study pertains to snag longevity, not to BBWO habitat use. The study the RDEIS probably intended to reference is Russell et al. (2007), which regards BBWO habitat characteristics...[and] found that BBWOs use high-severity areas. (RDEIS: Chad Hanson, JMP, pg. 1)

3. The EIS is fundamentally flawed because it assumes that moderate severity is suitable. Through this misrepresentation, the Forest Service arbitrarily inflates the amount of BBWO habitat that they report in this document, and dilutes the intensity of impacts of logging on actual BBWO suitable habitat. The NEPA document must divulge and analyze impacts to

BBWO habitat, excluding moderate severity areas from the analysis. (RDEIS: Chad Hanson, JMP, pg. 2; Rene Voss, JMP, pg. 6 and pg. 16)

4. What is the agency intending to do with the CWHR 4M/4D/5M/5D forest burned at 50-75% mortality that would remain unlogged? (DEIS: Chad Hanson, JMP, pg. 17)

5. Please provide detailed color maps to show where the current Black-backed Woodpecker habitat is in these areas, and where all logging is proposed. (DEIS, Chad Hanson, JMP, pg. 17)

Response: 1. To evaluate the effects of the proposed Moonlight/Wheeler Project on the BBWO, the RFEIS assumes that suitable habitat includes mid- to late-seral forest stands that experienced both high and moderately-high vegetation burn severity effects. The commenter believes that only severely burned stands (92 to 100 percent tree mortality) provide suitable habitat for this species. Several recent studies have looked at BBWO in California, including Hanson and North (2008) and the recent unpublished doctoral thesis (Hanson 2007) as well as monitoring data compiled by the Forest Service (Siegel et al. 2008); however, the Forest Service is unaware of any scientific studies that fully describe the specific habitat requirements for this species, relevant to the Sierra Nevada Range in California. Based on the scientific available literature regarding BBWO habitat use, the Moonlight/Wheeler Project analysis defines both high (75 percent and greater basal area mortality) and moderately-high vegetation burn severity category (50 to 75 percent basal area mortality) as suitable BBWO habitat. The moderately-high mortality range (50 to 75 percent basal area mortality) provides snags in the future for nesting habitat as well as foraging habitat now and into the future.

Table 2.4 in the Moonlight/Wheeler Project Forest Vegetation, Fuels, Fire, and Air Quality Report quantifies the amount of live versus dead trees by low to moderate severity (less than 50 percent basal area mortality) and moderate to high severity (greater than 50 percent basal area mortality) by site class. Stand Exam data indicates that, within stands that burned with moderate to high severity (greater than 50 percent basal area mortality), there are an average of approximately 288 to 435 dead trees per acre. Such high levels of mortality underscore the severity of fire effects in these stands and verify the claim that the high number of snags creates suitable BBWO habitat. It should also be noted that there is a probability that a sizeable portion of green-needled trees within moderately high (50-75% BAM) severity areas may die due to delayed conifer mortality as a result of fire-incurred damage (Hood et al. 2007). Thus, some areas that were mapped as moderate severity are expected to have higher actual tree mortality resulting in higher levels of snags and higher quality BBWO habitat.

The commenter cites a recent study he co-authored regarding BBWOs in the Sierra Nevada, stating: *"I found that, 3-5 years post-fire, this species only used unlogged high-severity patches, and did not find them anywhere with less than 90% tree mortality (Hanson and North 2008)."* The purpose of the study was reported to be to use presence-absence data analysis to determine if salvage harvest prescriptions could reduce foraging habitat quality for the BBWO. However, review of the study's BBWO survey methodology raises several concerns about using the study's findings that BBWOs only foraged in high-severity, unlogged patches to definitively discount the findings of other studies that indicate BBWOs forage in a variety of habitats of different burn severities. In particular, there are methodological questions as to whether the study design adequately detected BBWOs in all sample areas, as described below.

First, the study's authors state: "No [BBWO survey] transects were repeated within a patch." In order to reliably detect presence and determine absence, survey protocol generally requires

repeated surveys of the same area or very large datasets of single surveys of many similar areas (Ralph 1993). This study appears to have conducted eight, 8-minute samples during a single survey visit to 36 sample areas, of which 10 were in the high burn severity, unlogged condition. Thus, the single visit to each sample area is insufficient to conclude absence of BBWOs as they may have simply gone undetected during that one search (total of 64 minutes of search time per patch). Further, for the BBWO that were detected in the high severity and unlogged sample areas, the authors do not indicate how many individual detections were made and in how many patches. Without this information, it is unknown if these results are from one individual in one patch or many individuals in many patches. Given the small sample size (8 to 10 patches of each category) and unrepeated sample design, this type of information is needed to understand the power of the stated findings.

Second, the study's authors state: "Surveys were conducted between 6:00 and 15:00 PST." Survey protocol for landbirds, such as the BBWO, typically involves conducting surveys during the morning hours, generally from official sunrise to approximately 3.5 hours after sunrise to result in the greatest likelihood of detecting birds during their morning active period when they are most typically singing and foraging (Ralph 1993, Siegel et al. 2008). Since this study primarily examined foraging behavior, it occurred late in the expected breeding season for BBWO (mid-June to late-July) and further was restricted to "visual detections [of the study woodpecker species] within 50 m of the investigator." No assessment or discussion was provided to evaluate the detection effectiveness of visual detections during the study's 8 minute non-gridded point counts conducted during mid-summer and through the mid-afternoon for this species. However, a pilot study sponsored by the Forest Service did examine standard landbird protocol passive point count methods and an alternate callback vocalization method as potential methods to detect BBWO in the Sierra Nevada Mountains (Siegel et al 2008). Critically, Siegel et al. determined that passive point counts, where the highly trained observers were looking and listening for BBWO for 5 minutes at call points (during the active breeding season and during the 3.5 hour period after sunrise) failed to detect BBWO 11 times where presence was positively detected through an immediate follow-up playing of BBWO vocalizations. Siegel et al. derived this assessment during a similar time period (early-June to mid-July), but like the Hanson and North study, missed the prime BBWO breeding season, which is April to July (Dixon 2000). Additionally, Siegel et al. noted that in 6 of the 11 points where they confirmed a BBWO using the callback method, drumming of a woodpecker was heard but no visual confirmation was made during the 5-minute survey period. Siegel et al. conclude that "Our results [of this pilot study] suggest that Black-backed Woodpecker detectability during passive point counts is quite low, although we have not quantitatively assessed it." They also hypothesize that detectability of this dark colored, somewhat sedentary woodpecker (which blends in with burned trees and can perch silently on a snag for long periods of time) may be different in high severity burn areas compared to low or moderate severity burn areas where green tree foliage and more unburned branches may hide the birds from view. In addition, BBWOs may be more active flying and vocalizing in high severity burn areas where they are more territorial and occur at higher densities, further enhancing their detectability in high burn severity conditions. It is therefore, further unclear to what extent BBWO may have been present but undetected in the commenter's study.

Finally, the authors do not disclose how the fire was stratified into fire severity and treatment categories and how the study's sample patches were selected. Of particular concern is the gap between the study's moderate severity (39 to 72 percent mortality) and high severity (92 to 100 percent mortality) sample areas. The 20 percent mortality gap between 72 percent mortality and 92 percent mortality is missing from the study results (as is the 23 percent mortality gap between unburned and moderate severity). It is unclear if sampling was truly random across the categories and reflective of the true distribution of fire severity available within the burned areas, or if

sampling was skewed and may have biased the results. For example, within the moderate severity sample patches, it is unknown how the 8 replicates were distributed across the tree mortality range from 39% to 72%. Additionally, the commenter's statement that he "*did not find them anywhere with less than 90% tree mortality*" is a function of the sampling methodology, rather than a finding that BBWO do not forage in areas with less than 90% tree mortality as evidenced by the many other studies that have documented use in areas with less than 90% tree mortality

The Hanson and North 2008 paper is essentially the publication of Chapter 1 of the commenter's dissertation (Hanson 2007). Review of the dissertation finds that it similarly fails to disclose details to address the uncertainties about methodology and conclusions raised above. While the study found that of the BBWOs detected, they used the unlogged, high severity patches that were sampled, it does not provide sufficient evidence to discount the findings from other studies (discussed above) that have found BBWO foraging and nesting in other habitats, including the range of habitats (moderately-high and high vegetation burn severity habitats) used as the basis for evaluating effects on the BBWO in the Moonlight/Wheeler Project analysis.

We agree with the commenter's assertion that BBWOs use high burn severity areas; however, scientific evidence shows that moderate and low burn severity areas also provide habitat for BBWOs (Bock and Lynch 1970, Hoyt and Hannon 2002, Hutto 2008, Vierling et al. 2008). Nonetheless, the current state of scientific hypothesis testing for BBWO habitat relationships does not allow fine scale differentiation between highly suitable and moderately suitable habitat for this species relevant to the Sierra Nevada range. It would be highly misleading to characterize BBWOs as only occurring in areas that have burned at high severity and stating that moderate severity burn areas do not provide suitable habitat when evidence to the contrary exists.

2. The commenter is correct in that the RDEIS (pg. 91) incorrectly cited Russell et al. (2006) when it intended to reference Russell et al. (2007). The sole intention of referencing this paper was to point out the positive association Black-backed Woodpeckers (BBWO) have with burned areas that supported moderate or high pre-fire crown closure, and NOT (as the commenter points out, and we agree, is incorrectly stated in the RDEIS on pg. 91) as a basis in selecting moderately high to high severity burn areas for the Moonlight/Wheeler Project BBWO habitat analysis. This section has been corrected in the RFEIS (pg. 91) and now reads: "Russell et al. (2007) indicated that BBWOs were positively associated with burned areas that supported moderate or high pre-fire crown closure (greater than 40 percent). Moderately high and high severity burned forests have been shown to be used by BBWOs (Bock and Lynch 1970, Hoyt and Hannon 2002, Hutto 2008, Vierling et al. 2008). Based on these findings, pre-fire CWHR 4M, 4D, 5M and 5D that burned at moderately high (50-75% basal area mortality) or high severity (>75% basal area mortality) is used to determined trends in BBWO habitat."

The commenter believes that the Moonlight/Wheeler RDEIS should use the study conducted by Russell et al. (2007) as the basis for identifying suitable habitat for the black-backed woodpecker (BBWO). The 2007 Russell et al. study compared two different models to distinguish between nest and non-nest locations of six different cavity nesting bird species, one of which was the BBWO. One of the study's models was based on remotely sensed data while the other used remotely sensed and field collected data. This published article did not directly report on BBWO habitat or how BBWOs use habitats of varying burn severities.

3. To address the commenter's concern that the Forest Service arbitrarily inflated the amount of existing BBWO habitat by including areas that experienced moderate burn severity effects, an analysis was conducted to examine only the severely burned (75 to 100 percent basal area mortality) BBWO habitat that would be impacted by harvesting proposed under Alternative A

(the proposed action) of the Moonlight/Wheeler Project. This analysis used the same assumptions about suitable BBWO pre-fire conditions that were used in the EA analysis of moderate and high burn severity habitat: pre-fire BBWO potential habitat includes areas dominated by medium to large trees (greater than 12 inches dbh) with moderate to high canopy closure (greater than 40 percent). The analysis shows that, within the 68,408-acre Moonlight/Wheeler Analysis Area (Forest Service acres only), 28,819 acres of mid- to late-seral forest stands experienced high fire severity effects (75 to 100 percent basal area mortality). Of this total, the proposed action (alternative A) would conduct salvage harvest or hazard tree removal on approximately 11,760 acres (41 percent of this high severity acreage), leaving 17,059 acres (59 percent) of the high severity BBWO habitat in the Moonlight/Wheeler Analysis Area in an untreated condition, which is a substantial proportion of the high burn severity BBWO habitat created by the Moonlight/Wheeler Fire Complex (Table 1).

As described in the Moonlight/Wheeler Project RDEIS (Section 3.4.2.1.2.1) and displayed in the Attachment 2 of the Moonlight/Wheeler MIS Report, analysis of suitable BBWO habitat combined moderate and high vegetation burn severities, and concluded that 38 percent of suitable habitat in the Analysis Area would be treated under the proposed action. Calculating the extent of the project's effects using the commenter's suggestion to only consider areas of high burn severity as suitable BBWO habitat, the proposed action would treat 41 percent of the severely burned habitat in the Analysis Area.

Table 1. Comparison of amounts of suitable black-backed woodpecker habitat impacted under the Moonlight/Wheeler Project, based on different definitions of suitable habitat.

Suitable BBWO Habitat	Moderate and High Vegetation Burn Severity Habitat	High Vegetation Burn Severity Habitat Only
Suitable BBWO Habitat Treated in the Analysis Area (cumulative acres under Alternative A)	12,397 acres	11,760 acres
Suitable BBWO Habitat Available in the Analysis Area	32,569 acres	28,819 acres
Percent of Suitable BBWO Habitat Treated in Analysis Area	38%	41%

The commenter's concern that salvage harvesting would render BBWO habitat unsuitable has been addressed in the Moonlight/Wheeler analysis of BBWO habitat. For the Moonlight/Wheeler Project analysis, a worst case scenario is assumed: even though some snags would be retained in the salvage harvest areas as well as the roadside hazard tree removal areas and the harvest areas are intermixed with large untreated areas (Moonlight/Wheeler Project MIS Report, Attachment 2), the analysis assumes that the approximately 12,400 acres of proposed salvage harvest and hazard tree removal in suitable BBWO habitat would render the habitat unsuitable (Moonlight/Wheeler RDEIS, Section 3.4.2.1.2.1)

4. The Agency has no foreseeable logging planned within these untreated areas. The agency acknowledges that future actions may be contemplated in the future (several decades) as snags fall and contribute to heavy large fuel loading. Any actions would have to be considered in the future when they are ripe for decision and cannot be reasonably speculated at this time.

5. Maps showing where the current Black-backed Woodpecker habitat is in the analysis area and where all logging is proposed has been included in the MIS Report (attachments 1-

In conclusion, there are no definitive studies or examinations of BBWO relevant to the Sierra Nevada range in California that have determined the amounts of suitable nesting habitat and suitable foraging habitat that are required to support successful reproduction, nor examined the appropriate proportions of high, moderate, and low suitability habitat required to maintain sustainable populations. No scientific consensus exists regarding the amount or quality of suitable habitat required to maintain breeding populations relevant to the Sierra Nevada Range in California. In lieu of more definitive scientific consensus or a broader depth of studies evaluating habitat relationships of BBWO relevant to the Sierra Nevada Range in California, we believe it is reasonable to consider areas where BBWO have been detected and conditions that they have been observed to use as a reasonable proxy for describing suitable habitat.

Refer to WL#5, WL#6, WL#7, WL#8, WL#9, and WL#10.

5. **The Moonlight/Wheeler MIS Report's assumption about BBWO density in unburned forests is inaccurate.**

The Moonlight/Wheeler MIS Report assumes (p. 42) that there is about 1 pair of BBWOs per 100 acres, or 1 pair per 500 acres, in unburned forests throughout the Sierra Nevada, citing Bock and Lynch (1970) and Raphael and White (1984). This is a serious misuse of these studies. Both studies used the same study site, in which the "unburned" area was less than 400 meters from the unlogged high-severity patch (Figure 1 in Raphael and White 1984). In other words, the unlogged high-severity patch was within the home range of these few BBWOs nesting in adjacent unburned forest (Dixon and Saab 2000, Hutto 2008). Densities of BBWOs in unburned forest adjacent to large unlogged high-severity patches cannot be extrapolated to densities in unburned forest in general, and there is no scientific data supporting the Forest Service's attempt to do so here (RDEIS: Chad Hanson, JMP, pg. 2)

Response: The Forest Service is not making an 'assumption', as the commenter states, about BBWO densities in unburned forests. Rather, on page 42 of the final MIS Report, we have simply stated the results of two separate studies that estimated BBWO densities in unburned forests to be 0.2 pairs to 0.5 pairs per 100 acres (Bock and Lynch 1970, Raphael and White 1984).

The commenter criticizes our use of one of the few Sierra Nevada studies that published a density for unburned habitats. Yet, the commenter does not provide references to more relevant literature or suggest to us what he believes is a more reasonable estimate of BBWO density in unburned forests. Therefore, in the absence of specific studies that determined the density of BBWO in completely unburned forests, we are left with being unable to quantitatively estimate a potential density. As a result, we were left with simply being able to disclose what was reported in the published literature that was relevant – what was reported in these two articles.

Further the commenter appears to contradict his previous comments where he criticizes our assumption that BBWO suitable habitat includes fires that were 7-9 years old. Although the studies were examining the same 1960 fire, they occurred in two different timeframes (Bock and Lynch 1970 studied the fire 6, 7 and 8 years post-fire and Raphael and White 1984 studied it 16, 17 and 18 years post-fire) and used different methodologies to address different study questions. The fact that both studies found BBWO in unburned forests and even burned forests during these periods, suggests burned areas (and associated unburned areas) can provide usable, suitable habitat for BBWO through at least the 7-9 years used in this analysis.

Refer to WL#4, WL#6, WL#7, WL#8, WL#9, and WL#10.

