Notice of Appeal

The Sierra Forest Legacy	)	Notice of Appeal of the Record of Decision
The Sierra Club, and the	)	and Final Supplemental Environmental Impact Statement
Plumas Forest Project	)	for the Empire Vegetation Management Project
	)	on the Mt. Hough Ranger District, signed 5/31/07
	)	
	)	Responsible Official: Alice Carlton, Forest
v.	)	Supervisor, Plumas National Forest, Quincy, CA.)
	)	
Alice Carlton, Forest	)	Appeal Deciding Officer: Bernard Weingardt,
Supervisor, Plumas National Forest	)	Regional Forester, USDA Forest Service--PSW
	)	1323 Club Drive, Vallejo, CA 94592
Responsible Official	)	
_____	)	Appeal Date: July 30, 2007

Notice of Appeal
And
Statement of Reasons
Pursuant to 36 CFR § 215

Appellants:

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July 30, 2007

I. Description of Appeal.

The Sierra Forest Legacy, The Sierra Club, and the Plumas Forest Project (hereafter, "the Campaign") Appeal and Request Relief from Regional Forest Bernard Weingardt, Regional Forester, Region 5-PSW from the Record of Decision (ROD) and Final Supplemental Environmental Impact Statement (FEIS) for the Empire Vegetation Management Project on the Mt. Hough Ranger District of the Plumas National Forest, signed May 31, 2007 by Mr. Chris Knopp, Acting Forest Supervisor, Plumas National Forest, the Responsible Official.

The Legacy's appeal is timely, having been filed on or before July 30, 2007, on the first day of federal business following 45 days from the publication of the Notice of Decision in the paper of record, the Feather River Bulletin, in Quincy CA.

II. Description of Appellants.

The Sierra Forest Legacy (formerly known as the Sierra Nevada Forest Protection Campaign) is a 98-member group environmental coalition focused on the conservation, enhancement and protection of old growth forests, wildlands, at-risk species, rivers and streams and the ecological processes which shape the forests of the Sierra Nevada. We have standing based upon substantive comments on the Empire proposed action and draft environmental impact statement. We have made an extensive site visit to the treatment areas and have reviewed all relevant Empire Project documents, including the key specialists reports.

The Sierra Club-Mother Lode Chapter encompasses the Sierra Nevada and Cascade ranges from Yosemite to the Oregon boarder. The chapter's members desire that National Forests be managed to enhance forest ecology and provide fuels treatments near communities.

The Plumas Forest Project (PFP) is a non-profit grassroots environmental organization formed in 1989 to monitor activities on the Plumas National Forest. The PFP focuses primarily on logging, with its main goal being to ensure that forest Service projects protect all old growth stands as well as individual, larger, fire-resilient trees important to wildlife and watersheds. Throughout the 1990s, the PFP cooperated with other groups interested in similar protections for the Sierra Nevada through its public involvement in the Regional planning process that culminated in the 2001 Sierra Nevada Forest Plan Amendment, otherwise known as the Sierra Framework. The PFP seeks to ensure that the best science available is used by the Forest Service to address concerns about wildlife, watersheds, and wildfire.

III. Appeal Background

The Sierra Forest Legacy ("Legacy") has been actively engaged through its prior entity, the Sierra Nevada Forest Protection Campaign ("Campaign") in this project since its onset in 2004. [1] The Campaign commented on the Empire Project proposed action on July 29, 2004 and the Campaign submitted comments of the Empire DEIS and the Empire Science Consistency Review July 5, 2005. Based on significant flaws in the environmental documentation, on October 11, 2005, the Campaign filed an appeal of the Plumas National Forest Supervisor's Empire Project ROD/FEIS. In response to the Campaign's appeal, the Regional office reversed the Forest Supervisor's decision to implement Alternative D.

After issuance of a Supplemental Draft Environmental Impact Statement, the Campaign submitted supplemental comments on April 10, 2006. Based on similar significant flaws in the environmental documentation, the Campaign filed a second appeal, on October 2, 2006, of the Empire Project ROD/FSEIS. In response to the Campaign's second appeal, the Forest Supervisor withdrew his decision to implement Alternative D. The Forest subsequently issued a second Draft Supplemental Environmental Impact Statement in March 2007. The Campaign provided additional comments on this second Draft Supplemental EIS for the Empire Project on April 16, 2007.

The Legacy continues to believe that the proposed action, Alternative D is not appropriate given the potentially significant adverse impacts to wildlife effects and lack of necessity for meeting fuel reduction goals. The Legacy hereby incorporates its previous comments made on behalf of the Campaign in the prior NEPA and Appeal processes for this project, as set forth above.

Finally, the Legacy incorporates by reference the referenced documents cited in this appeal and prior comment letters. The Legacy is ready to make copies of any such referenced documents not already in the Forest Service's possession which the Forest Service wishes to review prior to making a final determination.

IV. Project Description

The Empire Project continues to implement Alternative D, which involves construction of 6,600 acres of defensible fuel profile zones (DFPZs), 2,400 acres of which are located in the Wildland Urban Interface ("WUI"). Alternative D also involves 1,226 acres of group selection logging, and approximately 2,370 acres of Individual Tree Selection ("ITS") Overall, Alternative D treats approximately 10,196 acres. In response to prior

[1] The Sierra Nevada Forest Protection Campaign ("Campaign") changed its name to the Sierra Forest Legacy in April of 2007. The Sierra Forest Legacy has standing to appeal based on the Campaign's extensive participation in the comment and appeal process that has occurred for the Empire project . For purposes of this Appeal, the Legacy will refer to comments made prior to its name change as having been made by the "Campaign."

comments, the Empire Project has "clarified" the boundary for the Project as the 103,000 acre area described in the Mount Hough Landscape Assessment. ("Assessment Area.")