6. The Moonlight/Wheeler MIS Report is highly misleading in its bioregional black-backed woodpecker trend analysis.

The statement that "distribution of black-backed woodpecker populations in the Sierra Nevada is stable" is wildly misleading for two main reasons. First, none of the sources gathered any empirical BBWO population distribution data or made any scientific assertions/conclusions about the population distribution of BBWOs being "stable" in the Sierra Nevada. Second, even if it was true that the "distribution" of BBWOs in the Sierra Nevada is stable (and, again, there is no scientific data to indicate this), this only means that BBWOs still live in the same areas of the Sierra Nevada in which they lived in the past. It does not mean that their populations are stable. In fact, the Breeding Bird Survey (BBS) includes population trend data on its website, and shows that BBWOs have declined in the Sierra Nevada. (RDEIS: Chad Hanson, JMP, pg. 2)(similar comment received for the DEIS: Chad Hanson, JMP, pg. 17)

Response: Although the commenter claims that no scientific data exists to support the conclusion that the BBWO population distribution is stable, he does not provide scientific data to suggest that it is not. Thus, the analysis conducted in the Moonlight/Wheeler project MIS Report and summarized in the RFEIS relies on the best available information regarding the two independent but interrelated aspects of BBWO trend. The analysis examines the effects of the project on suitable BBWO habitat, assesses trends in the amount of BBWO habitat created by recent wildfires, and accounts for reduced habitat quantity and quality due to salvage harvests on public and private lands. It should be noted that the Moonlight/Wheeler project MIS Report specifically references the 2008 Sierra Nevada Forests Bioregional MIS Report (USDA Forest Service 2008) as the source for its summary of bioregional trends. That Bioregional MIS Report includes a discussion of the process used to evaluate data and assess both habitat distribution and population trends. For the BBWO, the Bioregional MIS Report discloses that "The population monitoring strategy for this MIS is distribution population monitoring" and clarifies that "Distribution population monitoring tracks the changes in the distribution of each MIS at the Sierra Nevada scale by monitoring the changes in the presence of the species across a number of sample locations."

As evidence of scientific data that shows a decline in BBWO in the Sierra Nevada, the commenter references BBS data updated on their website. The Bioregional MIS Report includes a discussion and report of relevant Breeding Bird Survey (BBS) data for BBWO. It showed that from 1966-2005 the California population trend for seven BBS routes with BBWO was -0.4 (P=0.93) with a 95% confidence interval range from -0.0 to 8.1. As the commenter notes, the BBS data has been updated and reports a trend for seven BBS routes in California from 1966-2007 that has actually increased to 0.5 (P=0.92) with a 95% confidence interval range from -7.8 to 8.8. The commenter specifically mentions the Sierra Nevada trend data as showing a decline, and he is correct that based upon examining a subset of this data for only the Sierra Nevada (5 BBS routes in the analysis), the trend is -1.7 (P=0.76) with a 95% confidence interval range from -11.9 to 8.5. However, the BBS site indicates two significant cautions regarding these data and their interpretations. First the statistical evaluation that they conduct is reported through the P value. As they indicate, "A P value greater than 0.05 indicates that we cannot reject the null hypothesis that the trend is different from 0" (from Trend and Annual Index Information for the BBS data available online at: http://www.mbr-pwrc.usgs.gov/bbs/trend/regchg.html). Thus, none of the trends listed above can be used as strong support for the calculated trend. A second caution is that one must consider the BBS regional credibility rankings. The BBWO data for both

California and the Sierra Nevada regional population has a BBS Regional Credibility ranking of low. The BBS explains that this ranking indicates data with an important deficiency. In particular:

1. The regional abundance is less than 0.1 birds/route (very low abundance),
2. The sample is based on less than 5 routes for the long term, or is based on less than 3 routes for either subinterval (very small samples), or
3. The results are so imprecise that a 5% per year change would not be detected over the long-term (very imprecise).

The Sierra Nevada BBWO regional data referenced above has a calculated relative abundance of 0.04, a sample size of 5 routes, and a very high P value. Although the sample size is higher for the California data with 7 routes, the other statistics are similar with a calculated relative abundance of 0.06 and a very high P value. Siegel et al. (2008) considered both BBS data and Monitoring Avian Productivity and Survivorship Program (MAPS) data and concluded that neither source was likely to be a good predictor alone for regional MIS monitoring. This is consistent with the Bioregional MIS strategy of using multiple data sources (USDA Forest Service 2008) as no one source was likely sufficient.

Thus, the commenter is correct, and we do not disagree that the Forest Service cannot absolutely determine population trend from population distribution data, nor has the Agency attempted to do so. However, logically, declining populations would be ultimately expressed through a declining population distribution, and there is no current indication that the distribution of BBWO has substantially changed over the period when data has been collected. The Moonlight/Wheeler Project MIS Report evaluates the existing habitat and population data relevant to BBWO and concludes that the project would not result in a change in the distribution of black-backed woodpecker across the Sierra Nevada bioregion (Moonlight/Wheeler Project MIS Report, pg. 51).

Refer to WL#4, WL#5, WL#7, WL#8, WL#9, and WL#10.

7. The Forest Service's "Bioregional" analysis of BBWO habitat is based upon misinformation with regard to forest structure.

The Moonlight/Wheeler RDEIS (p. 116) admits (correctly) that BBWOs depend upon burned areas that were mature, closed-canopy forest prior to the fire (i.e., pre-fire structure of CWHR 4M, 4D, 5M, and 5D). However, the RDEIS immediately thereafter (pp. 117-118) includes a Sierra-wide analysis of BBWO habitat, claiming that there are currently 98,516 acres of BBWO habitat in the Sierra Nevada, and that there would still be 86,119 acres if the Moonlight/Wheeler project is implemented. However, the RDEIS does not define what it means by "high severity" in reference to these acres, and also includes all CWHR types in the total acreage figure, despite the fact that the scientific literature clearly states that BBWOs depend upon large patches of mature, closed-canopy forest that burns at high-severity (Russell et al. 2007; Hanson and North 2008). The RDEIS (pp. 117-118) cites Siegel et al. (2008) apparently as a basis to include all CWHR types, including areas that were sparsely forested prior to the fires. Again, this is highly misleading. Siegel et al. (2008) used the "call-back" method, in which a recording of a BBWO is played loudly in order to attract BBWOs. However, this method produces biased results when it is used within the home range radius of BBWOs because it draws them out of suitable habitat and into unsuitable areas by making them think they will find a mate (Hutto 2008). The only unbiased way to do the call-back method is to use it at a distance greater than the home range radius from unsuitable habitat (Hutto 2008). Siegel et al. (2008) did not do this, which is why they attracted some BBWOs into low-severity and moderate-severity areas, as well as into high-severity areas in

sparse forest (as opposed to high-severity areas in stands that were mature, closed-canopy forest prior to the fire). The Forest Service's inaccurate use of this data causes the RDEIS to wildly overstate the actual amount of BBWO suitable habitat currently existing in the Sierra Nevada, and understate the proportion that would be eliminated by the Moonlight/Wheeler project. (RDEIS: Chad Hanson, JMP, pg. 3)

Response: The commenter is partially correct, the discussion on page 117-118 should properly refer to only an analysis of the acres from large fires that have burned at high severity (as mapped by the Composite Burn Index value of 4 – Miller and Safford 2008) and an estimate of the area in the Sierra Nevada that has been salvage logged (from Forest Service records). This was not a true spatial analysis that examined the spatial overlay of high severity burned areas with potential BBWO pre-fire suitable CWHR types with salvaged areas. As stated in the MIS report and as we stated on pg 117, this was intended "to obtain a ballpark figure of how much potential habitat is available in the northeast California region". It cannot accurately estimate the true suitable habitat as not all of the high severity burned areas and not all of the salvage harvest occurred in stands that were dominated by medium and large trees and had moderate and high pre-fire canopy closure. The wording in the FEIS has been clarified to avoid confusion.

The commenter criticized the use of Siegel et al. 2008 because of it's use of the call-back survey method which potentially biases habitat based analyses as BBWO can be attracted to the observer. Siegel et al. acknowledges this methodology problem and indicates that the results of this methodology cannot easily be used to derive population estimates. They also acknowledge the problem of attracting BBWO to subsequent survey sites. They also acknowledge potential problems of using only passive call point methods (as used in Hanson and North 2008) in potentially biasing study results by failing to detect BBWO when they may be present and potentially having a higher detectability rate in high severity burned areas. Further, Hutto 2008 does not criticize the call-back method as the commenter notes. Rather Hutto used this method to make a statement that the playback detections generally confirm the pattern of detections he made using only passive call points. Since a comparison of survey methodologies was not the focus of this paper, Hutto does not provide comparative statistics between methods and does not indicate that it created biases and did not comment on the suggested distances between survey points. Nonetheless, we heed the cautions of Siegel et al. and only used Siegel's findings to indicate that findings from this Pilot Study suggest BBWO in the Sierra Nevada may be detected in a wide variety of pre-fire conditions.

Refer to WL#4, WL#5, WL#6, WL#8, WL#9, and WL#10.

8. The use of an 8-year timeframe for assessing effects on black-backed woodpecker habitat is inaccurate and misleading.

Black-backed woodpecker (BBWO) habitat is only truly suitable for about 6 years post-fire…nest success declines after 4 years post-fire, and declines dramatically after about 6 years post-fire, due to reduction of beetle larvae (i.e., the BBWO's food), snag attrition, and recolonization of nest predators into the burn area (Saab et al. 2004, Saab et al. 2007). Thus, while BBWOs can still be found in previously suitable habitat at 7 to 9 years post-fire, it is inaccurate to assert that their mere presence indicates continued viable use of the burned forest habitat. (RDEIS: Chad Hanson, JMP, pg. 3; Rene Voss, JMP, pg. 6 and pg. 16)

Response: The Moonlight/Wheeler Project cumulative effects analysis for BBWO uses an 8-year temporal scale (Moonlight/Wheeler FEIS, pg. 115) as does the bioregional trend analysis (Moonlight/Wheeler FEIS, pg. 117). It seems logical and ecologically reasonable to assume that

nest success or nest building by BBWO may drop off over successive years post fire, likely due to a complex series of changes as a result of snag longevity, insect availability, and nest predators. However, none of the recent BBWO studies (e.g., those of Saab, Hutto, and Hoyt and Hannon) specifically assess viability of this species.

More critically, the Saab et al. (2004) literature that the commenter references explains that "the length of time in which recently burned forests remain suitable habitat varies by site, depending on size, severity and mosaic of the burn," and, at their study site, "closer proximity and greater interspersion of unburned forest (15% unburned) **may** have allowed a quicker recolonization by nest predators into a smaller burn compared to the larger burn with few patches of unburned forest (4% unburned)." These findings of the Saab et al. study make sense given the ecological changes expected to occur over time in burned landscapes in the Sierra Nevada.

No definitive studies exist that determine when a fire no longer provides suitable habitat for BBWO, and based on the rationale provided above, it is illogical that such a definitive time limit truly exists. Both the Moonlight/Wheeler cumulative effects analysis and bioregional trend analysis use an 8-year timeframe to evaluate suitable habitat because several recent studies looking at BBWO have documented that this species continues to use burned forests within this timeframe. Recent monitoring indicates that 3 of 4 fires monitored in 2008 that were 7 years old (the oldest fires surveyed) had BBWO detections (Siegel et al. 2008). The authors note that "Suggestions that burned stands lose their enhanced attractiveness for foraging and nesting Black-backed Woodpeckers after 5-7 years are based primarily on information from other regions, and do not appear well-supported by our Sierra Nevada surveys." They also note that "Further survey work is needed to determine how many years after a fire burned stands continue to host Black-backed Woodpeckers in the Sierra Nevada, where particular assemblages of tree and insect species and/or unique environmental conditions may prolong the duration of resource availability compared with other areas of the species' range." Monitoring by these authors is sponsored by the Forest Service and will continue in 2009.

Refer to WL#4, WL#5, WL#6, WL#7, WL#9, and WL#10.

9. The RDEIS analysis of black-backed woodpecker habitat is inaccurate because it is based upon misinformation with regard to patch size.

The scientific data indicates that black-backed woodpeckers (BBWOs) drop essentially to zero when patches of suitable habitat are less than 30 acres (12 hectares) in size (Saab et al. 2002). BBWOs are positively associated with large patches of suitable habitat (Russell et al. 2007). The RDEIS analysis includes patches less than 30 acres in size, and thus overstates the amount of existing suitable BBWO habitat in the analysis area, and understates the proportion that would be logged by the Moonlight/Wheeler Project. (RDEIS: Chad Hanson, JMP, pg. 4; Rene Voss, JMP, pg. 6 and pg. 16)

Snag retention areas identified within treatment units that would remain unlogged are not adequate minimum patch size for BBWP's. (DEIS: Chad Hanson, JMP, pg. 17)

Response: The commenter's reference to Saab et al. (2002) states that "nests were not present where stand area was less than 12 ha (30 ac), and probability was highly variable when stand area was between 12 and 25 ha (30 – 60 ac), or when the area was greater than 55 ha (135 ac)." The reference is in relation to a predictive model of nest occurrence from 35 BBWO nests on two fires in the Rocky Mountains. Although BBWO did not appear to use stands smaller than 30 acres in this study, the authors did not report that they found avoidance of stands that were less than 30

acres. It is unknown how many stands that were otherwise "suitable" except for stand area existed within the study area; however, the study's authors report that the average stand area around nest sites was approximately 90 acres and around random points stand size was approximately 60 acres, making it difficult to know if this is an analytical artifact or biological response. The Forest Service is unaware of any analogous studies reporting on patch size use for BBWO in the Sierra Nevada so it is not known if these findings are directly applicable to the Sierra Nevada. Further, while patch size may be important in determining nesting occurrence, potential effects of the proposed project on both nesting and foraging habitat are analyzed as both are important to overall reproductive success.

Two of the authors of the Russell et al. (2007) reference cited by the commenter were co-authors of the Saab et al. (2002) paper. Both studies reported on the same fires using a subset of the same dataset (Russell et al. used 1995-1998 data while Saab et al. used 1994-1998 data). The objective of the Russell et al. paper was to compare the difference in predictive models based upon remote sensing data only and models augmented with field collected vegetation data. Importantly, Russell et al. provide the following caution: "Our models, however, were based on one moderate-severity burn in a ponderosa pine-Douglas-fir forest of Idaho. The ability of the model to generalize to other forests has not been tested." Due to the fine scale nature of burn severity mapping (30 meter pixels) and pre-fire vegetation mapping (5 acre minimum mapping unit), suitable habitat would potentially be under-represented if patches less than 30 acres were eliminated when they were reasonably adjacent to otherwise suitable habitat patches and would likely appear to a BBWO as a contiguous patch.

To address the commenter's concern that including suitable habitat patches less than 30 acres in the analysis overestimates the amount of existing suitable habitat, an analysis of severely burned habitat patches over 30 acres was conducted for the Moonlight/Wheeler Analysis Area. The analysis shows 66 habitat patches over 30 acres that experienced high vegetation burn severity (75 to 100 percent basal area mortality), totaling 26,877 acres in the Moonlight/Wheeler Analysis Area. This compares to 28,819 acres of severely burned BBWO habitat if all patch sizes (including those less than 30 acres) are included. The Moonlight/Wheeler Project, under the proposed action (alternative A) would cumulatively treat approximately 11,466 acres (40 percent) of the high burn severity patches over 30 acres within the Moonlight/Wheeler Analysis Area (Table 2 below). Hence, the Moonlight/Wheeler Project would not conduct any harvesting on approximately 17,411 acres (60 percent) of the large patches of BBWO habitat that experienced high vegetation burn severity effects in the Moonlight/Wheeler Fire Complex (Table 2 below).

Table 2. Comparison of amounts of high burn severity black-backed woodpecker (BBWO) habitat impacted under the Moonlight/Wheeler Project, based on different definitions of suitable patch size.

	High burn severity BBWO habitat patches larger than 30 acres	**High burn severity BBWO habitat of all patch sizes**
Amount of BBWO habitat within the 19,600-acre Analysis Area	26,877 acres	28,819 acres
Amount of BBWO habitat (defined above) treated under the Moonlight/Wheeler	11,466 acres (40%)	11,760 acres (41%)

Project via either salvage harvest or hazard tree removal		

Based upon a comparison of habitat patch size effects using the methods described above, it is clear that the analysis of effects did not significantly overstate the amount of BBWO habitat relative to the amount that would be treated under the proposed action as the commenter alleges. Hence, this additional analysis of effects on BBWO habitat continues to support the finding stated in the RFEIS (pg. 116) that, cumulatively, the Moonlight/Wheeler project effects would result in a decline in BBWO habitat availability and distribution across the Plumas National Forest but there would still be short term population increase resulting from the suitable habitat remaining after the proposed project.

Snag retention areas identified within treatment units that would remain unlogged under each action alternative do range in size from 7-26 acres, as the commenter points out. These areas were designated to provide for large snags and large down woody material recruitment to rehabilitate habitat structure (BA/BE, pg. 8). These areas were also incorporated into the design criteria to break up the continuity of harvested (and therefore cleared) areas within units. All snag retention areas fell along treatment unit boundaries (i.e. none were selected as 'islands' within units). Therefore, snag retention areas remain connected to adjacent, untreated burned forest patches and are reflected in Table 2 above. These areas are expected to provide for BBWO within the landscape area.

Refer to WL#4, WL#5, WL#6, WL#7, WL#8, and WL#10.

10. The Moonlight/Wheeler Project threatens the viability of the black-backed woodpecker in the Sierra Nevada.

The RDEIS (does not) actually divulges how much BBWO habitat currently exists in (the) fire area, and how much would be logged … (RDEIS: Chad Hanson, JMP, pg. 4)

Black-backed Woodpeckers would be extirpated (rendered locally extinct) from the area, due to total loss of habitat for this species if the Forest Service conducts the activities that it plans. (DEIS: Chad Hanson, JMP)

I conducted a GIS analysis of BBWO habitat in the Sierra Nevada, using an RdNBR threshold of 800 to define high-severity, as discussed above. I included the following additional restrictions in these high-severity areas: stands that were CWHR 4M, 4D, 5M, 5D, or 6 prior to the fire; federal public lands (there are no requirements to retain BBWO habitat on private lands, and this habitat is routinely clearcut shortly after fire, which also occurred in the Moonlight/Wheeler fire area); high-severity patches over 30 acres in size; high-severity patches in middle montane, upper montane, and eastern montane conifer forests (there is no record of BBWO use of lower westside forests, and subalpine forests are too sparse to be suitable); and areas north of Lake Isabella (BBWOs have not been recorded south of this area). I determined that there is a total of only 24,834 acres of BBWO suitable habitat in the entire Sierra Nevada. … I estimate that at least 2,000 acres of the 24,834 acres of BBWO habitat have been logged 2003-2006, leaving about 23,000 acres of actual habitat. Of this total amount, 17,776 acres are in Moonlight/Wheeler and 1,209 acres are in the American River Complex fire area, which is where the Black Fork project is planned. In other words, over 80% of the existing BBWO habitat in the Sierra Nevada is within the

Moonlight/Wheeler and American River Complex fire areas—the great majority in Moonlight/Wheeler. (RDEIS: Chad Hanson, JMP, pg. 4)

However, we can conservatively estimate that the proposed action for Moonlight/Wheeler alone would remove at least 40-60% of the BBWO habitat within Moonlight/Wheeler, which would remove 30-50% of the BBWO suitable habitat in the Sierra Nevada. The existing 23,000 acres of habitat supports alarmingly few BBWO pairs as things stand currently… If the Moonlight/Wheeler and Black Fork logging projects are implemented, and we estimate that roughly half of the BBWO habitat in Moonlight/Wheeler would be logged (this may be conservative), then that means this planned logging could lead to the loss of 30-50% of the Black-backed Woodpecker population in the entire Sierra Nevada (which is essentially the same as the entire BBWO population in California, since BBWOs don't live in the CA Klamath mountains). As such, the Moonlight/Wheeler project in and of itself poses a serious threat of extinction to the Black-backed Woodpecker in the Sierra Nevada, and in California in general. This threat is significantly exacerbated by planned salvage logging in the Moonlight/Wheeler Project and in other proposed post-fire logging projects, such as Angora (Lake Tahoe Basin Management Unit). (RDEIS: Chad Hanson, JMP, pp. 4 through 5; Rene Voss, JMP, pp. 6 through 7 and pp. 8 through 9)

The currently-existing amount of suitable habitat for Black-backed Woodpeckers in the Sierra Nevada is only enough to support at most 300-500 pairs. These numbers are so low that the Black-backed Woodpecker's California population—which could be a distinct subspecies—is currently at serious risk of extinction. If the Moonlight/Wheeler Project—or even a substantially scaled-back version of it—is implemented, it will seriously threaten the viability of the Black-backed Woodpecker in California. This threat is exacerbated by the lack of a mandatory population monitoring program for this Management Indicator Species. (RDEIS: Rene Voss, JMP, pg. 7)

Response: The commenter claims that the Moonlight/Wheeler Project RDEIS does not divulge how much BBWO habitat exists and how much would be affected by the project; therefore, one is unable to estimate project habitat loss resulting from the proposed project. The commenter is incorrect as the RFEIS specifically discloses effects on BBWO habitat, summarizing and incorporating by reference the Moonlight/Wheeler Project MIS Report, which includes 9 pages of analysis specifically addressing potential effects from the project on the BBWO. The RFEIS (Sections 3.4.2.1.2.1, 3.4.2.3.2.1, 3.4.2.4.2.1, 3.4.2.5.2.1) and MIS Report (pg. 45-49) provides the direct, indirect, and cumulative project effects to BBWO habitat. Cumulatively, after all proposed or ongoing dead tree removal project acreage within the analysis area is accounted for, approximately 20,172 (under Alt A) to 29,113 (under Alt E) acres of suitable BBWP habitat would be left untreated (MIS Report pg. 47, Table 15). As a result of remaining suitable habitat available post-project, this species is not expected to be 'rendered locally extinct', as the commenter states.

In addition, the PNF has records of BBWP nesting in non-burned forested stands, including lodgepole, high elevation white fir and foraging along green riparian zones above Antelope Lake (Gary Rotta, pers. com.). In summary, the commenter's statement that 'total loss of habitat for this species' would occur post-project is not supported by the analysis conducted for this project and the historical species presence records on the PNF.

As the commenter accurately points out, private industrial timberlands are typically intensively salvaged following wildfire; however, at the bioregional scale, some private lands are non-industrial timberlands and may or may not have intensive salvage occur. The RFEIS (pgs. 114,

140, 156, 170) and the Moonlight/Wheeler MIS Report (pg 46) states how much salvage harvest has been conducted to date on private lands within the analysis area; however the analysis only accounts for suitable habitats on public lands managed by the Forest Service.

The commenter uses his assumptions that BBWO are limited to only very high burn severity unlogged large patches in fires since 2003 in his determination that 80 percent of the suitable habitat for BBWO exists in the Moonlight/Wheeler and American River Complex Fires. Based on the commenter's inappropriate use of an RdNBR threshold for evaluating fire severity (refer to the attached comment response by Jay Miller), study findings that indicate BBWOs use a variety of burned (and unburned) habitats, and an analysis period limited to 5 years (2003 to 2007), the commenter's assessment likely underestimates the amount of existing BBWO suitable habitat across the Sierra Nevada bioregion. Further, smaller fires not accounted for at the bioregional scale of analysis (generally only fires that burn more than 1,000 acres of forested land are assessed through fire severity mapping) likely provide fine scale habitat mosaics that sustain local populations of BBWO. While we do not disagree that BBWOs heavily utilize ephemeral large high severity burned areas, and the larger area likely provides for higher population densities and contributes to pulses in population numbers, we do not believe that the vast majority of the habitat for BBWO in the Sierra Nevada exists in the two fire areas mentioned by the commenter. Again, the fact that BBWO are detected through the various data sources (BBS, MAPS, Siegel et al 2008) throughout the contemporary range indicates that this is not likely true.

While the commenter speculates about potential population numbers, uncertainties about BBWO habitat relationships in burned and unburned habitats, particularly how local populations persist in the absence of nearby wildfires for periods of time coupled with the lack of substantive information on BBWO densities in Sierra Nevada vegetation types, leads us to avoid such extrapolations due to the scientific uncertainty that exists at this time. Although the commenter refers to a study by Bock and Lynch from 1970 of a burned area in the Sierra Nevada, those results for BBWO were derived from two study plots, burned and unburned, 20.9 acres in size each. A single pair of black-backed woodpeckers occurred in the study plots, used both burned and unburned forest types, and had a territory that occurred both in the plots and outside the plots. Thus, territory size for this one pair was not accurately assessed and territory size could not be extrapolated out with any type of statistical confidence for this species. Therefore, the results from this study should not be used as a definitive estimate of population density.

Siegel et al. 2008 (pages 16 and 17) considered the effort needed to estimate BBWO population numbers across the Sierra Nevada. They concluded that due to, among other things, the difficulties of developing and implementing a reliable point count sampling methodology, "it may not be realistic to expect a spatially extensive monitoring program for Black-backed Woodpecker to actually count (or estimate from counts) numbers of individual birds. Doing so with confidence would likely require intensive efforts involving color-banding and repeated surveys. Such efforts are not compatible with a spatially extensive monitoring program, at least without incurring substantial financial costs. Rather than estimating annual population size, a more tractable survey goal would be to estimate and track the area of occupied habitat and the area of available habitat each year." It should be noted that the authors of Siegel et al. are affiliated with the Institute for Bird Populations, a well respected non-profit research group that specializes in bird studies.

Finally, the analysis of BBWO habitat for the Moonlight/Wheeler Project, presented in the MIS Report and summarized in the RFEIS, supports the conclusion that implementation of the project "under all alternatives, would not alter the existing trend in the ecosystem component, nor would it lead to a change in the distribution of black-backed woodpeckers across the Sierra Nevada bioregion" (MIS Report, pg. 51)

Refer to WL#4, WL#5, WL#6, WL#7, WL#8, and WL#9.

California Spotted Owl

11. The proposed project would result in serious short and long-term adverse impacts on the California spotted owl by removing fire-killed trees that provide current perch sites for foraging and future nest sites.

Removal of CSO PACs from the network was overly hasty and inappropriate. (DEIS: Monica Bond, JMP, pg. 2)

The Moonlight/Wheeler RDEIS categorizes severely burned forests as unsuitable habitat despite overwhelming scientific evidence that spotted owls forage in these habitats, and that many territories with severely burned stands in the Moonlight and Antelope fire complex continue to be occupied by owls. The RDEIS bases its claim that severely burned forests are unsuitable for owls on an unsupported speculation that these areas might become unsuitable in the long-term (20 or 30 years from now) as dead trees fall over time – even though no data are available about whether or not owls continue to use severely burned forests decades after fire, and in fact modeling based on known rates of snag longevity indicates that large dead trees are likely to be still standing and available to owls in the long-term. In other words, the Forest Service justifies eliminating suitable habitat that currently is occupied by owls because such habitat might hypothetically change 30 years from now and become unsuitable. (RDEIS: Rene Voss, JMP, pp. 5 through 6 and pg. 16; Monica Bond, JMP, pg. 1).

Response: As the RFEIS (Section 3.4.1.2.3) states, the Agency followed current direction (SNFPA 2004 ROD, pg. 37) in its analysis and determination to remove twenty-one PACs from the PNF PAC network. PAC habitat identified and analyzed for fire effects is based on what is recognized as suitable for this species in the CASPO Technical Report (Verner, et al 1992), the 2004 SNFPA FEIS and Vol 71 Federal Register of May 24, 2006. Deforested stands resulting from the fire and identified in the post-fire CWHR vegetation map are not considered suitable habitat areas to be retained for PAC designation (SNFPA 2004 ROD, pg. 37).

The commenter does not recognize the core substance of the project analysis regarding spotted owl habitat, the discussion of suitable habitat found in the Moonlight/Wheeler Project RFEIS on pages 84. The RFEIS uses the species standard definition for suitable habitat defined by the original treatise on the California spotted owl – *The California spotted owl: A Technical Assessment of its Status* by Verner et al. (1992), specifically Chapter 5 authored by Gutierrez and others. This definition has been utilized by the Forest Service in California since the report was released in 1992 with minor modification to generally assume that suitable habitat for this species is comprised of conifer and conifer-hardwood dominated forests with tree sizes greater than 11 inches diameter at breast height and generally greater than 50 percent canopy cover, although canopy cover down to 40 percent may have some low quality value as foraging habitat (USDA Forest Service 2001, 2004, USFWS 2006). Only areas that experienced moderately-high to high vegetation burn severity (50 to 100 percent basal area mortality) and now exist in a deforested condition (Landram 2008, personal communication, Moonlight and Antelope Adjunct Silviculturist BAER reports 2007) were considered to be unlikely to provide suitable habitat for California spotted owls.

We acknowledge, as the commenter also points out, numerous recent study findings that have detected spotted owls foraging in burned patches of snags following fires (Moonlight/Wheeler RFEIS, Section 3.4.1.2.3). Based on these findings, the RFEIS on pg. 81 states that "Moderately high to high severity burn patches create abundant large snags, large downed logs, and provide conditions in which dense areas of conifer regeneration and native shrub patches can grow – all habitat components which can support small mammal prey populations important to the spotted owl. However, the RFEIS (pg. 82) states clearly that these burned, deforested areas do not meet suitable spotted owl habitat conditions, as defined and tracked for management purposes (see preceeding paragraph).

The commenter's claim that the RDEIS identifies moderately-high to high severity burn areas as suitable now but will be unsuitable in the long term is not an entirely correct one. The section the commenter is referring to in the RDEIS (pg. 81) has been updated in the RFEIS (pg. 81) to further clarify that such burn areas are habitats defined as suitable according to Bond (2007). This section in the RFEIS continues with a discussion that, based on longevity of snags and the growth potential of fire generated brush dominating the burned sites, over time this burned habitat would not support much of the habitat parameters described by Bond as providing owl habitat.

We disagree with the commenter's statement that "the Forest Service is arguing that because moderate and severely burned forests that are currently suitable habitat might *hypothetically* become unsuitable in the long-term (perhaps 20 or 30 years from now), then it would not harm the owls to eliminate the suitable habitat now". As stated previously in this response and in the RFEIS and BA/BE, the Forest Service does not consider moderately-high and high severity burned forests as providing suitable habitat conditions for the spotted owl. These areas exist in a deforested, open condition and therefore do not provide suitable conditions for the owl, as defined by Verner et al. (1992) and others (USDA Forest Service 2001, 2004, USFWS 2006). That said, the Forest Service clearly acknowledges in the RFEIS and BA/BE recent findings by Bond et al. (in press) and others that burned habitats have been shown to provide foraging opportunities for owls. The Forest Service has never stated, as the commenter refers, that the effects of treating moderate and severely burned forests as proposed under the Moonlight/Wheeler Project "would not harm the owls". On the contrary, the effects section of the RFEIS for each action alternative (Sections 3.4.2.1.1.3, 3.4.2.3.1.3, 3.4.2.4.1.3, 3.4.2.5.1.3) states the following: "cumulative removal of fire-killed or roadside hazard trees does contribute to overall habitat degradation due to the removal of fire-killed structures supporting habitat. These actions could potentially adversely affect spotted owls if any are present in these areas due to disturbance and loss of foraging habitat."

The Forest Service is unaware of any studies that have documented that spotted owls can establish a resident territory or maintain a reproductive territory in an area composed primarily of burned forest with insufficient residual green trees. Nor is the Agency aware of any literature that supports that spotted owls seek out large residual snags that are in 20 to 30 year old (or older) previously burned areas that are away from residual older forest stands. This would be contrary to the contemporary scientific understanding of the basic biology of this species. Verner et al. (1992) discusses this on page 81, stating: "California spotted owls use forested habitats almost exclusively…" The authors continue: "Only one record is available of a pair nesting in a tree not closely surrounded by a stand of other trees. That pair nested in a residual snag in a clearcut on the Sierra NF, although relatively dense stands of oaks were within 160 feet of the nest and the young moved there shortly after they left the nest…" Finally, the authors also note that "Spotted owls have occasionally foraged in relatively open areas, such as shrubfields, meadows, or plantations, but this is exceptional." They then conclude "We included these observations only to illustrate that California spotted owls occasionally occur in habitats that do not meet all their life

history requirements (that is, they are unsuitable). It is important to note that one cannot infer suitability from the occasional presence of owls in a habitat."

The BA/BE (pg. 46) states "it seems likely that owls may persist in newly burned areas with some remaining habitat due to site fidelity and immediate flushes of prey in response to fire (Keane, pers. comm.)". We base our hypothesis that these represent short-term responses of a highly territorial species on several anecdotal sets of observations from recent fires because, as the commenter and others have acknowledged, long-term scientific studies of post-fire use have not been conducted (Bond et al. 2002, Clark 2007) and the implications from these anecdotal observations are not inconsistent with our hypothesis. In particular, we reviewed information related to surveys and a study conducted by the commenter (Bond et al., in press) on the Sequoia National Forest in the 2002 McNally Fire area . The results of that study have not been published yet and are unavailable for review and thus the details cannot be fully considered for relevance. However, Steve Anderson, Resource Officer on the Kern River Ranger District, Sequoia National Forest, where the McNally Fire occurred was knowledgeable of the study and spotted owl occupancy in the area of the study and responded to Don Yasuda, Wildlife Biologist for Region 5, in Memo 2670, dated July 5, 2007. The following are quotes from his responses regarding the study by Ms. Bond.

> "The owls that returned after the fire generally had some green islands and those that did not return were in areas of greater burn severity. Note that none of the spotted owls included in the nine that we believe she includes in her study returned to the same territory, they all moved to some degree to take advantage of green islands or edges of the burn since the previous core areas of their territories were burned severely. So there was overlap of a representative mix of severity but she appeared to focus on owls that returned and may not have presented a full picture of the effects of the fire including the owls that did not return."
>
> "I am aware of one set of owls that were found in a stand of dead trees in the year after the fire. One of the owls was banded by George Steger (one of the Poison owls). The period of use was prior to needle drop in a stand that was 75-90% but only had moderate burn severity and had retained needles for the first one to two years. The owls moved out of the burn in the second year."

A similar fire effect played out on the Tahoe National Forest after the Star Fire of 2001. CSO PAC PC075 was severely burned in the fire. A small clump of green trees remained in the PAC boundary 1 year post-fire, and the pair of owls were detected in the PAC in 2002 by the regional spotted owl demography team. Following 2002, the pair was never relocated in their burned PAC on the Tahoe National Forest, but were instead found to be occupying suitable habitat to the south on the Eldorado National Forest and were incorporated into a new PAC on the Eldorado National Forest.

Refer to WL#12, WL#13, WL#15, and WL#16.

12. **The DEIS failed to address pertinent recent research (Bond 2002, Clark 2007) that reveals spotted owls can and do utilize unlogged severely burned forests.** (DEIS: Monica Bond, JMP, pg. 3-4)

Response: The research the commenter cites has been considered in the Affected Environment section of the RFEIS (Section 3.4.1.2.3) and the Environmental Consequences section of the

RFEIS (Sections 3.4.2.1.1.3, 3.4.2.3.1.3, 3.4.2.4.1.3, 3.4.2.5.1.3) as well as the BA/BE (pgs. 60, 63, 65, 67). Please refer to RTC # and RTC # as it pertains to the agency's definition of suitable owl habitat used in this project's analysis.

The commenter references a thesis by Clark (2007) to support the general notion that spotted owls and their use of habitat is not substantially affected by wildfire. However, the commenter may have interpreted the findings by Clark (2007) in a too positive light. For instance, Clark stated that,

> "Furthermore, the owls that ventured into the fire were typically individuals that were displaced by the fire and periodically visited their old territory. This suggests that when given the opportunity, owls focused their activities in unburned habitat. Utilization of unburned habitats was further demonstrated by several owls with territories inside the fire frequently traveling long distances to forage in unburned habitat" (p. 117).
>
> "While owl pairs inside fires likely produced young at a similar rate to owls outside fires, overall reproductive output declined following wildfire. This is because the total number of owl pairs following wildfire declined and therefore less total young were produced each year, which indicated a negative impact of fire on spotted owl reproduction" (p. 124).
>
> "Use of roosting and foraging habitat with high severity burn was very low suggesting that this cover type was poor habitat for spotted owls" (p. 127).
>
> "Given that spotted owls in this study had decreased survival and occupancy following wildfire, it is apparent that wildfire and salvage logging collectively had negative impacts on spotted owls…" (p. 128).