The Empire Project FEIS states that the Assessment Area has limited amounts of the highest quality 5M and 5D habitat yet the Empire Project still proposes to reduce portions of this habitat to poor quality. Logging within DFPZs and groups will remove trees up to 30" diameter in many stands, where there are already limited in the existing landscape. Within DFPZs, canopy cover will be reduced to between 30 to 45 percent. Large snags and down wood will also be removed. In sum, by lowering canopy cover and removing co-dominant larger trees and remaining structural characteristics of old forests, the Empire Project will degrade habitat for old forest associated species such as the California spotted owl, American marten and Pacific fisher

V. Appeal Summary

The Legacy appeals the Empire Vegetation Management Project based upon: (1) violations of the National Environmental Policy Act ("NEPA"), 42 USC 4321-4370, and its implementing regulations, and (2) violations of the National Forest Management Act ("NFMA"), 16 USC 1600 *et seq*., and its implementing regulations, regional and forest plans, as set forth more fully below. This appeal is based on legal inadequacies raised in the Campaign's prior comments and appeals that have still not been remedied by the supplemental review documents, and on further points raised in the Campaign's supplemental comments.

The Empire Project's NEPA violations of NEPA include failure to take a hard look at alternatives, failure to present and analyze necessary and accurate scientific information, failure to take a hard look at the individual impacts of this project, and failure to consider the cumulative impacts of this project in combination with other past, present and reasonably foreseeable future projects (including projects that are foreseeable as part of the QLG pilot project) segmentation of existing projects and use of an analysis area that is too small. The Forest Service lacks information on habitat quality, how the project will impact existing habitat, and how post-treatment habitat will be sufficient for wildlife in the type of fragmented, low canopy coverage forest that will result from this project. Thus, it was unable to take the "hard look" at the environmental impacts of this project, as required by NEPA. *See Blue Mountains Biodiversity Project v. Blackwood,* 161 F.3d 1208, 1212 (9th Cir. 1998).

The Empire Project also violates NFMA since the Forest Service's re-approval of this Project still has taken no action to address the Campaign's prior comments that the Forest Service is not insuring the viability of sensitive forest species when it conducts the intensive fuel reduction, group selection and ITS harvesting proposed for this project. *See* 16 U.S.C. 1604 § 6(g) (3)(B), 36 C.F.R. § 219 *et. seq.* The Forest Service's failure to assess project and landscape level impacts to sensitive wildlife species and management indicator species,

failure to monitor (at the forest plan or project level) populations of management indicator species and species at risk means it cannot insure that it is maintaining diversity and viability of wildlife in the forest. *See Earth Island Inst. v. U.S. Forest Serv.*, 442 F.3d 1147, 1153 (9th Cir. 2006); *Sierra Nevada Forest Protection Campaign v. Tippen,*, 2006 U.S. Dist. LEXIS 57832 (E.D. Cal. August 16, 2006). Further the Forest Service is violating its own Forest Plan and guidelines by allowing for continued significant impacts to soil, thereby leading to a substantial and permanent impairment of the productivity of the land.

The Empire Project implements the 1999 Herger-Feinstein Quincy Library Group Forest Recovery Act ("QLG") and tiers to the 2004 Sierra Nevada Framework ROD (USDA Forest Service 2004a), and accompanying FSEIS (USDA Forest Service 2004b). As demonstrated in the Campaign's appeal of the 2004 ROD and FSEIS (SNFPC et al. 2004), both the new plan and the FSEIS fail to comply with the National Forest Management Act (NFMA), the National Environmental Policy Act (NEPA), and other environmental laws. The Empire Project as presently proposed is also contrary to law for the reasons set forth in the Campaign's appeal of the Framework decision (a copy of which was provided as part of the Campaign's original scoping comments and incorporated by reference herein).

The Legacy requests that the Forest Supervisor's decision be reversed and the Forest required to comply with all applicable laws in completing its review for this project.

VI. Statement of Reasons

A. The Empire Project Violates the National Environmental Policy Act

Under NEPA, the EIS for a major federal action must include "a description and analysis of the environmental impact of the proposed action, any adverse environmental effects that cannot be avoided if the action is implemented, alternatives to the proposed action, the relationship between short-term uses and long-term productivity, and any irreversible or irretrievable commitment of resources that would be involved if the action were to be implemented. *See Sierra Nevada Forest Protection Campaign v. Tippen* quoting *Earth Island Inst. v. U.S. Forest Serv*., 442 F.3d 1147, 1153 (9th Cir. 2006); 42 U.S.C. § 4332(2)(C). "In short, NEPA requires that a federal agency 'consider every significant aspect of the environmental impact of a proposed action' and inform the public that it has indeed considered environmental concerns in its decisionmaking process.'" *Id*.; also citing *Kern v. U.S. Bureau of Land Mgmt*., 284 F.3d 1062, 1066 (9th Cir. 2002).

NEPA ultimately prohibits uninformed agency action. *See e.g., Robertson v. Methow Valley Citizens Council, 490 U.S. 332, 350-51.* As set forth in a recent decision, *Oregon Natural Resources Council Fund, V. Brong*, 2007 U.S. App. LEXIS 17530 (9th Cir. 2007):

> "As we have observed on multiple occasions, "general statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." Klamath-Siskiyou, 387 F.3d

> at 993-94 (quoting Ocean Advocates, 361 F.3d at 1128). Even if the BLM was unable to indicate with any great degree of certainty the results of the Project, because the cumulative effects analysis requires an agency to predict future conditions, uncertainty is an inherent part of the process. Therefore, a general statement about uncertainty does not satisfy the procedural requirement that an agency take a hard look at the environmental effects of an action. The BLM can certainly explain specific projections with reference to uncertainty; however, it may not rely on a statement of uncertainty to avoid even attempting the requisite analysis."