Similarly, the commenter references Clark (2007) to make inferences that salvage logging, more than wildfire, is negative to spotted owls and their use of habitat. However, Clark (2007) did not distinguish between intensity of salvage harvests, but lumped all degrees of salvage harvest into one category for analysis. For instance, on p.14 Clark stated, "Salvage unit polygons included a variety of harvest techniques including clear-cuts, thinning with green tree retention, and patches of wildlife "leave" trees. However, to minimize the number of habitat classes in the final map, harvest prescriptions were combined into a single category, regardless of the type of salvage." Also, on p. 122 Clark stated, "Wildfire and subsequent salvage logging on private timberlands were likely responsible for the elevated extinction rates following the Timbered Rock Fire, although I did not examine the impacts of wildfire and salvage separately in this analysis", on p. 124 stated, "I was unable to estimate the impacts of wildfire and salvage logging separately on spotted owl survival because they were highly interrelated and I lacked sufficient data to model these effects separately", and, on p. 128 stated, "Further research is needed to investigate the impacts of high severity wildfire and salvage logging on survival rates of spotted owls because I was unable to separate these factors". Therefore, due to lumping all kinds of salvage into one category, and not analyzing the effects of wildfire separately from salvage, it is difficult to interpret how his results would be extrapolated to potential effects of this project, which has designated 1,723 acres (under Alternative A) within treatment units as snag retention areas and will leave untreated from 46,517 to 54,042 acres (alternatives A and C, respectively) of the fire land base located on NFS lands.

Refer to WL#11.

13. **I recommend that the Forest Service select Alternative B, the only proposed alternative to ensure an appropriate level of snags to support spotted owls and other older-forest species in the short- and long-terms. In my scoping documents, I recommended that the project retain larger-sized snags (and scorched live trees) and large downed woody debris in all highly burned areas to provide (1) future owl nesting sites, (2) adequate perches for foraging and (3) habitat for prey species (Verner et al. 1992).** (DEIS: Monica Bond, JMP, p.)

Response: Snag retention areas, ranging in size from 7 to 26 acres, were incorporated into project design (RFEIS, Sections 2.2.1.1, 2.2.3.1, 2.2.4.1, 2.2.5.1). Snag retention areas were designated to provide for large snags and large down woody material recruitment to rehabilitate habitat structure within treatment units (BA/BE Report, pg. 8).

Standards and guidelines for down wood and snags to be retained within the project area stated in the SNFPA ROD (USDA 2004, pg. 69) have been implemented for this project. Furthermore, at least 49,000 acres of public land within the fire perimeters (over 24,000 of which burned with high burn severity) would be left untreated, thereby maintaining and recruiting snags across the landscape.

Our knowledge of CSO ecology suggests that the greatest potential benefit to spotted owls are snags and current and future down logs near the edges of the fire or in proximity to moderate to large patches of surviving green trees. It is possible that spotted owls could use snags for nesting if they are in close proximity to living green trees and this is most prevalent in areas that burned at low and moderate severity. Most of the areas proposed for treatment are in larger patches where few if any trees survived.

Refer to WL#2 and WL#11.

14. **Much of the California spotted owl PAC acreage initially mapped by the Forest Service immediately after the Moonlight and Wheeler fire complex as having burned at high-severity, leading to 20 PACs being dropped from the network, may in actuality have burned at lower severities due to survival of terminal buds and subsequent flushing of foliage—a factor unaccounted for in the DEIS. This potentially could have altered the results of the post-fire PAC analysis.** (DEIS: Monica Bond, JMP, pg. 6)

Response: The post-fire CWHR vegetation map was used to identify remaining suitable habitat around each activity center and was thus critical in the determination to remove 20 PACs from the network. Fire severity data was not the only tool used to create this updated vegetation map. Infra-red aerial photos and pre-fire vegetation data provided critical information as well in determining fire effects on canopy cover and change in CWHR classifications (FEIS, Section 3.4.1). The creation of this post-CWHR map was a meticulous and exhaustive process and the Agency feels the most reliable data sources were used in its completion.

It is possible that some individual trees where all of the needles were scorched from the fire will exhibit needle flush following the fire. From past experiences, most of these trees will ultimately die in subsequent years. Some of those individual trees, however, could survive long term but would have substantially damaged crowns and would not be likely to provide the deep and full crowns typically characteristic of trees in suitable spotted owl habitat. The harvest and marking guidelines stipulate that only trees with no green needles are removed, except for limited cases where trees are human health and safety risks. In general, it cannot be reasonably expected that,

within each of the 20 PACs removed, flushing trees could account for enough acres to establish and sustain a 300 acre protected activity center.

In addition, post-fire CSO surveys have been conducted in 2008 and are currently being completed for 2009. If territorial spotted owls are detected, the biologist will re-evaluate the opportunity to establish a protected activity center and, if applicable, make recommendations to the decision-maker for potential modification of the project to mitigate adverse effects to CSO.

Refer to WL#11.

15. **The 2004 SNFPA Framework changes are likely to precipitate the need to list the California spotted owl as endangered or threatened, particularly since researchers have documented continuing declines of the subspecies.** (DEIS: Monica Bond, JMP, pg. 6)

Response: After reviewing the best available scientific and commercial information, the U.S. Fish and Wildlife Service (USFWS), in its most recent finding, determined that listing the CSO under the endangered species act is not warranted (Federal Register, May 24, 2006, Volume 71, No. 100). The USFWS considered the estimated amounts of habitats affected by active management and estimated from potential wildfires and concluded that no available data indicated that the removal of trees and the reduction in canopy cover as prescribed by the 2004 Framework and described herein would affect California spotted owl reproduction or occupancy such that the California spotted owl is in danger of extinction now or within the foreseeable future (FR Vol.71, No.100, pg. 29901).

The Forest Service recognizes that the threats to CSO must be evaluated based upon actual changes in vegetation from active management and wildfires. The Moonlight-Wheeler Fires, because they affected a large number of spotted owl territories in a contiguous area, are a concern for the impact they had on the distribution of CSO, including in the identified Area of Concern. The effects of this are fully evaluated in the BA/BE and summarized in the FEIS. These fires highlight and support the wildfire threats to CSO that the Forest Service identified in the HFQLG and in the SNFPA and that the USFWS concurred with in their listing determination. As future large high severity fires continue to impact existing CSO territories, the Forest Service will re-examine the species status and will consult with USFWS if it appears that the species is threatened with extinction.

Since the demographic studies of the CSO continue, the estimates of the population rate of change (lambda) are continually updated. At the time of the USFWS listing review, the data suggested that the spotted owls in the Sierra Nevada have shown increased survival during the past 16 years, and with the exception of one study area which showed a decline that was not statistically significant, spotted owl populations in the Sierras are not declining. Considering the habitat affects of the fires and the estimated effects of the project and the species distribution in the project area and in the Plumas National Forest area, the analysis in the BA/BE, as summarized in the FEIS, reasonably concludes that this project would have the potential to affect individual spotted owls but would not lead to a trend toward federal listing or loss of viability.

Refer to WL#11.

16. **The RDEIS fails to analyze the impacts of post-fire salvage logging on California spotted owls in the project area. The RDEIS does not provide 2008 post-fire survey**

data in a usable format for the public to be able to properly determine potential project impacts on individual owl territories.

The BA/BE at p. 46-47 provides a summary comparison of PAC occupancy between burned and adjacent unburned sites. While interesting and useful, the issue at hand is not a comparison of burned versus unburned territory occupancy rates. The fire has already occurred (RDEIS: Monica Bond, JMP, pg. 5).

The BA/BE fails to provide any data or discuss the impacts of post-fire salvage logging on occupancy rates of individual spotted owl PACs. The BA/BE and RDEIS did not analyze the loss of currently suitable habitat from this project on spotted owls, because the Forest Service improperly assumed the habitat was not suitable (RDEIS: Monica Bond, JMP, pg. 5)(similar comment received for DEIS: Chad Hanson, JMP, pg. 13)

The RDEIS and BA/BE do not provide critical information in a useful format for the public to determine impacts of the project on spotted owls. The original BA/BE provided a table showing each PAC and its occupancy status prior to the fire (2006). However, despite owl surveys conducted in 2008, the RDEIS did not provide the post-fire occupancy of specific PACs in the new BA/BE. In other words, I cannot determine which of the fire-affected PACs were occupied in 2008 other than PL107. The RDEIS simply summarized the number of PACs that were found to be occupied in 2008 and did not incorporate this information on a PAC-specific basis in an updated table. It is unclear why this information was provided in the original BA/BE but not in the updated version (RDEIS: Monica Bond, JMP, pg. 4))(similar comment received for DEIS: Chad Hanson, JMP, pg. 13)

Response: The table and discussion to which the commenter is referring to (Moonlight/Wheeler Project BA/BE, pg. 47, Table 12) does not in any way, as the commenter states, provide a summary comparison of PAC occupancy between burned and adjacent unburned sites. Instead, this table simply presents information on detection and occupancy data for the twenty-five PACs impacted by the Moonlight and Antelope Complex fires, including the most recent (pre-fire) survey results from 2006.

An evaluation of fire effects on spotted owl PACs within the Moonlight/Wheeler Analysis Area was completed and these results are provided and discussed in the RFEIS (pg. 82-85) and BA/BE (pg. 49-52). The Forest Service followed current direction (SNFPA 2004 ROD, pg. 37) in its analysis and determination to remove twenty-one PACs from the PNF PAC network. PAC habitat identified and analyzed for fire effects is based on what is recognized as suitable for this species in the CASPO Technical Report (Verner, et al 1992), the 2004 SNFPA FEIS and Vol 71 Federal Register of May 24, 2006. Deforested stands resulting from the fire and identified in the post-fire CWHR vegetation map are not considered suitable habitat areas to be retained for PAC designation (SNFPA 2004 ROD, pg. 37).

As stated and cited earlier in this response letter, the RFEIS and BA/BE recognize that moderately-high to high severity burn areas, although not suitable as defined for management and tracking purposes, does provide foraging conditions for spotted owls. However, there are still many unknowns and uncertainties associated with both the short and long-term responses of owls affected by large, high severity wildfires and owl responses immediately post-fire should be assessed (RFEIS, pg. 82). Results from the first year of post-fire owl surveys were released in January 2009 in the *California Spotted Owl (CSO) Module: 2008 Annual Report to HFQLG* (John Keane, Principal Investigator) and these results are presented in both the RFEIS (pg. 82) and BA/BE (pg. 47). Spotted owls did not continue to occupy territories severely burned by fires

in 2007. Twenty-three spotted owl protected activity centers (PACs) were located in the pre-fire landscape. Vegetation and owl surveys were conducted in the pre-fire locations of the 23 spotted owl PACs to evaluate the effects of the fires. Suitable spotted owl habitat decreased from approximately 70 percent to 6 percent following the fires. Only one pair of territorial owls was documented in the 88,000-acre Moonlight-Antelope Complex Fire Area, with the female from this pair (which did not breed in 2008) being the only female detected in the fire area. There were 10 single male detections made across the burned area, but they occurred primarily during the night when owls typically forage. In unburned habitats within a 1-mile buffer area surrounding the burned area, five confirmed pairs, one unconfirmed pair, one territorial male single and six single detections were documented. Based upon this initial year of surveys, Keane suggests that "the immediate post-fire landscape may not support territorial CSO sites, low-mid severity fires may have positive or neutral effects on CSO, and it is unknown if CSOs can persist over both the long-term and the short-term in severely burned areas of pre-fire suitable habitat." Spotted owl surveys in Moonlight-Antelope Complex Fire Area will continue in 2009.

To address the commenter's concern that the 2008 Moonlight/Wheeler Fire Area spotted owl survey results are not included in an updated occupancy table and therefore does not allow a determination to be made as to what fire-affected PACs were occupied in 2008, these survey results have now been included in Table 12 of the final BA/BE (pg. 47). This table now displays that three of the 10 single male spotted owl detections in 2008 fell within areas previously designated as PACs (pre-fire PACs PL 229, PL262, and PL284). These individuals, based on currently accepted protocols, could not be classified as territorial birds, therefore an activity center was not established around these detection areas. Table 12 also shows the 2008 pair detection that fell within PL107 (Fred's Creek PAC). As the RFEIS (pg. 85) and the BA/BE (pg. 52) state, this PAC has been retained and tentatively re-mapped to the best available suitable acres around this new activity center location. If additional survey results (now being completed in 2009) identify any other resident single or pair within the Moonlight/Wheeler fire perimeter, the Forest Service will designate an activity center based on the best available 300 acres of habitat. Project EA, pg. 67).

Refer to WL#11, WL#12, WL#13, and WL#15.

Species at Risk

17. The Moonlight/Wheeler Project RDEIS fails to analyze adverse impacts to Species at Risk that are strongly associated with burned forests.

Appendix E of the 2001 Sierra Nevada Forest Plan Amendment Final EIS identifies numerous Species at Risk (SAR), which it describes as species for which there is a significant concern about loss of viability—i.e., extinction. The RDEIS fails to analyze impacts to these SAR, despite the fact that several of them have strong habitat associations with high-severity fire areas and/or large snags. Examples include: olive-sided flycatcher, silver-haired bat, long-legged myotis, Sierra Nevada snowshoe hare, blue grouse, and pileated woodpecker. (RDEIS, Chad Hanson, JMP, pg. 5)

Other wildlife species dependent upon high-severity burned forest, large snags, and/or patches of montane chaparral, such as the Olive-sided Flycatcher (a Species at Risk), several myotis bat species (all Species at Risk), and the Sierra Nevada Snowshoe Hare, would be threatened by the Moonlight/Wheeler Project. This threat is exacerbated by the Forest

Service's failure to conduct required population monitoring for Species at Risk. (RDEIS: Rene Voss, JMP, pg. 7 and pg. 17))(similar comments received for the DEIS: Chad Hanson, JMP, pp. 20-21)

Response: The Sierra Nevada Forest Plan Amendment (SNFPA) Final Environmental Impact Statement (FEIS 2001), Appendix E identifies Species at Risk (SAR) to include: (1) Federally Threatened, Endangered, and Special Concern Species, (2) Forest Service Sensitive Species; (3) species identified in the Sierra Nevada Forest Plan Amendment's "high vulnerability" group; and (4) species identified in the Sierra Nevada Forest Plan Amendment's "moderate vulnerability" group with either small populations or suspected population declines. Neither the pileated woodpecker nor blue grouse are identified as SAR (SNFPA FEIS, Appendix E, Table E-9, pg. E-64). The remaining four species, olive-sided flycatcher, silver-haired bat, long-legged myotis, and Sierra Nevada snowshoe hare, are identified as SAR within the moderate vulnerability group; however, Table E-9 indicates that all four of these species are at lower risk (SNFPA FEIS, Appendix E, Table E-9, pg. E-64 and E-69). Nonetheless, effects of the Moonlight/Wheeler Project on habitats for these six species have been addressed through the Moonlight/Wheeler Biological Evaluation (BE) and Management Indicator Species (MIS) analyses, which assess the Project's effects on species that have the same habitat requirements as the six species listed by the commenter.

Habitat requirements cited in this response come directly from the California Wildlife Habitat Relationships System available from the California Department of Fish and Game and from the Birds of North America Online, a product of the Cornell Lab of Ornithology. Both services derive species-specific data gathered from the latest research. Although the commenter implies that the species he lists are dependent upon burned habitats, a review of life history accounts for these species in the California Wildlife Habitat Relationship System (CWHR 2008) does not indicate that burned habitats are a major habitat association. (Olive-sided flycatchers do however have some association with burned habitats, as discussed below.) While these six species may utilize burned areas and benefit from the change in forest structure and heterogeneous landscapes shaped by fire, they are primarily found in living forests.

Olive-sided Flycatcher

Olive-sided flycatchers are "mostly associated with edges of open mixed conifer forest near natural openings (meadows, canyons, fires) or man-made openings (clear-cuts, harvest units). Presence in early successional forest appears dependent on availability of snags or residual live trees for foraging and singing perches. In mixed conifer forests of the Sierra Nevada, more abundant in open mixed conifer and red fir forest than in closed canopy forest; optimum habitat considered to be late successional forests with 0-39% canopy cover." Their "association with burned areas is likely due to the creation of forest openings, increased interface of live and dead forest, availability of snags, and increased aerial insect population providing foraging opportunities." In other words, olive-sided flycatchers exploit the creation of openings following fire events, but they are not dependent upon them. Olive-sided flycatcher habitat is analyzed by proxy in the Moonlight/Wheeler MIS Report through the following habitat analyses: (1) mid seral coniferous forest (pp. 26 through 31), represented by mountain quail; (2) late seral open canopy coniferous forest (pp. 31 through 33), represented by blue grouse; and (3) burned forest (pp. 42 through 51) represented by black-backed woodpecker.

The commenter correctly points out that the olive-sided flycatcher appears to associate with recently burned areas; however, this species also breeds in early seral forest conditions in unburned forests and is not completely fire-dependent (Robertson and Hutto 2007). However, the

commenter incorrectly references the Robertson and Hutto (2007) literature. While the authors, in their study area in the northern Rocky Mountains, did detect what they considered an "ecological trap", they were comparing a high severity burned forest with a selectively thinned unburned forest that had similar stand structure. They did not evaluate salvage harvest nor the effects of a reduction in the number of snags in a burned forest. Furthermore, Robertson and Hutto (2007) do not claim that the "ecological trap" that they detected in their study would not sustain populations. In fact, to the contrary, they clearly emphasize on page 118 "that an ecological trap is a behavioral, not a population phenomenon." They further state that "Thus, while the presence of an ecological trap may indeed reduce the likelihood of population persistence, absolute or relative population growth rates are not diagnostic characteristics of ecological traps." As it was not the objective of their study, nor appropriate for their study design, they did not study or report on population growth rates for olive-sided flycatchers.

Sierra Nevada Snowshoe Hare

Snowshoe hare use "montane riparian habitats with thickets of alders and willows, and in stands of young conifers interspersed with chaparral. The early seral stages of mixed conifer, subalpine conifer, red fir, Jeffrey pine, lodgepole pine, and aspen are likely habitats, primarily along edges, and especially near meadows, dense cover is preferred, either in understory thickets of montane riparian habitats, or in shrubby understories of young conifer habitats." The CWHR information makes no reference to severely burned areas providing habitat for this species. The analysis of early seral coniferous forest, represented by the mountain quail, in the Moonlight/Wheeler Project MIS Report (pp. 26 through 31) addresses impacts to habitat for the snowshoe hare, which similarly relies on early seral coniferous forest habitat.

Pileated Woodpecker

Pileated woodpeckers "occupy dense mature forests with large numbers of snags, stumps and logs for cover and foraging" and "late successional stages of coniferous or deciduous forest, but also in younger forests that have scattered, large, dead trees." While pileated woodpeckers may occasionally forage within burned areas, the species is not associated with high severity fire, but rather large dead trees in mature, closed canopied forests. Effects of the Moonlight/Wheeler Project on pileated woodpecker habitat are disclosed in the Moonlight/Wheeler Project BE under the California spotted owl (pp. 56 through 67), northern goshawk (pp. 69 through 73) and forest carnivores sections (pp. 75 through 78). In addition, pileated woodpecker habitat is analyzed in the Moonlight/Wheeler Project MIS report under late seral closed canopy coniferous forest habitat (pp. 33 through 38) represented by spotted owl, American marten, and northern flying squirrel.

Silver-haired Bat

Silver-haired bats are associated with ponds and streams in forested areas. This species forages in or near coniferous forests or mixed deciduous forests adjacent to water and uses buildings, hollow trees and abandoned birds nests (mainly woodpecker nests) for breeding. Silver-haired bats are not specifically associated with severely burned forest. Habitat for the silver-haired bat was analyzed in Moonlight/Wheeler MIS Report under snags in burned forest habitat (pp. 42 through 51) and snags in green forest habitat pp. 38 through 42). As disclosed in the RDEIS, riparian habitat conservation area guidelines (Appendix C) are specifically aimed at protecting stream and pond habitats.

Long-legged myotis

The long-legged myotis is associated with high, open and wooded mountainous terrain and uses cliffs, hollow trees, and buildings to roost and breed. The species is not associated with severely burned forests. No cliffs are located in the proposed treatment areas, and habitat effects for this species are analyzed in the MIS report under snags in burned forest habitat (pp. 42 through 51) and snags in green forest habitat (pp. 38 through 42).

Blue Grouse

The blue grouse is an identified MIS for the Plumas National Forest. Detailed analysis of the effects of the Moonlight/Wheeler Project on blue grouse habitat (which is comprised of late seral open canopy coniferous forest) is presented in the Moonlight/Wheeler MIS Report (pp. 31 through 33).

Finally, the use of the SAR concept during the planning and analysis process for the Sierra Nevada Forest Plan Amendment during 1998 through 2000 was a forward-looking attempt to implement the 2000 planning rule. The 2000 planning rule was never implemented, and there are no legal requirements for monitoring SAR.

Refer to WL#18 and WL#20.

Management Indicator Species

18. The Moonlight/Wheeler Project violates forest plan requirements for Management Indicator Species (MIS) and SAR monitoring.

Regardless which framework amendment applies, the Forest Service must gather MIS population data. The 2004 Framework ROD specifically incorporated the population monitoring requirements of Appendix E of the 2001 Framework FEIS. We assert that the 2007 amendment for MIS is illegal under NEPA. This issue is currently under litigation. See Sierra Forest Legacy v. U.S. Forest Service, No. 08-4240 (N.D. Cal. 2008).

The MIS and SAR species which have a check mark under the column heading "Population Monitoring" are required to have their populations monitored. Earth Island Institute v. U.S. Forest Service, 442 F.3d 1147, 1173-1176 (9th Cir. 2006). These include numerous species dependent upon snags and burned forest—species which would be harmed by salvage logging. The Forest Service has failed to conduct this monitoring, and thus cannot continue to log the habitat of these species without risking a threat to their viability. Id. (RDEIS: Rene Voss, JMP, pp. 9 through 10)(similar comment received for DEIS: Chad Hanson, JMP, pg. 14)

Response: Management Indicator Species **(**MIS) for the Plumas National Forest are identified in the Sierra Nevada Forests Management Indicator Species Amendment (SNF MIS Amendment) Record of Decision (ROD) signed December 14, 2007. The Amendment replaces the Plumas National Forest's former MIS list (contained in the 1988 Plumas National Forest Land and Resource Management Plan, LRMP) with a list of 13 MIS.

The SNF MIS Amendment ROD states, "This decision modifies Appendix E of the 2001 SNFPA FEIS, as adopted by the 2004 SNFPA ROD in the following manner: this decision removes the "X" in the MIS column in Tables E-9, E-10, and E-11 of Appendix E. This decision drops these

species as MIS" (SNF MIS ROD, pg. 5). Hence, the population monitoring requirements of the 2004 Sierra Nevada Forest Plan Amendment Record of Decision have been replaced by the 2007 MIS Amendment ROD, and therefore no longer apply.

Guidance regarding MIS set forth in the Plumas LRMP as amended by the 2007 SNF MIS Amendment ROD directs Forest Service resource managers to (1) at project scale, analyze the effects of proposed projects on the habitat of each MIS affected by such projects, and (2) at the bioregional scale, monitor populations and/or habitat trends of MIS, as identified in the Plumas LRMP as amended.

The bioregional scale monitoring strategy for the Plumas NF's MIS is found in the 2007 SNF MIS Amendment ROD. Bioregional scale habitat monitoring is conducted for all 12 of the terrestrial MIS. In addition, bioregional scale population monitoring, in the form of distribution population monitoring, is identified for all of the terrestrial MIS except for the greater sage-grouse. For aquatic macroinvertebrates, the bioregional scale monitoring identified is Index of Biological Integrity and Habitat. The current bioregional status and trend of populations and/or habitat for each of the MIS is discussed in the Sierra Nevada Forests Bioregional Management Indicator Species (SNF Bioregional MIS) Report (USDA Forest Service 2008).

All habitat monitoring data are collected and/or compiled at the bioregional scale, consistent with the Plumas National Forest LRMP as amended by the 2007 SNF MIS Amendment ROD. Habitats are the vegetation types (for example, early seral coniferous forest) or ecosystem components (for example, snags in green forest) required by an MIS for breeding, cover, and/or feeding. MIS for the Sierra Nevada National Forests represent 10 major habitats and 2 ecosystem components (USDA Forest Service 2007), as listed in Table 1 of the MIS Report (pg. 5) prepared for this project.

The Sierra Nevada Forest Plan Amendment Final Environmental Impact Statement (SNFPA FEIS 2001) identified Species at Risk (SAR) to include: (1) Federally Threatened, Endangered, and Special Concern Species, (2) Forest Service Sensitive Species; (3) species identified in the Sierra Nevada Forest Plan Amendment's "high vulnerability" group; and (4) species identified in the Sierra Nevada Forest Plan Amendment's "moderate vulnerability" group with small populations or suspected population declines. Species at risk are assessed in Appendix R and listed in Appendix E of the SNFPA FEIS. The use of the SAR concept was a forward-looking attempt to implement the 2000 planning rule. The 2000 planning rule was never implemented, and there are no legal requirements for monitoring SAR.

Refer to WL#17.

Migratory Bird Treaty Act

19. **Implementation of the Moonlight/Wheeler Project during the nesting period would lead to violations of the Migratory Bird Treaty Act (MBTA).** (RDEIS: Rene Voss, JMP, pg. 20)

The MBTA makes it unlawful for any person to kill a bird, its nest, or eggs, identified at 50 CFR § 10.13 (includes the black-backed woodpecker). See 16 U.S.C. § 703 et. seq. Approval of logging on July 15, 2009 before black-backed woodpecker chicks have fledged would likely lead to a violation of the MBTA because the logging, road building and associated activities will directly kill roughly 50-100 birds in the Moonlight-Wheeler fires area, and

probably additional birds in the Moonlight/Wheeler fire area. The Forest Service must analyze this violation of the MBTA in its EA/DEIS and take appropriate actions to ensure it does not directly kill these baby birds while they are still in the trees the Forest Service intends to fell. (RDEIS: Rene Voss, JMP, pg. 20; Chad Hanson, JMP, pg. 5)

Response: Federal Agency responsibilities relative to the management and protection of migratory birds are described in the January 2001 *Executive Order, Responsibilities of Federal Agencies to Protect Migratory Birds* and the December 2008, *Memorandum of Understanding between the USDA Forest Service and the US Fish and Wildlife Service to Promote the Conservation of Migratory Birds*. Within the National Forests, conservation of migratory birds focuses on providing a diversity of habitat conditions at multiple spatial scales and ensuring that bird conservation is addressed when planning for land management activities (MOU page 3). The Moonlight/Wheeler Recovery and Restoration Project has met this expectation.
Effects to migratory birds (including black-backed woodpeckers) and their habitats, are discussed and disclosed within the Moonlight/Wheeler Project MIS Report and RFEIS. The MIS Report assessment of the potential effects on BBWOs with project implementation concluded that "there would be a reduction in burned forest habitat supporting snags, thus potentially reducing habitat that could support BBWOs…but overall, the analysis area still provides habitat (snags in burned forest) that would support higher densities of BBWO over 2002 levels" (MIS Report, pg. 51). The Moonlight/Wheeler Fire Recovery and Restoration Project is consistent with agency guidance and complies with the Migratory Bird Treaty Act.

The RFEIS (Sections 3.4.2.1.2.1, 3.4.2.3.2.1, 3.4.2.4.2.1, 3.4.2.5.2.1) and Moonlight Wheeler MIS Report (pg. 44) has been updated to acknowledge that a possible direct effect of implementing the action alternatives could be mortality of BBWO chicks that have not yet fledged and are present within snags scheduled for removal. Considering the unknown number of occupied BBWO nests potentially within units, the duration of harvest activities (much of which would extend outside of the nesting stage), and snag retention/untreated areas, the Forest Service feels that an estimate of the number of BBWO chicks that could be directly killed, as the commenter provides, is unreasonable and is therefore not included in the RFEIS and MIS Report.

Refer to WL#4.

20. **The DEIS and MIS Report fail to adequately analyze impacts to the Fox Sparrow.** (DEIS: Chad Hanson, JMP, p.)WL13

Response: This species has been analyzed, following current R5 standards (SNFMISA 2007) and the analysis can be found in the MIS Report (pg. 13-17).

21. **The DEIS fails to reasonably disclose how impacts of the action alternatives on sediment delivery will negatively affect aquatic systems. This must include the direct, indirect and cumulative effects on turbidity, sedimentation, fine sediment in stream substrate, pool conditions, stream width/depth ratios, water temperature, and sediment-sensitive aquatic biota based on available scientific information.** (DEIS: Jonathan Rhodes, JMP, pg. 16)

Response: Methods for cumulative watershed effects analysis are described in Section 3.5.1.2 of the RFEIS. Equivalent roaded acres (ERAs) serve as an index to measure the impact of past, present, and future land management activities on downstream water quality. Watersheds and

their associated stream systems can tolerate given levels of land disturbance, but there is a point when land disturbances begin to substantially impact downstream channel stability and water quality. This upper estimate of watershed "tolerance" to land use is called the threshold of concern (TOC). Above the TOC water quality may be impaired such that the water is no longer available for established beneficial uses, such as municipal water supplies or irrigation, or no longer provides adequate habitat for fisheries

Stream condition inventory (SCI) attributes and macroinvertebrate metrics were evaluated to qualify streams with data collected as good, moderate and poor (USDA 2009f). SCI's have been conducted on, Little Antelope, Antelope, Clark's, Stream, Moonlight, Lights and upper and lower Boulder Creeks. The SCI data and Rapid Bioassessment data were reviewed together prior to the Moonlight and Wheeler Fires and included the following metrics: %fines, substrate size, residual pool depth, temperature, stream cover, and aquatic macroinvertebrates. This information was evaluated and incorporated into the analysis of direct, indirect, and cumulative effects of the project on hydrology (RFEIS, Section 3.5.2.1) and benthic macroinvertebrates (RFEIS, Sections 3.4.2.1.2.2, 3.4.2.3.2.2, 3.4.2.4.2.2, 3.4.2.5.2.2).

22. **The DEIS fails to reasonably analyze and disclose the impacts of the proposed alternatives on watershed and aquatic systems.** (DEIS: Jonathan Rhodes, JMP, pg. 15)

Response: The effects of the no action alternative and action alternatives on aquatic MIS (benthic macroinvertebrates) are described in detail in the Aquatic MS report on pages 12-25. The report analyzed the effects of unimpeded postfire recovery and postfire salvage on aquatic macroinvertebrates. The Aquatic MIS Report has analyzed the potential effects from this project by alternative, including the future foreseeable projects on Aquatic macroinvertebrate habitat and population trends. The Aquatic MIS Report disclosed negative effects of the action alternative by post fire logging. The responses to the key factors identified for riverine habitat would be affected by wildfire. As with numerous studies (included in Roby & Azuma 1995, and in Minshall, 2003), it is expected that stream temperatures, stream flows and nutrient levels will all increase in the short term, and that long term increase in sediment production and deposition will occur. With salvage logging, the timeframes for recovery may be extended. Recovery of stream ecosystems from the effects of fire is likely to be slower, more sporadic, and potentially incomplete in cases where natural process is impaired (Minshall, 2003, as cited on pg. 8 of the Aquatic MIS report).

23. **The DEIS fails to include an alternative with adequate riparian protection and management aimed at restoring ecosystems after fire**. (DEIS: Jonathan Rhodes, JMP, pg. 18)

Response: The Agency followed current direction for management within the Riparian Habitat Conservation Areas ([RHCA's] per the PNF LRMP (1988 as amended by the HFQLGFRA FEIS and ROD (1999,2003) and the SNFPA FEIS and ROD (2004). In addition, the HFQLG/SNFPA Implementation Consistency Crosswalk, revised December 2007, provides direction for applying standards and guidelines for 2004 SNFPA FSEIS and ROD (HFQLG / SNFPA Implementation Consistency Crosswalk and cover letter, December 12, 2007). The 300 and 100' buffers on perennial, intermittent, and ephemeral streams are a minimum. These buffer widths are adjusted to the greatest distance from the edge of the stream based on the height of one and two site potential trees (by stream type), or to the top of the inner gorge. Wetlands are buffered based on site sensitivity (soil condition and stability. In addition, design elements for snag retention and equipment restrictions for each action alternative (RFEIS, Sections 2.2.1.1, 2.2.3.1, 2.2.4.1, 2.2.5.1) have been developed to protect riparian vegetation, equipment on >25% slope, soil sensitivity, and maintain recruitment of LWD. All applicable best management practices (BMP's)

and standard management practices (SMR's) will be met (RFEIS, Appendix C). Management activities in RHCAs must contribute to improving or maintaining watershed and aquatic habitat conditions described in the Riparian Management Objectives (RMOs). The objective is to reduce fuels and the potential for a future high severity wildfire within the RHCA's while maintaining key attributes for recovery of the stream ecosystem within the Moonlight Wheeler Project Area.

WATERSHED

1. **The analysis does not include any information as to whether soils in the project are have been sampled, as required by the standard, and whether sample data is available. Although the analysis does discuss erosion potential and hazards, there is no description of current soil conditions in each unit or whether the project has a potential to exceed the thresholds of the R5 SQS for soil productivity (soil cover, soil porosity, organic matter, soil moisture regime).** (DEIS: Chad Hanson, JPM)

Response: Refer to section 3.5.1.1 in the RFEIS refers to soil disturbance survey. Soil disturbance survey results are provided in the Watershed Report (pg. 6-12). R5 guideline thresholds for soil productivity are not met throughout the proposed treatment area due to the fire, and are not likely to be for up to 5 years post- treatment. These thresholds are R5 Soil Quality Analysis Standards (SQAS), intended to be used during evaluation of soil condition. Unlike the standards and guidelines for maintenance and improvement of soil resources presented in the Plumas NF LRMP, the SQAS are not a set of mandatory standards or requirements.

2. **Please explain how the Forest Service intends to ensure that soil loss will not exceed 1 ton/acres/year, including the amount of soil cover necessary for each unit to ensure soil loss does not exceed soil formation.** (DEIS: Chad Hanson, JMP)

Response: R5 guidelines (R5 Supplement No. 2509.18-95-1) for soil loss will not be met in the long term with or without implementation of the proposed action. This is stated throughout the Watershed report and in detail on pages 17 and 18. Also refer to the Moonlight Fire BAER soil report. Mostly due to fire effects, soil loss from burned watersheds will be well in excess of guidelines for rate of soil formation for at least five years after treatment. It cannot be ensured that soil loss rate does not exceed soil formation rate.

Within three to five years vegetative cover consisting of grasses, forbs, and shrubs is expected to colonize the site (Forest vegetation, Fuels, Fire, and Air Quality Report sections 4.1.1 and 4.2.2.).

3. **Please explain how the Forest Service will ensure that soil porosity will be at least 90% of the natural porosity for each unit. This analysis should describe the current soil porosity (or bulk density) and how skid trails and other activities that may increase soil bulk density will not degrade soils below the 90% porosity requirement in each unit.** (DEIS: Chad Hanson, JMP)

Response: According to the R5 Soil Quality Analysis Standards (SQAS), the loss of more than 10% of soil porosity is considered detrimental compaction. Existing condition on proposed treatment units (from soil survey data) is 0-7% detrimental compaction (pp 11-12, Watershed report). See section 3.5.2.1.1.1 for a description of compaction effects. The SQAS are not a set of mandatory standards or requirements PNF LRMP standards and guidelines require that no more than 15% of timber stands be dedicated to landings and permanent skid trails. No permanent landings or skid trails are dedicated by project action alternatives.