Thus, under NEPA, the Forest Service cannot make conclusory assertions that an activity will have insignificant impact on the environment. *See Alaska Ctr. for Env't v. United States Forest Serv.*, 189 F.3d 851, 859 (9th Cir. 1999). Instead, the Forest Service must take a "hard look" at the potential impacts of a proposed timber plan, and must put forth a "convincing statement of reasons" that explain why the project will impact the environment no more than insignificantly. *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998). "General statements about possible effects" and some risk do not constitute a 'hard look' absent a justification regarding why more definitive information could not be provided." *Neighbors of Cuddy Mountain v. United States Forest Service*, 137 F.3d 1372, 1380 (9th Cir. 1998).

Further, an agency must take a hard look at alternatives to the proposed project, particularly whether such alternatives can achieve the project purposes with less environmental impacts. *See e.g., See Sierra Nevada Forest Protection Campaign v. Tippen.*

An agency's NEPA analysis must also consider cumulative impacts of reasonably foreseeable future actions and impacts from "cumulative actions" as defined under NEPA. *See Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 895-96 n.2 (9th Cir. 2002); *Bayeeper v. U.S. Army Corps of Engineers*, 2006 U.S. Dist. LEXIS 67483 (E.D. Cal. September 20, 2006); *Great Basin Mine Watch v. Hankins*, 456 F.3d 955, 969, 971-73 (9th Cir. 2006) A "cumulative impact is defined as:

> [T]he impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.7. "[P]roper consideration of the cumulative impacts of a project requires some quantified or detailed information;... [g]eneral statements about possible effects and some risk do not constitute a hard look absent a justification regarding why more definitive information could not be provided." *Klamath-Siskiyou Wildlands Ctr. v. BLM*, 387 F.3d 989, 993 (9th Cir. 2004)

An agency cannot simply offer conclusions but must instead identify and discuss the impacts that will be caused by each successive project, including how the combination of those various impacts is expected to affect the environment, so as to provide a reasonably thorough assessment of the projects' cumulative impacts. *Id*. "The analysis must be more than perfunctory," id. at 994, and "must give a sufficiently detailed catalogue of past, present, and future projects, and provide adequate analysis about how these projects, and differences between the projects, are thought to have impacted the environment." *Lands Council v. Powell*, 395 F.3d 1019, 1028 (9th Cir. 2005).

Here, the Empire Project planning documents fail to include important information and analysis necessary to a full and accurate assessment of the impacts of the proposed project and alternatives that could avoid or lessen such impacts to owls, martens and other sensitive forest species.

1. The Empire Project Fails to Take a Hard Look at Impacts to California Spotted Owls

In our prior comments and appeals, we have set forth several areas in which the Empire Project does not take the requisite hard look at impacts to California spotted owls.

First, the Empire Project still has not taken a hard look at the spotted owl's need for high quality habitat, which is generally lacking in the project area. Given the lack of large trees and CWHR 5 & 6 stands, the Forest Service should be doing everything it can to increasing, not reducing this habitat.

Second, the Empire Project does not provide enough information or analysis regarding the impacts of Alternative D to spotted owl habitat in the circular core areas around the nest site. Leading owl biologists have demonstrated that the quality of habitat within these circular areas closest to nest are critical in own occupancy and survival. *See* Blakesley (2005); Seamans (2005). However, besides some basic information regarding the overlap between the nest core area and the designated HRCA, the Empire Project documents provide little information regarding the habitat quality of these core areas immediately around the nest sites.

Third, the Empire Project still does not provide adequate information to analyze the impacts of logging at the relevant scales designated as the home range core, the home range area and a larger area analyzing how different owl home ranges interact across the landscape.

Fourth, the Forest Service is not correctly analyzing the risk to owls from the proposed project since it 1) does not acknowledge the continued uncertainty regarding the owl's status, particularly in the northern Sierra and in the Empire Analysis area; 2) incorrectly assumes that the spotted owl population on the PNF appears to have an upward trend; and 3) does not assess impacts in a manner that takes into account the relationship between the absence of owls from formerly occupied habitat and the overall poor habitat

conditions in the project area. The Forest Service has not provided enough information to determine whether owls have adequate amounts of "suitable habitat" in the planning area. Instead, the Forest Service simply relies on the entire range of CWHR 4M habitat as suitable, even though research shows that the lower quality habitat in this range is not suitable.

Finally, the Forest Service has not conducted an adequate or accurate analysis regarding the potential for future habitat reduction under the proposed action to fragment owl habitat and isolate owl pairs in small blocks of nesting habitat, surrounded by marginal to unsuitable habitat, the tendency of uniform stand density thinning to harm pockets of high quality habitat, and to eliminate or substantially reduce the availability of prey species..

a. The FSEIS Does Not Consider the Owl's Need for High Quality Habitat for Survival and Reproduction

The FSEIS still does not adequately address the need to maintain the maximum number of large trees and quality nesting habitat consistent with legitimate Forest Service goals. As discussed in prior comments and further below, alternatives that limit fuel reduction treatments to trees below 20" dbh meet the Forest Service's fuel reduction and forest health objectives.

As stated by previous comments, the poor performance of owls in the area can in part be attributed to the low quality of habitat in the area, particularly high quality habitat necessary for owl survival. As discussed in prior comments, a primary focus for management should be to avoid "actions which further reduce the survival probabilities for adult females (which) will have disproportionately large and negative effects on population growth rate" (Blakesley et al. 2001). As stated by leading owl scientists working on the nearby Lassen National Forest, "[G]iven the current trend in California spotted owl populations, the most positive step that can be taken to reverse the apparent decline is to identify, and implement, those actions that will lead to increases in adult survival probabilities. Owl studies to date suggest that this will occur with *increased retention and recruitment of large trees and retention of closed-canopy conditions* throughout the Sierra Nevada landscape." (Ibid) (Emphasis added).