4. **Please explain how the Forest Service will ensure that soil organic matter is maintained in amounts sufficient to prevent significant short or long-term nutrient cycle deficits, and to avoid detrimental physical and biological soil conditions.** (DEIS: Chad Hanson, JMP, p.)WT4

Response: This refers to R5 SQS (R5 Supplement No. 2509.18-95-1) for soil organic matter.R5 SQS are not a set of mandatory standards or requirements. The PNF LRMP does not state standards for amount of soil organic matter to be maintained. Soil organic matter will increase after fine organic matter accumulates on the mineral soil surface. Soil organic matter in low and moderately soil burn severity areas is likely to be similar to pre fire conditions (Moonlight BAER soil report).

Refer to WT5.

5. **Also, please explain how the Forest Service will ensure that fine organic matter will cover at least 50 percent of the area.** (DEIS: Chad Hanson, JMP)

Response: Due to the effects from the wildfires, soil organic matter across proposed treatment units is considerably below the R5 Soil Quality Analysis Standard threshold of 50% (Table 3 pp 11-12 in Watershed report). The proposed activities will setback recovery (Watershed report pp 17-19, 24; RFEIS, section 3.5.2.1.1). Recovery to threshold limits is not expected for up to 5 years.

6. **Please also explain how the Forest Service will ensure that is soil moisture will remain unchanged where productivity or potential natural plant community are dependent upon specific soil drainage classes.** DEIS: Chad Hanson, JMP)

Response: Soil drainage is dependant upon soil texture and structure. These properties were not altered significantly by the fire in low and moderate soil burn severity areas (Moonlight Fire BAER soil report). Additionally, large woody debris (LWD) moderates soil moisture. Project design criteria are for 5-10 tons per acre on dry ponderosa sites (page 11, Watershed report; RFEIS section 3.5.2.1.1) following recommendations of Brown et al (2003) and Graham et al (1994). Modeling by Tompkins and Moghaddas for the Moonlight/Wheeler project shows that short and long term LWD on activity sites will meet those recommendations (RFEIS, section 3.5.2.1.1; Watershed Report pp19—20).

Refer to WT5.

7. **Please provide scientific studies or other analysis that shows how a 15% or greater allowance of detrimental soil disturbance complies with the National Forest Management Act's requirement that the Forest Service "insure that timber will be harvested from National Forest System lands only where . . . soil . . . will not be irreversibly damaged . . . ." 16 U.S.C. § 1604(g)(3)(E).** (DEIS: Chad Hanson, JMP)

Response: Irreversible damage would result only from loss of productive soil from the site. Other disturbances characterized as "detrimental" by the R5 Soil Quality Analysis Standards (SQAS) are not irreversible because such deficiencies have ample potential to recover over time. Levels of fine organic matter and large woody material would recover to above R5 SQAS thresholds within a few years. See section 3.5.2.1.1.2. Soil porosity and compaction effects will also eventually recover, although over a longer timeframe.

Irreversible damage due to loss of productive soil within the treatment units will be prevented by project design features, including limiting ground-based activities to less than 35% slopes and 25% slopes on erosive soils, lop and scatter slash treatments to increase soil cover, and standard Best Management Practices such as proper siting of skid trails and landings and erosion control measures on those features.

8. **The DEIS uses the currently degraded state of the burned ecosystem as the baseline for comparing impacts, but fails to disclose that salient scientific literature has specifically recommended that such a baseline should not be used (Beschta et al., 1995; 2004).** (DEIS: Jonathan Rhodes, JMP)

Response: The soil standards are used for evaluating management induced impacts. Wildfire is considered within the cumulative effects and existing condition, though the direct and indirect effects in the specialist report concentrates on the effects of salvage timber activities such as tractor based activities and biomass removal. The Watershed specialist report acknowledges the burned area and discusses this more qualitatively, especially in regards to residual organic matter, pages 6-12 and 24-25.

9. **a).The DEIS fails to reasonably analyze and describe the cumulative effects of the proposed alternatives on soils and the cumulative impacts on the impacts to soils due to past and ongoing management. This includes groundcover and its composition, soil compaction, and detrimental soil disturbance, based on a hard look at available information.** (DEIS: Jonathan Rhodes, JMP)

Response: Detrimental soil surveys were made of 30 units with the greatest potential impact from proposed activity (Watershed report Pg. 11-12, RFEIS section 3.5.2.2.1). Discussion of direct/indirect effects is found in Watershed report pages 17-19, and cumulative effects discussion on pages 24-25 with brief on literature review of cumulative harvest effects on soils. ERA model coefficient values for various proposed and past actions incorporate estimation of ground cover loss and hydrologic function. This analysis is summarized on pages 25—26 of Watershed report.

10. **The DEIS fails to adequately disclose the impacts of wood removal on soil productivity.** (DEIS: Jonathan Rhodes, JMP)

Response: Refer to direct, indirect, and cumulative effects discussion presented in the RFEIS (section 3.5.2.1.1).
Also refer to the Watershed Report pages 19-21

11. **The RDEIS still fails to provide a reasonable assessment of the total amount of organic matter and LWD that will be lost in the project areas due to all activities.** (RDEIS: Jonathan Rhodes, JMP)

Response: The forest, fuels and fire section 3.3.2.2.1 in the RDEIS gives exhaustive estimates of wood removal in the project area (table 31 and 32, pages 54 and 55). Estimates of remaining standing dead for recruitment and LWD 0-30 years out from harvest are provided in Soil and Water section 3.5.2.1.1.2, table 98. As previously noted in Soil and
Water section 3.5.1.1.1 (table 96) activity areas have deficient soil cover, scant organic matter or LWD left over from fire. After harvest it is expected that ground cover in activity areas from lop

and scatter of tree tops and limbs would average 10%. Observations of ground cover in ground based treatment areas was an average of 20%.

12. **a.The DEIS utterly fails to disclose that native brush provides an important source of soil nutrients and organic matter.**

b. The RDEIS must be rectified by fully describing the loss of woody material, organic matter and nutrients from all treatments involving brush removal or control. (DEIS: Jonathan Rhodes, JMP)

Response: It's true that brush provides a strong recovery mechanism with *Cleanthes* increasing nitrogen within soil as well as brush stabilizing soil and providing soil cover. The Watershed specialist report will acknowledge the merits of brush re-growth. Brush under story removal is not a stated objective in proposed action, and very little under story remains on site.

13. **a).The DEIS fails to reasonably disclose the degree to which salvage logging and associated activities under the action alternatives will increase soil compaction and disruption.**

    b).The DEIS also wholly fails to disclose the existing extent and intensity of soil damage caused by past and ongoing activities, such as grazing, landings, logging, and roads.

    c).The DEIS utterly fails to properly disclose that the loss of soil productivity caused by the construction of landings and roads is severe and extremely enduring (Karr et al., 2004; Beschta et al., 2004), even for "temporary" roads and landings (Beschta et al., 2004).

    d). DEIS has failed to reasonably disclose the impacts of the alternatives on groundcover and vegetative regrowth. (DEIS: Jonathan Rhodes, JMP)

Response: Discussion of long term effects of past, present, and future projects are found in the Watershed report, pages 25—27. Recovery periods for various activities are incorporated in the ERA model results, are tabulated on page 25, table 11, of the Watershed report and table 101of the RFEIS.

14. **The DEIS fails to disclose that scientific literature indicates that postfire logging significantly reduces postfire groundcover from live vegetation by destroying the live vegetation, setting back natural postfire regeneration of conifers (Donato et al., 2006), disrupting duff layers, and removing future sources of needles and woody material that ultimately fall to the forest floor and provide important groundcover after fire (USFS and USBLM, 1997a; AGU, 2003; Pankuk and Robichaud, 2003).** (DEIS: Jonathan Rhodes, JMP)

Response: The Watershed report discusses the impact of post fire logging in the context of erosion and organic matter. Refer to these sections within the environmental consequences section of the watershed specialist report, pages 17-21. Guidelines for soil productivity (USDA 1995) are in terms of erosion and organic matter. Under the proposed action the burn areas will be planted after logging so destruction of native recruitment by logging activity is ameliorated.

Refer to FV11

15. **The DEIS fails to disclose that logging will also persistently reduce groundcover by removing future sources of groundcover from wood and needles, as well as retarding the regrowth of groundcover vegetation due to soil damage.** (DEIS: Jonathan Rhodes, JMP)

Response: Soils discussion in Watershed report on pages 24—25 includes review of literature on fire salvage impacts to soil. The ERA model coefficient values for various proposed and past actions incorporate estimations of groundcover loss and recovery (Watershed report pages 25--26). Refer to for WT13 and WT15 regarding reduction of live groundcover.

16. **The DEIS incorrectly asserts that groundcover will remain below the Forest Plan guidelines until basal vegetation is re-established.** (DEIS: Jonathan Rhodes, JMP)

Response: Determination that groundcover will be insufficient until live basal vegetation recovers is reasonable given the degree of consumption of the canopy foliage (needlecast might be a source of groundcover) as well as the forest floor. The BAER soils report (Watershed specialist report page 7, paragraph 4, states complete consumption of soil cover and canopy in high burn severity areas (38% of fire area). The survey for the watershed report found canopy cover between 6 and 49% and soil cover between 0 and 45% across all burn severity areas (page 11—12, table 3, of the watershed report) with very little foliage left.

17. **There is no doubt that groundcover in burned areas within the Project area have increased significantly since groundcover levels were last surveyed by the PNF and will continue to (do) so during the forthcoming growing season. This must be disclosed and factored into a reasonable analysis of the amount and composition of groundcover that will be removed under the action alternatives and its impacts on soil erosion and soil productivity.** (RDEIS: Jonathan Rhodes, JMP)

Response: The Water Erosion Prediction Program and ERMiT module within was used to ascertain increase in erosion potential with reduction in groundcover, starting in 2008, 1 year after the fire and continuing to 2012 with anticipated harvest in 2009 and 2010.

18. **a) The DEIS fails to reasonably disclose the intensity and extent of erosion caused by postfire logging and associated activities, including the construction, reconstruction, and elevated use of roads and landings, under the action alternatives.**

    b) Although available scientific information indicates that the action alternative will vastly elevate erosion and sediment delivery to streams in an enduring manner, the DEIS fails to provide any reasonable estimate of erosion and sediment delivery by alternative. (DEIS: Chad Hanson, JMP)

Response: Results of erosion modeling (ERMiT) of fire area, both with and without proposed activity are detailed in the Watershed report, pages 17—18 and Figure 3, pg. 19. Similar modeling was also reported in the BAER soils report. These results and discussion were not included in the DEIS and will be reported in the FEIS. ERA modeling results incorporate all phases of activities: harvest logging systems, and road and landing construction. Results are presented in % ERA, which represents a degree of hydrologic alteration that potentially alters runoff yield, timing and peak.

19. **The DEIS fails to adequately disclose that road and landing construction and reconstruction cause enduring increases in soil erosion, even if the roads and landings are subsequently obliterated (Beschta et al., 2004)**. (DEIS: Jonathan Rhodes, JMP)

Response: Refer to the Watershed report page 19, para 2—4. Road activity, even temporary road accounted for in ERA modeling. Results are given in Watershed Report page 25, Table 10 and in the RFEIS Table 54, page 106 and Table 56, page 110. Refer to WT12 response. Effects of temporary roads and landings in ERA model were assumed to have an effect the year of operation. Deep sub-soiling, particularly in decomposed granite soils would effectively de-compact and restore infiltration capacity and at the very least destroy the continuity of the feature to convey surface flow and transport sediment.

20. (**The DEIS fails to reasonably disclose that the effects of postfire salvage logging are especially significant on steep slopes, in erosion-prone and/or shallow/low fertility soils, and soils burned at higher severities (Karr et al., 2004; Beschta et al., 2004; Lindenmayer and Noss, 2006). The DEIS compounds this defect by failing to fully disclose the extent of logging-related activities, including road and landing reconstruction and construction, in such areas.** DEIS: Jonathan Rhodes, JMP)

Response: ERMit erosion modeling was conducted for steep slopes as well as relatively shallow tractor-able slopes (Watershed report page 17—18). Road and landing area were accounted for in ERA modeling (Watershed report pages 25—26; RFEIS —3.5.2.2.1), and included effects of temporary roads and landings. Refer to WT17 response.

21. **The forthcoming FEIS must also reasonably disclose that subsoiling of compacted areas does not restore soil productivity.** (RDEIS: Jonathan Rhodes, JMP)

Response: Long term degradation for biological condition is predicted for >20 years on subsoiled areas (Section 3.5.2.1.1, page 198). Subsoiling is explicitly for restoration of hydrologic function through partial reclamation of infiltration capacity. Subsoiling would only occur on landings and temporary roads (section 3.5.1.3 Project Design Features, page 180).

22. **DEIS fails to reasonably disclose the extent and intensity of machine piling under the action alternatives and its consequences.** (DEIS: Jonathan Rhodes, JMP)

Response: Machine pile burns are not in proposed action for treatment area. All pile burns to be on landings. Harvesting on tractor yarded units to be whole tree. Harvesting on tractor yarded units to be whole tree. Tops and limbs on cable and helicopter yarded units to lopped and scattered (RFEIS, section 2.2.1.1)

23. **The DEIS failed to disclose how much LWD will be robbed from streams under the action alternatives.** (DEIS: Jonathan Rhodes, JMP)

Response: LWD within channels or elsewhere in the RHCA, live trees, woody and herbaceous vegetation would not be removed anywhere in treatment area, including an RHCA. Enough dead standing trees, including designated snags for wildlife would be left to meet recommended levels of LWD for the long term (30 years +) (Graham et al, 1994; Brown et al, 2003) within all treatment areas and the RHCA. 10 tons/acre of LWD is projected to be left or gained from future recruitment within riparian corridors over long term (Tompkins and Moghaddas, 2008). Refer to the discussion in watershed specialist report pages 10-11, 13—20 and RFEIS, section 3.5.1.1.3

24. **Most of the streams within the project area already have deficient levels of LWD and the loss of LWD degrades streams in several fundamental ways, although this is not adequately disclosed in the RDEIS.** (RDEIS: Jonathan Rhodes, JMP)

Response: Discussion of the detrimental effects of LWD lost through effects of fire or otherwise deficeint are discussed in detail Section 3.5.1.9, starting on page 183.

25. **The DEIS fails to reasonably disclose how logging under the action alternatives will affect stream temperatures, and the functionality of riparian areas with respect to stream shading and microclimate maintenance (USFS et al., 1993; Rhodes et al., 1994).** (DEIS: Jonathan Rhodes, JMP)

Response: Many riparian areas, as reported in Watershed report (pgs 6—5) (RFEIS section 3.5.1.2) were un-burned or lightly burned. Much of the perennial reaches still had intact or partially intact riparian vegetation communities. Any modification to stream temperature, and turbidity, due to loss of shade, and forest floor, respectively will recover gradually as upper story canopy re-develops and groundcover, either as live basal vegetation or litter, accumulates. But a burned and dead RHCA of whatever width, with near total loss in forest floor and canopy foliage will afford scant benefits in the immediate post-fire term. Planting within moderately high to high severity burn, including RHCA, will enhance natural regeneration of forested areas and accelerate recovery.

Indicators used to analyze the effects of the proposed Moonlight-Wheeler Project on macroinvertebrate habitat are Equivilent Roaded Area (ERA) and Threshold of Concern (TOC) values by HUC 6 sub watersheds (Aquatic MIS Report, Fig.1, table 1, Aquatic MIS Report, Appendix A, table1), Riv Pac O/E scores, and aquatic macroinvertebrate metrics (Aquatic MIS Report, Appendix B, table 1 & 2). In addition, Stream Condition Inventory measurements were evaluated determine the current condition, any potential changes in these habitat factors by the proposed action. Sedimentation is measured by pool tail fines, and the Wolman pepple count (D50), water temperature was indicated by stream surface shade and thermorgraph temperatures (appendix , table XXX), flow is qualified by the current type of stream (ephemeral, intermittent, and perennial) and if there is the potential for this stream to change and thus showing any changes in flow. Reference page 11 of Aquatic MIS report.

26. **The DEIS fails to disclose that there is significant scientific information indicating that in order to reasonably protect streams from additional damage, the width of fully protected areas around streams should be considerably wider than that afforded by the PNF's Riparian Habitat Conservation Areas (RHCAs) and the proposed "protection" measures under the action alternatives. (**DEIS: Jonathan Rhodes, JMP)

Response: PNF LRMP forest-wide standards for Streamside Management Zones are amended by the Sierra Nevada Forest Plan Amendment and standards therein for RHCAs (SNFPA SEIS, 2004; Appendix A, Pg 356). RHCA equipment restriction zones were devised after site visits by project hydrologist, silviculturist, fisheries biologist, and soil scientist to treat the RHCAs with reasonable assurance that adequate buffering would remain, usually provided by major slope breaks (RFEIS design criteria in RFEIS section 2.2.1.1, table 1 and 2). Snag retention criteria would help meet riparian management objectives for large woody debris (RFEIS section 2.2.1.1, table 1).

27. **The DEIS fails to reasonably analyze cumulative effects on peak flows and their numerous effects on channel and aquatic conditions and processes (Rhodes et al., 1994; Jones and Grant, 1996; Bowling et al., 2000; La Marche and Lettenmaier, 2001; Gucinski et al., 2001; Dunne et al., 2001; MacDonald and Coe, 2007).** (DEIS: Jonathan Rhodes, JMP)

Response: The magnitude of peak flow response to fire and activity is discussed in detail in Watershed report pages 25—27 and RFEIS (section 3.5.2.2). Current stream channel condition and morphology and relationship to natural flow regime and land-use such as mining further discussed in Watershed report on pages 5—6.

28. **We urge careful consideration of the quantity and location of temporary roads, landings and skid trails in order to minimize adverse effects on water quality and watersheds already at high risk of CWE. We recommend the final environmental impact statement (FEIS) include information supporting both the proposed siting of roads and landings and the conclusion that proposed activities would not result in significant adverse effects. For example, the DEIS states that roads are a minor source of CWE (p. 106), but fails to provide the basis for this statement. The FEIS should describe the existing conditions and data underlying its conclusions.** (DEIS: EPA)

Response: To minimize erosion and sedimentation, the quantity and location of temporary roads, landings, and skid trails is controlled by Best Management Practices 1-10, 1-12, 2-1, and 2-16. See Appendix C of the RFEIS.

ERA % attributable to roads are a minor portion of the total % ERA count, which is shown in Table 54, section 3.5.2.2 of the DEIS, and in Table 6, Page 16 of the Watershed specialist report. A discussion of road placement and effects on watershed runoff is provided in the same locations for each report.

The ERA method is not a spatially based model, but an index of effects. It is not specific to individual features according to their position in the landscape or interaction with other action impacts. A comparative example might be a road down slope of a treatment unit that conveys runoff water to a stream crossing, as opposed to a road on a ridge crest with gentle side slope drainage onto untreated ground. In the current use of the ERA method by the Forest both roads would be counted the same impact.

Whatever the localized effects on runoff and erosion, a harvest road system contributes a minor proportion of total runoff of a HUC 6th or 5th field watershed. For a discussion refer to the Watershed specialist report Page 22, paragraph 5.

29. A**)It is essential that the defects in the RDEIS be rectified by including estimates of the cumulative extent and total amount of soil erosion and soil loss caused by all activities under each alternative.**

B)However, RDEIS fails to provide an adequate analysis of the cumulative effect of road and landing activities. . .The RDEIS also fails to reasonably disclose that these activities significantly and persistently increase erosion and sediment delivery.. .For instance, the RDEIS fails to reasonably disclose the well-documneted fact that elevated road use. . . vastly increases soil erosion and sediment delivery.

C)The RDEIS still fails to disclose the area affected by the following activities that elevate erosion and sediment delivery for each alternative.

- *The total area of soils bared by all activities*
- *Total amount of roads that will be reconstructed.*
- *Total amount of roads subjected to elevated use*
- *Lcoation and amount of landings*
- *Total amount of pile burning* (RDEIS: Jonathan Rhodes, JMP)

Response: The Equivalent Roaded Area (ERA) method for cumulative effects used in this report, accounts for all activity area past, proposed and future foreseeable, both on Forest land and adjacent other ownership. The method indexes disturbance normalized to the hydrologic function of a native surface road in units of acre. Activity is broken down then into as many types as necessary to adequately represent the total degree of disturbance—landings, roads, harvest area, burn area etc. The changes are expressed in % watershed area in ERA. Relative change from present condition to post harvest is shown in %ERA in Table 101 of the RDEIS, page 203 section 3.5.2.1.2. The ERA method therefore quantifies hydrologic response to activity on a watershed basis—a response that moves from, with increasing %ERA, a baseline condition of undisturbed forest slopes to greater runoff with concomitant erosion and sediment transport.

It should be noted, again, that no pile burning would occur in treatment units

The following language in a previous draft RDEIS (1/9/09 in project file) will be retained in RFEIS Section 3.5.2.1.2
Alternative A proposes construction of 13 miles of temporary roads, which would include 9 intrusions into RHCA's, 7 crossings on intermittent channels and 2 on perennial channels. Erosion and transport of fine sediment (<0.05mm diameter) from roads that may be held in suspension by moving water, increases most significantly with increased traffic and the incidence of maintenance, such as might be expected along active logging haul routes (Bilby, 1989; Forsyth et al; 2006, Sheridan, 2006). Actual sediment production from roads, not to mention delivery to channels is enormously variable (Sheridan, 2006) and dependent on hillside slope, density of hill side drainage features, geology, and soil type, simply to mention some of the more significant factors. In addition to the temporary roads the proposed action would construct 14 helicopter landings.

30. **The DEIS fails to reasonably analyze and describe the impacts of the proposed alternatives on soils and the cumulative impacts on soils from existing conditions in combination with proposed activities.** (DEIS, Jonathan Rhodes, JMP)

Response: Refer to WT8.

31. **The DEIS fails to reasonably disclose that Best Management Practices (BMPs) do not eliminate impacts of land management activities.** (DEIS: Jonathan Rhodes, JMP)

Response: Water quality will be protected through the use of Best Management Practices (BMPs) (USDA Forest Service 2000). BMPs are the primary method employed by the Forest Service and the State of California to prevent water quality degradation and to meet California State Water Quality objectives relating to nonpoint sources of pollution. BMPs were incorporated in the design of the action alternatives and are listed under the regulatory framework (Appendix C, table C-1).

The PNF LRMP sets out objectives and protocol for monitoring of plan standards and guidelines, BMP compliance and effectiveness, and soil productivity parameters. Monitoring is to be completed by forest staff on a per annum basis, either project by project, or a sampling of projects. Sampling should include at least five units each on granite and metasedimentary rock soils for a total of ten units for implementation monitoring. Specific methods would be defined by district watershed personnel.

If BMP monitoring results disclose adverse observations, recommendations from forest staff will be implemented in an effort to mitigate that issue.

32. **Dunne et al. (2001) expressly noted that it cannot be reasonably assumed that relatively small increases in peakflows do not have significant adverse impacts on stream system. . .because relatively small increases in peakflows exponentially increase sediment transport. Therefore it is critical that the RDEIS be revised.** (RDEIS: Jonathan Rhodes, JMP)

Response: As Dunne et al. (2001) also noted, stream power is proportionate to a product of channel geometry, slope and discharge (flow).

It follows that small increases in discharge in a given channel form do not constitute geometric increase in power, or for that matter, exponentially larger amounts of work performed (moving sediment).

33. **On page 210 of the RDEIS, the word "conservative" is used to describe peak flow estimates in BAER report. This could be confusing or misleading to the public who might interpret conservative to mean "errs on the safe side" or predicts the worst possible outcome for planning purposes.** (RDEIS: USDI)

Response: On page 205 of RFEIS, the sentence has been changed to "…the peak flow increases due to burned area effects calculated in the BAER report are likely an underestimation.

34. **The station number for Lights Creek near Taylorsville is 11401300.** (RDEIS: USDI)

Response: The station number for Indian Creek near Taylorsville is 11401200

Lowest annual peak recorded (at Indian Creek) is 2919 cfs not 11.5 (RDEIS: USDI)WT34

Number changed in report from 114013 to 11401300

Number changed in report from 114012 to 11401200

Number changed in report from 11.5 to 219. (note this did not change calculations of frequency distribution as previous low 11.5 was thrown out as a low outlier in any case.

BOTANY

1. **Incomplete and inadequate analysis of impacts to sensitive/rare plant species.** (DEIS: Vivian Parker, CNPS, pg. 10)

Response: Environmental consequences (effects and impacts) to sensitive plants are analyzed based on guidelines outlined in Forest Service Manual (FSM) 2672.4, 2672.41, 2672.42, 2672.43 and Forest Service Handbook (FSH) 1909.15, chapter 10, section 15.

2. **The DEIS and Sensitive Plant BE did not quantify habitat changes from past, present or reasonable foreseeable reforestation projects that permanently eliminated suitable habitat for sensitive plant species, thus creating long term cumulative impacts.** (DEIS: Vivan Parker, CNPS, pg. 10)

Response: Cumulative effects on sensitive plants are addressed in sections 3.6.2.1, 3.6.2.1.1, 3.6.2.2.1, and 3.6.2.3.1 of the RFEIS and sections 4.0, Methodology for Assessing Impacts, and 5.0, Effects of the Proposed Project the Biological Evaluation of Potential Effects of the Moonlight and Wheeler Fires Recovery and Restoration Project on Threatened, Endangered, Candidate, and Sensitive Plant Species (hereafter refer to as BE).

Refer to B1.

3. **Federal law requires that "inventories shall include quantitative data"(36 CFR § 219.26).** (DEIS: Vivian Parker, CNPS, pg. 10)

Response: 36 CFR § 219.26 is from the 1982 Planning Regulations. They have no standing. We are to follow our new regulations at § 219.14:

> *(4) Plans developed, amended, or revised using the provisions of the planning rule in effect prior to November 9, 2000. For units with plans developed, amended, or revised using the provisions of the planning rule in effect prior to November 9, 2000 (see 36 CFR parts 200 to 299, revised as of July 1, 2000), that rule is without effect. No obligations remain from that regulation, except those that are those specifically in the plan.*

The PNF LRMP standards and guidelines specify "inventory and monitor sensitive plant populations on a project-by-project basis" but do not outline protocols or detailed requirements. The Sierra Nevada Forest Plan Amendment (2004) also has a standard and guideline requiring field surveys to be tiered to FSH 2609.25.11 which has since been updated by FSH 2609.26.11 (effective April 13, 2007). All field surveys comply with FSH 2609.26.11.

Furthermore, inventories or field surveys are quantitative; it is the analysis of the quantitative field surveys that is qualitative.

4. **The DEIS also did not contain an analysis of the life history requirements for each sensitive plant.** (DEIS: Vivian Parker, CNPS, pg. 10)

Response: Sensitive species discussions are limited to those which occur within the botany analysis area (RFEIS section 3.6.2.1 and BE section 1.2). The available scientific literature on sensitive species in the area does not contain information on life history requirements.

Refer to B8.

5. **The DEIS also failed to analyze the significance of the population(s) of sensitive plants in the project area relative to the individual species as a whole.** (DEIS: Vivian Parker, CNPS, pg. 11)

Response: Details of sensitive populations in the project area and their relationship to the species as a whole is in the Biological Evaluation of Potential Effects of the Moonlight and Wheeler Fires Recovery and Restoration Project on Threatened, Endangered, Candidate, and Sensitive Plant Species, section 5.1.1 including tables 3 and 4.

6. **The PNF LRMP requires annual monitoring of sensitive plant populations (Table 5-1, p. 5-11, PNF LRMP 1988). In addition, annual monitoring is required by the 2001 "Framework" revision of the Sierra forest plans.** (DEIS: Vivian Parker, CNPS, pg. 11)

Response: Annual monitoring is conducted. The monitoring reports are available at http://www.fs.fed.us/r5/hfqlg/monitoring/.

7. **Project alternatives should be designed to enhance sensitive plant populations in the project area.** (DEIS: Vivian Parker, CNPS, pg. 11)

Response: SNFPA (2004) standard and guideline for sensitive plant surveys #125 states "…the project can be designed to conserve or enhance TEPS plants and their habitat." All project action alternatives and associated effects are considered negligible to slightly beneficial to sensitive plant species in the botany analysis area.

8. **Forest Service claims must be backed up by "a summary of existing credible scientific evidence" and must use "explicit reference by footnote to the scientific and other sources relied upon for conclusions." 40 CFR § 1502.21 (b) (3), § 1502.24.** (DEIS, Vivian Parker, CNPS, pg. 11)

Response: References are included in the RFEIS, Biological Evaluation of Potential Effects of the Moonlight and Wheeler Fires Recovery and Restoration Project on Threatened, Endangered, Candidate, and Sensitive Plant Species, and the Noxious Weed Risk Assessment for the Moonlight and Wheeler Fires Recovery and Restoration Project.

40 CFR §1502.22 states:

Incomplete or unavailable information.

> *When an agency is evaluating reasonably foreseeable significant adverse effects on the human environment in an environmental impact statement and there is incomplete or unavailable information, the agency shall always make clear that such information is lacking.*
> *(a) If the incomplete information relevant to reasonably foreseeable significant adverse impacts is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement.*
> *(b) If the information relevant to reasonably foreseeable significant adverse impacts cannot be obtained because the overall costs of obtaining it are exorbitant or the means to obtain it are not known, the agency shall include within the environmental impact statement:*
> *(1) A statement that such information is incomplete or unavailable; (2) a statement of the relevance of the incomplete or unavailable information to evaluating reasonably foreseeable significant adverse impacts on the human environment; (3) a summary of existing credible scientific evidence which is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment, and (4) the agency's*

evaluation of such impacts based upon theoretical approaches or research methods generally accepted in the scientific community. For the purposes of this section, ``reasonably foreseeable'' includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason.
(c) The amended regulation will be applicable to all environmental impact statements for which a Notice of Intent (40 CFR §1508.22) is published in the Federal Register on or after May 27, 1986. For environmental impact statements in progress, agencies may choose to comply with the requirements of either the original or amended regulation.

A literature search of Forest Science Database, ECODISC, JSTOR, Scopus, Web of Science, BioOne, Biological Abstracts, BIOSIS Previews, Wildlife & Ecology Studies Worldwide, Ecology Abstracts, and Google Scholar by the National Forest Service Library on Penstemon sudans resulted in no additional information on the ecology or natural history that would aid in land management decisions. Personal communications on August 14, 2008 with Nick Jensen, CNPS rare plant botanist, and Roxanne Bittman, California Natural Diversity Database Lead Botanist, resulted in no new information that would aid in land management decisions.

9. **The requirement for surveying of sensitive plants "early in the project development process" and the requirement to design projects so as to preserve and "enhance" sensitive plant habitat is also affirmed on CNPS' appeal of the 2004 supplement (revision of the 2001 Framework) Record of Decision by then Chief Dale Bosworth. This decision is attached to this comment letter.** (DEIS: Vivian Parker, CNPS)

Response: All project units have current plant surveys on file at the Mt. Hough Ranger District and all project action alternatives and their associated effects are considered negligible to slightly beneficial to sensitive plant species in the botany analysis area.

Refer to #B7.

10. **The DEIS fails to reasonably examine and describe the impacts of the Projects' alternatives on the spread and establishment of non-native vegetation.** (DEIS, Joanthan Rhodes, JMP)

Response: Noxious weeds and the risk of spread are discussed in sections 3.6.1.1, 3.6.2.1.2, and 3.6.2.2.2 of the RFEIS, and in the Noxious Weed Risk Assessment.

RANGE

1. **Consider temporary adjustments of livestock management practices to encourage watershed recovery.** (DEIS: EPA)

Response: Four allotments fall within the Moonlight and Wheeler Fires Recovery and Restoration Project treatment areas.

Hungary Creek and Taylor Creek are vacant, and Lights Creek and Lone Rock are occupied.

Lights Creek is permitted to run 24 pair from 6/1 to 9/1. In 2008 they ran 16 pair from 6/1 to approx 7/18. The permittee dropped the cows off near Indicator Meadows, which is at the top of the allotment, and the cows drifted over to his allotment on the Lassen forest and then to the

home ranch. In the past, the permittee also dropped cows off at Moonlight Valley. Due to the logging activity he did not do that this year. Permittee will do something similar in 2009.

No cows grazed on Lone Rock in 2008. The permittee received EQUIP funds to defer grazing. The majority of livestock grazing and forage is on private land.

Lone Rock is approximately 60 percent private land and Lights Creek is approximately 40 percent. The Forest Service does not administer private land. The Forest Service holds the permittee to SNFPA 2004 use standards on forest service lands; less than 20 % use on riparian shrubs and aspen, less than 20 % altered banks and less than 40% use in meadows.

The cattle on these 2 allotments tend to graze the meadows, riparian stringers and along roads. Use in the riparian areas will be discouraged, as needed, through adaptive management practices such as; permittee riding, placement of protein blocks, reducing number or season and building fence.

The majority of the livestock primary range does not fall within the high severity burn areas. Cattle tend not to graze on timbered slopes greater than 30%.

Refer to the RFEIS, section 3.10, pages 243 and 244 for a complete discussion of affected environment and environmental questions.

GENERAL

1. **Describe the condition of existing roads and environmental effects of existing and temporary roads and landings.** (DEIS: EPA)

Response: The RFEIS section which describes design criteria for each action alternative now includes the condition of existing roads.

Environmental effects of existing roads and landings has been incorporated into the RFEIS Economics and Hydrology sections.

2. **The FEIS should provide a closure and restoration plan for the proposed temporary roads and landings. This plan should include information on whether these roads and landings would be recontoured, replanted, monitored, and closed, and include a schedule for closure of the temporary roads and landings.** (DEIS: EPA)

Response: The RFEIS section 2.2 tables 3 and 6 (for alternatives A and C respectively) discuss the design criteria for temporary roads and landings. These design criteria state that "temporary roads and landings would be subsoiled to a minimum of 18 inches in depth, reforested, and closed following the completion of harvest."

In addition, Appendix C of the RFEIS provides the Standard Management Requirements (SMRs) and Best Management Practices (BMPs) for temporary roads and landings. Practices incorporated into the project design include the following:

1. Block vehicle access to temporary roads and install water-bars prior to subsoiling operations.
2. Subsoiling to 18 inches minimum depth of temporary roads and landing s within the same year as harvest.

3. Timber sale contracts would contain many standard provisions that help ensure protection of soil and water resources. These include provisions for an erosion control plan and road maintenance plan.

4. **Determine whether naturally occurring asbestos may be a management issue for this salvage harvest.** (DEIS: EPA)

Response: No known serpentine-based soils are in the Project Area that would be disturbed by project implementation activities. In addition, dust would be mitigated by road watering and other standard management practices as described in Appendix C of the RFEIS and in contracts (sections T-806 and B 5.3).

5. **Provide specific information on existing conditions, include a more rigorous evaluation of effects, and support conclusions with data and explanations.** (DEIS: EPA)

Response: Comment noted. Applicable sections of the RFEIS have been updated to incorporate this comment.

6. **Provide information on existing economic conditions of Plumas County and local communities. Include specific information regarding the economy of the region and Plumas County, the importance of timber-related revenues and jobs for local communities, and employment and income data.** (DEIS: EPA)

Response: Refer to the RFEIS section 3.2 Economics and Appendix A, Economic Analysis, and to the Economic and Social Environment Specialist Report: Affected Environment, Timber Harvest Trends, and Economic Consequences sections.