Blakesley (2005) shows that site occupancy is positively associated with the amount of nest area dominated by larger trees and higher canopy cover (>70%) at a 203 hectare/500 acre nest area, and was negatively associated with non-habitat. Site occupancy was best predicted by the quality of habitat in the nest core area. *See* Blakesley (2005) ("Nest area (203 ha) composition was a much better predictor of site occupancy than core area (814 ha), but relationships to apparent survival and reproductive output were similar at both spatial scales.") High quality nesting habitat that supports adult survivorship is generally defined as areas of high canopy cover (> 70%) in large size 5 class trees averaging greater than 24" dbh. However, the Empire project continues to rely on lower quality habitat as the basis for finding that continued reduction in habitat quality will not threaten long-term persistence on owls in the project area and in the QLG Pilot area in general.

The project documents do not identify the amount of this habitat present, but instead generally assumes that all habitat with trees greater than 12" dbh and 40% canopy cover constitute "suitable" habitat, and thus there will be no impacts to owls as long as habitat is retained at these levels. However, owl scientists have documented that highly suitable habitat for nesting, roosting, and foraging consists of dense, multi-storied stands dominated by trees $\geq$ 24 inches, high numbers of snags and downed logs, and canopy cover $\geq$ 70%. Lower-quality habitat suitable for foraging and sub-optimal roosting and nesting typically consists of multi-storied stands dominated by trees $\geq$ 12 inches and canopy cover $\geq$ 50%, with a minimum of about 40%. The FSEIS continues to fail to differentiate between percent of high-quality and lower-quality owl habitat within PACs and HRCAs. The Forest Servuce's methodology of lumping all levels of 'suitable' habitat together into one broad category obfuscates important information about the occurrence of high-quality habitat in the project area. This information is necessary for an accurate and complete portrayal of the project's real impacts.

Studies illustrate such general habitat analysis does not satisfy the "hard look" standard under NEPA. For example, the project documents do not present adequate information regarding the availability of nesting habitat in the 500 acre nest core area described by Blakesley (2005):

> Land managers in the Sierra Nevada region should retain forest stands dominated by large trees with canopy cover >70% and minimize the amount of area unsuitable to spotted owls within 200 ha surrounding spotted owl site centers to promote site occupancy. Minimization of non-suitable habitat should also increase spotted owl reproductive output.

See also Bart (1995) (owl fecundity and adult survival decreased with decreasing amounts of suitable habitat around the core activity centers and that "removing any suitable habitat within the vicinity of the nest tends to reduce the productivity and survivorship of the resident owls."); USDA Forest Service 1998, p. 24, ("In the absence of clear reasons why these results would not apply to the California spotted owl as well, they need to be considered in planning for the owls in the Sierra Nevada.")

In comparison, Blakesley 2003 found that the average nest core area composed of forest stands with >70% canopy cover was 52%. Blakesley 2003. Here, as discussed in our prior comments, available data indicate that the proposed treatments will eliminate most of the dense canopy coverage within owl HRCAs. *See* Britting 2006a, p. 8, Table 5 ("In seven of the ten owl sites, there would be no dense canopy cover remaining following treatment.")

Blakesley 2003 also found 38% of the nest core area are in stands with large trees (>24" dbh) and >40% cover and that 24% of the nest core area are in stands with large trees (>24" dbh) and >70% cover, i.e., 5D habitat. Further, Blakesley found an average of 83% suitable habitat within the 500 acre nest area, with a standard deviation of 12% (Blakesley 2003). *See also Sierra Nevada Forest Protection Campaign v. Tippen, supra.* Here, the

Forest Service does not provide information regarding the amount of high quality habitat within the 500 acre nest core habitat nor the harvesting that will occur within nor any analysis of potentially significant impacts to these areas. Here, the project area contains very little 5D habitat. The Forest Service's proposal to harvest in the nest core areas without assessing the quality of existing nest core habitat or impacts to that area from logging violates NEPA. *See e.g., Sierra Nevada Forest Protection Campaign v. Tippen, supra.*

Similarly, the Empire project documents provide no information regarding the amount of quality habitat in circular core areas of 1,000-acre circular core (Seamans (2005) and 2,010-acres. (Blakesley *et al*. 2005.) As discussed in Bond 2007, research shows that reducing canopy cover and the large-tree component in spotted owl circular nest and core areas have the potential to substantially impact the spotted owl. These studies show that ocupied owl "core" areas at these spatial scales also contain significant amounts of high quality habitat.[2] By not disclosing the habitat conditions nearest the nest site, the Forest Service is not providing adequate information to assess the current plight of owls in the planning area and the potential impacts that removing further quality habitat may have on their continued occupancy and survival. *See* Bond 2007; Rosenberg and McKelvey 1999; Franklin *et. al.*. *See also* Discussion Section VI.A.1.b. below.

The Forest Service also fails to take a hard look at the impacts to owl home range core areas from reductions in dense, higher quality habitat.. As discussed in previous comments, HRCAs are designed to include "the best available California spotted owl habitat in the closest proximity to the owl activity center." (USDA Forest Service 2004a, p. 39). Extensive logging within HRCAs is likely to adversely affect owl reproduction and occupancy. *See e.g.*, Blakesley (2005); Bart (1995).[3] Here, the Empire project proposes to log significant acres of owl home range core areas, yet fails to provide information regarding the amount of high quality and/or dense canopy habitat (4D, 5M, 5D or 6) that will remain.

(Blakesley 2003) shows mean amount of habitat types in nest areas and core areas. with an average 52 percent of the nest areas and 43 percent of core areas composed of forest stands with $\geq$70 percent canopy cover, and, further, that the amount of nest area dominated by $\geq$24 inch diameter trees and $\geq$70 percent canopy cover was positively associated with occupancy rates, and that occupancy, apparent survival, and nesting success all increased

[2] (Blakesley 2003) shows mean amount of habitat types in nest areas and core areas. A combination of 3G0, 3G1, 3G2, 4G0, 4G1, 4G2, 4G3 indicates that on average 52 percent of the nest areas and 43 percent of core areas were composed of forest stands with $\geq$70 percent canopy cover. Blakesley also found that the amount of nest area dominated by $\geq$24 inch diameter trees and $\geq$70 percent canopy cover was positively associated with occupancy rates, and that occupancy, apparent survival, and nesting success all increased with increasing amounts of old-forest characteristics within the nest core area. *See* Bond 2007.