7. **Describe climate change and its effects on successful reforestation. Include a description of climate change and its implications for successful reforestation and describe and evaluate projected climate change consequences such as frequency of high intensity storms and amplified rain events, the severity and frequency of insect outbreaks, droughts, and fire seasons, and their effects on the success of reforestation efforts.** (DEIS: EPA)

Response: In general we agree with the commenter's statement that "current research estimates that climate change could change the amount, timing, and intensity of rain and storm events; increase the length and severity of the fire season; modify the rate and distribution of harmful timber insects and diseases; and aggravate already stressed water supplies" and that "a significant change in the weather patterns of our region could have important implications for how we manage our forests."

However, while it is acknowledged that broad trends in climate change may be generally described, the effects of climate change within the project specific location and implications for successful reforestation are highly variable, have unknown levels of uncertainty and margins of error, and are largely unpredictable within the temporal and spatial bounds of this analysis.

8. **The Forest Service used the wrong forest plan for the DEIS analysis.** (DEIS: Chad, Hanson, JMP)

Response: Management proposals by PNF are determined by direction contained in the PNF Land and Resource Management Plan (1988), which was amended by Herger-Feinstein Quincy Library Group (HFQLG) Forest Recovery Act Final Environmental Impact Statement (RFEIS) and Record of Decision (ROD) (1999, 2003), and the Sierra Nevada Forest Plan Amendment (SNFPA) Final Supplemental Environmental Impact Statement (FSEIS) and ROD (2004). In addition, the HFQLG/SNFPA Implementation Consistency Crosswalk, revised December 2007, provides direction for applying standards and guidelines for the 2004 SNFPA FSEIS and ROD.

9. **(1)The DEIS completely fails to reasonably incorporate and disclose the available scientific literature that describes the highly negative ecological impacts of post-fire salvage logging.**

   (2) The DEIS fails to adequately disclose the numerous persistent negative effects of the action alternatives that have been repeatedly documented in scientific literature on postfire logging. In so doing, the DEIS fails to reasonably differentiate among the alternatives with respect to their environmental effects.
   (3) The DEIS fails to disclose that the action alternatives include activities that scientific literature has repeatedly noted are inconsistent with postfire restoration, including groundbased logging and logging on moderately to severely burned areas.

   (4) The DEIS also fails to reasonably disclose that the available scientific literature documents that burned areas, if left unmolested by postfire logging, provide many important ecosystem benefits, including those important for biodiversity, heterogeneous forest structure, provision of downed wood, soils, and aquatic systems. (DEIS: Jonathan Rhodes, JMP)

Response: 1) What constitutes best available science varies over time and across scientific disciplines. As a general matter, we show consideration of the best available science when we insure the scientific integrity of the discussions and analyses in the project NEPA document. Specifically, the NEPA document should identify methods used, reference scientific sources relied on, discuss responsible opposing views, and disclose incomplete or unavailable information, refer to 40 CFR 1502.9 (b), 1502.22, and 1502.24.

The project record references all scientific information considered: papers, reports, literature reviews, review citations, peer reviews, science consistency reviews, results of ground-based observations, and so on. The specialists report in the project record includes a discussion substantiating that consideration of the aforementioned material was a consideration of the best available science.

2) Refer to item number 1 above for a discussion on “Best Available Science” and how it has been incorporated into the RFEIS, appendices, specialist reports, and the project record.

3) Refer to G8 for the PNF’s current direction regarding this project.

4) Refer to item number 1 and 2 above for a discussion on “Best Available Science”.

10. **DEIS fails to adequately disclose the nature of the action alternatives and ongoing management.** (DEIS: Jonathan Rhodes, JMP)

Response: Appendix C of the RFEIS includes past, present, and reasonably foreseeable actions that may or have occur(ed) within any of the resource (forest vegetation, wildlife, soils and hydrology, botany, and heritage) analysis areas.

All specialist reports include a list of past, present, and reasonably foreseeable actions within their respective analysis areas and conduct direct, indirect and cumulative analyses.

11. **The Final Environmental Impact Statement (FEIS) should include a robust analysis of the impacts to resources, such as wildlife, soil, and water quality, of each of the alternatives. Since each of the alternatives would impact different acreages of land, the impacts should be described both qualitatively and quantitatively so that government agencies and the public can distinguish the scale of impacts that would result from increasing the scale of logging activities.** (RDEIS: Kathleen Goforth, EPA, pg. 1)

Response: A complete analysis of all project activities for each alternative is located in chapter 3 of the Revised Final EIS (RFEIS). Sections 3.4, Wildlife – Terrestrial and Aquatic and 3.5 Soil and Hydrology, as well as all other resource sections, include analyses of affected environments and environmental consequences for each action alternative (A, C, D, and E). The analyses include a discussion of impacts in both qualitative and quantitative forms. Alternative A has the greatest amount of acres and activities proposed; therefore all other action alternatives (C, D, and E) would result with fewer impacts compared to alternative A.

12. **The FEIS should describe the criteria and rationale for selection of the preferred alternative. We also reiterate our recommendation provided following our review of the DEIS that the Forest Service consider different combinations of treatment practices (ground-based, skyline, and helicopter harvesting methods, intensity, and acreage of harvested areas, and number of miles of temporary roads and landings) in order to design alternatives which may more effectively achieve the project purpose, need, and objectives, while minimizing impacts to an area that is already highly impacted.** (RDEIS: Kathleen Goforth, EPA, pg. 2)

Response: The Moonlight and Wheeler Project record of Decision (ROD) will provide a discussion of the criteria and rationale for selecting an alternative. This discussion will include several variables such as the project's purpose and need, design criteria, objectives, measurement indicators, economic values, etc. At the time the RDEIS was published for review in February 2009, alternative A was the preferred alternative.

The Deciding Official has the flexibility and authority to choose an action alternative (A, C, D, or E), the no action alternative (B), or any combination of any of the action alternatives in the ROD. Regardless of the decision made, rationale and criteria for making that decision will be provided in the ROD.

13. **The FEIS should provide a more robust discussion of the rationale for eliminating Alternatives G, H, I, J, and K from detailed study.**

Response: Comment noted.

14. **EPA also questions the proposal to harvest fire-killed and fire-injured conifer trees within 150 feet of the road prism, as part of the Roadside Hazard Timber Harvest. While we understand the need to remove potential hazards in order to protect the**

safety of Forest staff and the public, we questions the need to remove all trees to a distance of 150 feet from the road. Minimizing this harvest activity to only those trees that could actually reach the road if felled by wind or other natural occurrences would decrease the impact on resources. (RDEIS: Kathleen Goforth, EPA, pg. 2)

Response: Refer to section 1.3.1 Removed Roadside Safety Hazards and tables 3, 7, 11, and 14 for a complete discussion of the purpose of and need for action and design criteria. Trees within the Moonlight Fire perimeter, along the roadsides, are generally 150 feet tall. A buffer was created to capture the tallest trees that may potentially fall and hit the road prism. Trees that meet the PNF Roadside/Facility Hazard Tree Abatement Action Plan 2008 criteria as "hazard" trees would be removed within the 150 foot buffer. Therefore not all trees within the 150 foot buffer would be felled and removed.

15. **While EPA recognizes the need for reforestation to rapidly reduce the risk of erosion and sedimentation, we continue to recommend development of an alternative that minimizes adverse impacts to damaged watersheds. We recommend including in the preferred alternative aspects of other alternatives, such as:**
    - **Avoid California spotted owl Home Range Core Areas and Protected Activity Centers;**
    - **Avoid riparian zones;**
    - **Limit the upper diameter limit of harvested trees to 24 inches diameter breast height (dbh); and**
    - **Harvest only from units accessible by existing roads.** (RDEIS: Kathleen Goforth, EPA, pg. 3)

Response: California spotted owl Home Range Core Areas and Protected Activity Centers have been deleted where they overlap with the Old Forest Emphasis land allocation in alternative C.

Avoiding riparian zones has not been incorporated into the design criteria for any of the action alternatives because the tons per acre of large woody debris would far exceed the upper limit of the project specific retention level (5-10 tons per acre)(section 3.5.1.10.3 of RFEIS) in the long term.

An upper diameter limit of 24 inches dbh was included in alternatives eliminated from detailed study (section 2.3 of the RFEIS) [G, H (upper diameter limit of 20 inches dbh), and J (upper diameter limit of 20 inches dbh)]. An upper diameter limit of 24 inches dbh proves to have high cost values with low sawlog values, resulting in a high, negative percent above value.

Alternative J, an alternative eliminated from detailed study, includes no road construction or reconstruction.

16. **We continue to urge careful consideration of the quantity and location of temporary roads, landings, and skid trails in order to minimize adverse effects on water quality and watersheds already at high risk CWE.** (RDEIS: Kathleen Goforth, EPS, pg. 3)

Response: Comment noted.

17. **The FEIS should include information supporting both the proposed siting of raods and landings and the conclusion that proposed activities would not result in significant adverse effects.** (RDEIS: Kathleen Goforth, EPA, pg. 3)

Response: The Moonlight and Wheeler Project Logging Systems Report (June 2009) includes an analysis of roads. Section 3.5, Soils and Hydrology of the RFEIS discusses roads as they relate to the affected environment and environmental consequences.

18. **We recommend that the FEIS describe the condition of existing roads, the data and rationale underlying the need for the proposed temporary roads and 14 landings, and the environmental effects of existing roads and temporary road and landing construction. We recommend temporary roads and landings be carefully placed to minimize adverse effects on already unstable slopes and soils. The FEIS should state measures proposed to reduce adverse impacts and should provide an estimate of the impacts that are avoided by such measures.** (RDEIS: Kathleen Goforth, EPS, pg. 3)

Response: Refer to above response. (#27) Rationale for design criterion is stated in tables 1 through 15 for each alternative. An estimate of the impacts that are avoided by incorporating the design criteria is factored into the environmental consequences section for each resource in chapter 3 of the RFEIS.

19. **In order to mitigate the impacts of the proposed projects on watersheds, EPA recommends that existing roads and landings that are not essential to the proposed project, other ongoing Forest Service activities, or access to private land holdings be decommissioned. Include a quantification of miles of road proposed for decommissioning.** (RDEIS: Kathleen Goforth, EPA, pg. 4)

Response: All roads proposed in each alternative in the Moonlight and Wheeler Project are necessary to implement each alternative. Non-system roads that currently exist on the landscape are being analyzed under the PNF Travel Management EIS as user created routes. Proposing to decommission all existing non-system roads within the Moonlight and Wheeler Project would directly conflict with the PNF Travel Management EIS. No additional roads will be incorporated into the Moonlight and Wheeler Project.

20. **The FEIS should provide a detailed Closure and Restoration Plan for the proposed temporary roads and landings. This Plan should include specific information on whether these roads and landings would be recontoured, replanted with appropriate vegetation, monitored, and closed to off-highway vehicle use. We recommend the FEIS include a specific post-harvest schedule and timeline for closure of the temporary roads and landings.** (RDEIS: Kathleen Goforth, EPA, pg. 4)

Response: To hasten restoration of disturbed soil areas, new and existing temporary roads, skid trails, and landings would be subsoiled to a minimum of 18 inches in depth, reforested, and closed following the completion of harvest. Refer to appendix C for Best Management Practices (BMPs) and Standard Management Requirements (SMRs) specific to temporary roads and landings. Once a road is closed it is closed to all motorized vehicles. BMP monitoring would take place once implementation is complete. Implementation of the Moonlight and Wheeler Project is subject to contract specifications and contract time frames.

21. **Given the severely damaged state of watersheds, we recommend a temporary closure of specific allotments, readjustments of livestock numbers, or adjustments of use levels, within high severity burn areas, to encourage more rapid watershed recovery. We recommend the FEIS describe the livestock management practices which could be or are being implemented to encourage watershed recovery and include a timeline for implementation of modified management practices.** (RDEIS: Kathleen Goforth, EPS, pg. 4)

Response: Refer to R1. Refer to section 3.10, Range of the RFEIS. The majority of the Wheeler fire was on the Clark's Creek Allotment. The Wheeler fire had little impact to the Bass, Doyle, Jenkins, and Fitch Canyon Allotments. None of the Key Areas were burned. The pastures burned in the Clark's Creek Allotment; Dry Flat, North 3 Creeks, and South 3 Creeks, voluntarily were not used by the permittee in 2008. The unburned Clark's Creek pasture was used for 17 days with 200 pair 10/20-11/7, which is after seed set and plants go dormant. The Key Areas in Jenkins Allotment were not burned.

Following the Moonlight fire, the Lone Rock Allotment was not grazed in 2008 by the permittee. NRCS used EQIP funds to find pasture elsewhere to defer grazing for a year. The grazing on Lone Rock occurs predominately on the leased private meadow lands in the valley bottoms. Lights Creek Allotment only grazes 24 pair within the entire 23,500 acre allotment. Indicator Meadow was not burned in the fire. The fire skipped over Indicator Meadow. An end of season use check in 2008 showed very little use on Indicator Meadow; 0%-5% meadow, 0%-5% willow, and 0% bank alteration. Antelope Lake was not used in 2008 following the fire. The Key Areas in Antelope Allotment were not burned in the Moonlight fire. Taylor Lake and Hungry Creek Allotments are Vacant. They have not been grazed for the past 10 years.

At this time there are no plans to increase livestock stocking rates or increase use standards on any of the allotments due to the increase in transitory range created by the fire.

22. **EPA recommends aggressive implementation of mitigation measures to address potential exceedances of air quality standards. The FEIS should include a detailed smoke management plan describing Northern Sierra Air Quality Management District regulations for pile burning and smoke management, an implementation schedule, the responsible parties, and monitoring and reporting requirements.** (RDEIS: Kathleen Goforth, EPA, pg. 5)

Response: A Smoke Management Plan will be completed prior to any burning and request of a burn permit.

23. **EPA recommends that the Forest Service include a Construction and Operations Emissions Mitigation Plan for fugitive dust and diesel particulate matter (DPM) in the FEIS and adopt this plan in the Record of Decision (ROD). EPA recommends the following mitigation measures be included in the Construction and Operations Emissions Mitigation Plan in order to reduce impacts associated with emissions of PM and other toxics, particularly in areas where the public or Forest staff may be impacted:**

Fugitive Dust Source Controls:

- Stabilize open storage piles and disturbed areas by covering and/or applying water or other dust palliative where appropriate. This applies to both inactive and active sites, during workdays, weekends, holidays, and windy conditions.
- Install wind fencing and phase grading operations where appropriate, and operate water trucks for stabilization of surfaces under windy conditions.

- When hauling material and operating non-earthmoving equipment, prevent spillage and limit speeds to 15 miles per hour (mph). Limit speed of earth-moving equipment to 10 mph.

Mobile and Stationary Source Controls:

- Reduce use, trips, and unnecessary idling from heavy equipment.
- Maintain and tune engines per manufacturer's specifications to perform at EPA certification, where applicable, levels and to perform at verified standards applicable to retrofit technologies. The California Air Resources Board has a number of mobile source anti-idling requirements which could be employed. See their website at: http://www.arb.ca.gov/msprog/truck-idling/truck-idling.htm.
- Prohibit any tampering with engines and require continuing adherence to manufacturer's recommendations.
- If practicable, lease new, clean equipment meeting the most stringent of applicable federal or state standards.

Administrative controls:

- Identify all commitments to reduce construction and operations emissions in the FEIS and specify air quality improvements that would result from adopting specific air quality measures.
- Identify where implementation of mitigation measures is rejected based on economic infeasibility.
- Prepare an inventory of all equipment prior to construction and identify the suitability of add-on emission controls for each piece of equipment before groundbreaking. (Suitability of control devices is based on: whether there is reduced normal availability of the construction equipment due to increased downtime and/or power output, whether there may be significant damage caused to the construction equipment engine, or whether there may be a significant risk to nearby workers or the public.).

Response: Timber sale contracts adhere to OSHA regulations.

24. **It is important to protect human health by limiting exposure to naturally occurring asbestos. We recommend that the Forest Service determine whether naturally occurring asbestos may be a management issue for this salvage harvest by reviewing the asbestos occurrence information on the California Geological Survey website at: http://www.consrv.ca.gov/cgs/minerals/hazardous_minerals/asbestos/index.htm and the California Air Resources Board (CARB) regulations guidance at http://www.arb.ca.gov/toxics/asbestos/asbestos.htm. The CARB website addresses California's Asbestos Airborne Toxic Control Measures for Surfacing Applications, which apply to unpaved roads. This issue should be documented in the FEIS.** (RDEIS: Kathleen Goforth, EPA, pg. 6 through 7)

Response: Serpentine soil has not been found in the Moonlight and Wheeler Project area; however all safety concerns will be addressed if it is discovered.

25. **The Forest Service should also review the results and road surfacing recommendations in the Department of Toxic Substances Control report "Study of Airborne Asbestos From A Serpentine Road in Garden Valley, California" (April 2005) at: http://www.dtsc.ca.gov.loader.cfm?url=/commonspot/security/getfile.cfm&pageid=33546.** (RDEIS: Kathleen Goforth, EPA, pg. 7)

Response: Comment noted.

26. **We recommend the FEIS include a description of climate change and its implications for successful reforestation. For example, describe and evaluate projected climate change consequences such as frequency of insect outbreaks, droughts, and fire seasons, and their effects on the success of reforestation efforts.** (RDEIS: Kathleen Goforth, EPA, pg. 7)

Response: Refer to section 3.3, Forest Vegetation, Fire, Fuels, and Air Quality for a discussion on carbon sequestration.

27. **The FEIS should be thoroughly edited so that it does not contain inconsistent information or other errors. The FEIS should provide clear summaries of the data in the text with supporting tables and conclusions that clearly describe the impacts of the alternatives. The FEIS should include specific data on existing conditions in the analysis area and all community impacts.** (RDEIS: Kathleen Goforth, EPA, pg. 8)

Response: Comment noted.