[3] The 2001 Framework strictly limited logging within HRCAs based on the recognition that spotted owls preferentially use core areas within their home ranges (Bingham and Noon 1997) and that degrading habitat within HRCAs will likely reduce owl survival and reproductive success (Bart 1995; USDA Forest Service 2001a, Volume 3, Chapter 3, part 4.4, pp. 92-93).

with increasing amounts of old-forest characteristics within the nest core area. *See* Bond 2007; Seamans 2005. Here, the HRCAs do not provide the amount of 5D nesting habitat, yet the Forest Service proposes to eliminate size 5 class habitat and remove 20-30" trees which will contribute to future 5D habitat in the future.

More recent research reviewing habitat characteristics of areas similar in size to HRCAs support the critical importance of retaining nesting habitat with large trees and high canopy cover. In Seamans (2005) found that "forests comprised of medium and large trees and having high canopy cover [i.e., CWHR 5D and 4D] were correlated with higher territory occupancy and higher individual survival rates." (*Id*., p. 91). Seamans found that forests with medium (12 to 24 inch) to large ($\geq$ 24 inch) trees and $\geq$70% canopy cover were positively associated with survival of and probability of site occupancy by adult ($\geq$1 year old) California spotted owls at the 400-ha (988-ac) scale, and amount of hardwood forest, brush-sapling, or pole coniferous forest was negatively associated with these parameters. Contrary to other studies of the northern spotted owl (e.g., Franklin et al. 2000), Seamans found that increasing habitat heterogeneity did *not* positively impact survival and reproduction. Amount of interior forest within an owl territory was important in explaining spatial variation in population vital rates, and habitat fragmentation was either "neutral or negative" for population growth rate, survival, and reproduction. Seamans (2005) concluded that "maintaining existing contiguous blocks of forest dominated by medium and large trees with high canopy cover in owl territories, and allowing forests in earlier seral stages to mature, would benefit California spotted owls. This should increase not only survival, but also encourage occupancy of these sites by owls." Seamans (2005) also states that "intensive thinning of forest patches within owl territories that results in a lowering of canopy cover may have negative impacts on survival, and may impact occupancy of territories."

Chatfield (2005) examined habitat within circular territories of about 1,135 acres around each nest stand. She found that the relative probability of spotted owl territory occupancy increased with increasing amounts of mid- to late-seral forests having high canopy cover [i.e., 70 percent or greater]." (*Id*., p. 40).

In sum, both Seamans (2005, pp. 118-119) and Chatfield (2005, pp. 52-53) concluded that thinning, such as allowed by the 2004 Framework and proposed in the Empire project, could greatly reduce habitat value for spotted owls by reducing canopy cover from dense to moderate. Together, this new research by Blakesley, Seamans and Chatfield raises serious concerns about the impacts on the owl of reducing canopy cover within dense stands. Instead, the studies support the use of 70% canopy cover as the minimum threshold for nesting habitat and the need to maintain a reasonable percentage of such high canopy nesting habitat within owl territories to ensure owl occupancy and persistence. A truly science-based analysis of impacts to spotted owls from logging projects should examine the amount of pre- and post-treatment canopy cover $\geq$70% in stands with large trees within the 300-acre PAC, the 500-acre nest area around the nest/roost stands, the 1,000-acre home range core area, and the larger home range area. These designations have all been documented in the

scientific literature to be important to adult survival, reproduction, and probability of site occupancy.

b. The FSEIS Still Does Not Provide Adequate Information Regarding the Habitat Quality in the Circular Core Areas Around Owl Nest Sites.

As discussed above, the Empire project documents do not provide information regarding the habitat quality in the in circular core areas of 500 acres, (Blakesley *et al*. 2005), 1,000-acres (Seamans (2005) and 2,010-acres. (Blakesley *et al*. 2005.) In the FSEIS, the BE provides information limited to the amount of suitable habitat – including low quality 4M habitat -- within the 500-acre nest area. No other information is given.

Without information on the amount of high quality habitat that currently exists around owl nest sites, it is impossible to assess whether these areas currently offer sufficient habitat for spotted owl survival. As discussed in Bond 2007, the recent Seamans (2005) and Blakesley 2003, 2005 studies show that the quality of habitat in the circular area surrounding the nest site is a critical factor in predicting owl occupancy and survival. There are several resaons for this:

> The circular spatial scales examine the amounts of varying-quality habitats as well as non-habitat that occur within each circular area and how these amounts will influence probability of occupancy, survival, and reproduction. The rationale for analyzing amounts of different habitat types around the nest/roost sites is that the distance from the nest or roost sites influences the probability of an area being available to spotted owls for foraging because they are "central place foragers." In other words, spotted owls return to a central location (nest or core roost area) during an evening of foraging, so the farther away the foraging habitat, the more energetically costly it might be for the owl to travel to the area and return to the nest/roost site (Rosenberg and McKelvey 1999). Analysis of habitat within these circular areas is critical due to these recent studies demonstrating the strong relationship between high-quality habitat in vicinity of the nest and owl occupancy and survival.

Bond 2007.

Further, Franklin 2000, in a study on northern spotted owls, concluded "[t]wo factors, climate and habitat, appeared to have the greatest effect on these two life-history traits. …… As habitat quality decreased, the effects of climatic variation on survival increased." As the climate gradient progresses from an optimal warm, dry spring to a cold, wet spring the study results indicate that "individuals in good habitat (mature, old growth forests) had a much slower decline in survival as climatic conditions deteriorated than did individuals in poorer habitats. Thus, high habitat quality, as defined in this study, buffered survival of territory occupants from the negative effects of climate." This study further supports the importance

of high quality habitat surrounding an owl nest site that may buffer the worst effects of adverse weather conditions. Bond 2007.

By not describing the habitat conditions around the nest site, the Forest Service is not providing a critical component of the information necessary to understand whether there is currently enough habitat for owls to survive in the area.

As discussed in Bond 2007, research shows that reducing canopy cover and the large-tree component in spotted owl circular nest and core areas have the potential to substantially impact the spotted owl. These studies show that ocupied owl "core" areas at these spatial scales also contain significant amounts of high quality habitat.[4] By not disclosing the habitat conditions nearest the nest site, the Forest Service is not providing adequate information to assess the current plight of owls in the planning area and the potential impacts that removing further quality habitat may have on their continued occupancy and survival:

c. The FSEIS Still Does Not Ensure that Minimum Thresholds at Relevant Spatial Scales for Owls are Being Maintained

For HRCAs, the 2004 Framework states that desired conditions for California spotted owl 1,000-acre HRCAs are to achieve at least 50—70 % canopy cover, at least 24 inch diameter trees dominating the overstory, and a higher-than-average level of snags and downed woody debris. Treatments must be designed to avoid the highest quality habitat and existing suitable habitat must be retained (although some habitat may be modified to meet fuels objectives). 2004 ROD p. 46, Table 1.

Here, the project documents do not explain whether or how this desired condition is being met. The project documents do not discuss the amount of canopy cover that will occur within the HRCAs, either in the treatment or outside the treatment acreage. The public is unable to ascertain what levels of canopy cover occur currently and post-treatment from the information provided within the BE. Instead all the studies on HRCAs suggest that the HRCA area of 1,000 acres is critical habitat within an owl's home range that must be protected to insure viability. *See* Blakesley (2005) ("Within owl core areas (814 ha), increased amounts of habitat used by spotted owls for nesting, roosting and foraging should increase owl survival"); Bond 2006. Further, as discussed below, it may be that in some PACs, the current nest core habitat is already degraded such that the HRCA habitat is critical to maintain to avoid an isolated "island" surrounded by unsuitable habitat. *See* Verner et al. 1992, p. 15 ("We expect that owl pairs in SOHAs would disappear at a relatively high rate, leaving the SOHAs unoccupied and at least temporarily nonfunctional.")

[4] (Blakesley 2003) shows mean amount of habitat types in nest areas and core areas. A combination of 3G0, 3G1, 3G2, 4G0, 4G1, 4G2, 4G3 indicates that on average 52 percent of the nest areas and 43 percent of core areas were composed of forest stands with ≥70 percent canopy cover. Blakesley also found that the amount of nest area dominated by ≥24 inch diameter trees and ≥70 percent canopy cover was positively associated with occupancy rates, and that occupancy, apparent survival, and nesting success all increased with increasing amounts of old-forest characteristics within the nest core area. *See* Bond 2007.

The Empire Project also still does not analyze impacts to owls at the broader home range scale. This is a particular concern because owl home ranges in the project area are likely to have marginal habitat quality. The Forest Service has estimated the number of owl home ranges that would have less than 50 percent suitable habitat after project implementation as part of the assessment of likely impacts on the owl population. (USDA Forest Service 1999a, pp. 76-82). Here, however, it is likely that owl home ranges fall below that figure. Without such information, there is no way for the Forest Service to take a hard look at the impacts of this project.

The protection of PACs alone is inadequate to ensure owl survival and thus the Forest Service's failure to consider the project impacts on these critical habitat areas does not constitute the hard look analysis required under NEPA. As noted by the Sierra Nevada Framework, "[p]rotecting occupied, as well as suitable but unoccupied habitat, over the long term is important to insure species viability. (USDA Forest Service, 2001a, Chap. 3, part 4.4, p. 82.) According to the Framework:

> [C]onservation efforts should therefore consider not only occupied habitat, but also suitable unoccupied habitats, in developing conservation strategies for species for which dispersal may function as a primary limiting factor. (*Id.*)

Indeed, Framework scientists specifically found that timber harvesting poses serious short term risks to the owl due to habitat fragmentation:

> [R]etaining existing suitable habitat and improving habitat conditions over the next couple of decades may be particularly important for stabilizing owl populations. Research into population dynamics at larger scales has suggested the possible existence of habitat thresholds, below which populations may go extinct in the presence of suitable habitat due to constraints on successful dispersal. With current population declines, vegetation treatment impacts over a short time period may involve risks to the spotted owl population that are not evident by considering longer-term habitat projections alone.

(See e.g., USDA Forest Service, 2001a, Chap. 3, part 4.4, p. 95. *See also id.* at p. 96 ("[W]here a greater proportion of owl home ranges have less than desired amounts of habitat to begin with, reducing the amount of habitat within the few home ranges that exceed the habitat threshold, prior to increasing amounts of habitat in other owl home ranges, could increase the risk of worsening conditions and increasing nearest neighbor distances for owl sites within these areas.")

Given the critical importance of high quality habitat occurring *outside* of PACs within the Project area, the Forest Service should avoid treatments that reduce such quality habitat.

c. The Forest Service is Not Identifying the Uncertain Risk to Owls Posed by Intensive Logging in Their Habitat

The Forest Service is not identifying the magnitude of the risk facing spotted owls in the Plumas National Forest and in the planning area and how the Empire Project increases such risk..

First, the Forest Service is not acknowledging the continued uncertainty regarding the owl's status, particularly in the northern Sierra and in the Empire Analysis area. As noted by the Science Consistency Review, the Empire project environmental review "does not adequately represent the uncertainty and risk associated with the proposed actions in terms of impacts to CSO relative to trends toward listing and/or viability." (SCR 2005) The DEIS does not discuss the owl's imperiled status in the northern Sierra Nevada, based on the best available information. Rather, the FSEIS erroneously concludes that "the California spotted owl populations are either relatively stationary or increasing on the four study areas." However, the draft 2006 meta-analysis did not conclude that populations were increasing and clearly pointed to serious concerns about the Lassen study area – the closest owl study area to the Diamond Project – which appears to be faring considerably worse than owls elsewhere in the Sierra Nevada. (Blakesley et al. 2006b). The 2006 owl meta-analysis showed that lambda – the predicted rate of population change – was .973 on the Lassen study area, indicating a likely population decline, with a 95 percent confidence interval of .946 to 1.001. (*Ibid.*, p. 3). Moreover, the Lassen study area exhibited a 64 percent likelihood of experiencing a 10 percent or greater population decline within the next seven years. (*Ibid.*, p. 4). Other information further indicates that the Lassen owl population is declining. Thus, for example, site occupancy declined between 1991-1994 and 2001-2004, with several owl territories becoming abandoned following logging. (Blakesley et al. 2005). This information needs to be fully disclosed in the EIS, and its implications for management need to be weighed.

Second, the Forest Service still fails to consider the poor results of owl occupancy and reproductive success in the Analysis area. The BE (p. 31) and the forest wide MIS report (Plumas National Forest 2006, p. 37) claim that the population trend for California Spotted Owl (CSO) is stable. This claim is based on a comparison of a survey of the occupancy of SOHAs in 1991 compared to data collected on the Plumas Lassen Administrative Study. These surveys, however, are not comparable. The 1991 surveys were based on detecting the presence of an owl in a SOHA. Those results included areas that had been previously occupied, but not occupied during the time of survey. This amounted to 4% of the SOHAs. The PLAS results that were cited in the BE, however, did not include the number of areas not occupied in a given survey year. The result is that the BE and MIS report compare results that in fact are not comparable.

The annual report issued in March, 2007 for the PLAS does provide information on occupancy that can be reasonable compared to the results from the SOHA survey in 1992. As will be shown below, the PLAS results indicate that detections of CSO are down for 2006

indicating that far fewer sites are currently occupied than estimated by the BE and MIS report. The PLAS annual report provides results on the crude density for owls from 2004 to 2006. These densities are determined from the number of owls detected during surveys. The results are reported in the table below that was extracted from the annual report.

Table 2. Crude density of territorial California spotted owls across survey areas on the Plumas and Lassen National Forests in 2005 and 2006. Locations of survey areas are identified in Figure 1.

		Crude Density of Territorial Owls (#/km^2)		
Survey Area	Size (km^2)	2004*	2005*	2006*
SA-2	182.5	0.126	0.126	0.115
SA-3	218.5	0.093	0.093	0.093
SA-4	238.3	0.067	0.067	0.046
SA-5	260.3	0.077	0.077	not surveyed****
SA-7	210.4	0.071	0.071	not surveyed
SA-1A	190.5	not included***	0.047	0.042
SA-1B**	130.4	not included	0.023	not surveyed
SA-11	180.0	not included	0.056	0.033
SA-12	192.4	not included	0.088	0.068
SA-13	193.4	not included	0.067	0.067
SA-14	331.2	not included	0.054	0.042
SA-15	317.4	not included	0.041	0.022
Total Study	2,645.3	0.084	0.075	0.061

Taken from: Plumas Lassen Study Annual 2006 Report, March 2007, Sierra Nevada Research Center, Pacific Southwest Research Station, USDA Forest Service, p. 172.

These results indicate that while crude densities of owls within the five areas surveyed from 2004 to 2005 remained the same the overall density of areas surveyed in 2005 (including additional areas surveyed in 2005) was lower than the areas surveyed in 2004 (i.e. 0.084 in 2004 versus 0.075 in 2005). The overall crude density of owls is even lower in 2006 (i.e. 0.061) compared to 2004 and 2005. Furthermore, crude density dropped in 8 out of the 10 units that were surveyed in 2005 and 2006. The annual report concludes that "The lower crude density observed in 2006 may suggest a decline in CSO numbers or could reflect lower detection rates for individual CSOs during a second consecutive year of low reproduction and high Spring precipitation." (Sierra Nevada Research Center 2007, p. 172). These results indicate that there is a possibility that owl numbers have declined in the study area. The results in no way indicate that population numbers are stable.

The Empire project appears to assume in the absence of any demographic data, that the "spotted owl population on the PNF appears to have an upward trend." BE, p. 28. This conclusion appears to be based on a limited assessment of owl occupancy data collected from the PLAS study which is then imposed on the total number of protected activity centers (PACs) designated for the Plumas National Forest. Such

Further, as explained in greater detail in the section on monitoring, the BE seems to have confused the cumulative identification of "owl sites" on the national forest as an indication that owl numbers are increasing. This is precisely the inference that the USFWS cautioned against when they stated that "the number of territories should not be viewed as a population estimate for the taxon." As discussed below, Section VI.B.3, the analysis of population trend in the BE and Management Indicator Species (MIS) Report for the Plumas National Forest misapplies the PLAS data by failing to take into account the fact that some of the owl sites are not occupied in given years. (*See* Attachment 5, Empire BE.) Further, there has been no systematic survey completed each year for all owl territories (or for even the same subset of territories) designated on the Plumas National Forest. The PLAS data set in itself is insufficient to estimate population trend. There are only two years of data which is too few time steps from which to make estimates of population trend. This situation is confirmed by the absence of any calculation or estimate of population trend in the 2005 annual report for the PLAS. (USDA Forest Service 2006a).

Finally, occupancy data alone can not be used to evaluate population trend. It was for this precise reason that the owl demographic studies were developed also to consider data related to reproductive success and survival over a sufficient period of time to estimate population trend. Bond 2006.

In sum, the occupancy data that is reported is not adequate to assess population trend. *See* Bond 2006. The Forest Service should also acknowledge that there is no population trend data available for the Plumas National Forest and that the Lassen Study area, which strongly suggests a declining population, provides the closest and most relevant population data.

Third, the Forest Service does not assess impacts in a manner that takes into account the relationship between the absence of owls from formerly occupied habitat and the overall poor habitat conditions in the project area. Table 20 of the BE shows that only 3 of the 9 affected PACs were documented as "high occupancy," where reproduction and pair occupancy was documented in the past 2 years, and only 1 PAC supported "medium occupancy" where just a pair or single owl but no reproduction was documented in the past 2 years. Conversely, 5 PACs were documented as "low occupancy," in which no owls were found the past 2 years. *See* Bond 2006.

To the extent that more relevant population trend data exists, its shows that owls are not fully occupying the Empire project area. Bond 2006. As discussed in Britting 2005, the monitoring data and spatial layout of the PACs listed in the Empire project area demonstrates that of the 23 PACs listed in the BE, Attachment 5, detections were made at only 9 in 2004. (detections at PL039, PL040, and PL017 are counted as one detection since they are the same pair.) PACs PL036, PL133, PL015 and PL 331 all have either high or moderate risk to PAC viability, but owl was either not detected or surveys were not completed in 2004. (FEIS, pp. 78-79, BE, Attachment 5). Other PACS that are adjacent to treatment areas were not surveyed as well (e.g. PL010, PL173). Thus, based on current population monitoring, the

Forest Service cannot rely on the preservation of PACs to ensure that owls are surviving in the project or Assessment Area.

Further, Table 20 assesses risks to owl PACs by assigning a "low risk" to PAC where logging will be less intense, even for PACs that have not been occupied with a reproductive pair since 1992. For PACs that are no longer occupied, it is not clear how the Forest Service can assign a value of "low risk" to loss of PAC viability. The project documents note that logging within HRCAs and home range areas may increase competition among remaining owl pairs, but does not discuss the fact that such over-competition has likely already begun in the Empire project area. For example, as stated, PACs PL039, PL040 and PL017 are all occupied by the same pair (see BE, Attachment 5). The use of more space by owl suggests that habitat quality is low and they need to forage more area to get enough food, thereby indicating that habitat quality in general in the area may be of poor quality. Rather than assess the condition of these PACs and their surrounding HRCAs, the Forest Service responds by saying that only a small percentage of this habitat will be adversely affected by logging. This reasoning avoids the point that if already inadequate habitat is further reduced in quality, viability for local owl populations is not ensured. (Bond 2005, 2006, Tempel 2005a, 2005b).

The lack of full occupancy for these PACs suggests that the overall habitat quality of the PACs and surrounding core areas in currently inadequate, before treatment, to ensure owl survival. *See* Britting 2005 ("Much of the area to the west of the Empire treatment units is dominated by a landscape that is conifer forest (white areas) or that is composed of young/small diameter (<12" dbh) forests or forests with very sparse canopy (<30% canopy cover) (lightest gray areas). The treatment units, including both the DFPZs, ITS and GS treatments (indicated by the diagonal lines in Figure 1), overlap with some of the highest quality habitat in the region. Placement of the treatment units has targeted some of the best remaining habitat in the area.")

As discussed above, the Empire project documents do not present adequate information about the habitat quality in the circular core areas surrounding owl nest sites. *See* Section VI.1.b, *supra*. By not including this information, the Forest Service is not providing adequate data to assess the current habitat condition for owls and the relative risk faced by the owl population in the planning area.

Further, as discussed in our prior comments and by the Science Consistency Review ("SCR"), the Forest Service characterizes habitat mapped through aerial photos as 4M, including trees down to 11" dbh as "suitable" for owls, though it is uncertain at best whether such lower quality 4M stands provide usable habitat for owls. S*ee* SFEIS, p. 96 ("There appears to be an element of uncertainty associated with what constitutes foraging habitat.") However, the FEIS still concludes that for "the Empire Project analysis, all class 4M is considered owl foraging habitat." *Id* . As noted by Bond 2007:

Although the Forest Service discloses the amount of owl habitat in the various

> CWHR classes, the FEIS fails to adequately address the issues raised by the Science Consistency Review biologists regarding the on-the-ground habitat values within the strata categories less likely to provide suitable habitat. For example, the BE at p.30 characterizes 45,927 acres of the analysis area as "highly suitable" habitat, yet 22,186 acres (48%) of habitat is described as 4M strata. The 4M stratum is considered to be the lower end of suitability for owl nesting habitat (Verner et al. 1992). The lowest end of 4M stratum (e.g., 12-inch trees and 40 percent canopy cover) would likely be of marginal use for spotted owl foraging, yet the Empire BE relies upon and generalizes about the "high quality" suitable habitat without taking a hard look at the real, on-the-ground habitat characteristics of the sites. The point, made by the wildlife ecologist reviewers, that significantly increased risk and uncertainty exists by relying on generalized strata, should not have been ignored by the Forest Service in its final response to comments and decision for the Empire FSEIS.

The relationship between lack of quality foraging and nesting habitat is not considered by the Forest Service as a reason that owls are sparsely populated in this region. A hard look under NEPA requires the Forest Service to provide some explanation for why such PACs in the planning area are no longer occupied and whether it is related to the lack of overall high quality. *See* Bond 2007 ("A summary of impacts of the Empire Project on California spotted owls is more complex than just a simple listing of amount of acres of broadly defined silviculturall-based categories of nesting or foraging habitat lost across the project site, or within each PAC or HRCA as a percentage of acres remaining.")

Such an analysis would require the Forest Service to present information regarding the amount and quality of suitable habitat at each of the 3 relevant spatial scales described above. For example, as discussed above and in prior comments, the Empire Project does not provide any discussion of how the HRCAs function as a necessary habitat complement to the PACs in the project area. The Empire BE offers the simplistic total acres reduced and an average figure of 39/acres per HRCA but the impacts occur not on average values but specific harvest units and existing conditions in owl home ranges. This lapse is critical, however, due to the importance of this habitat to owl survival and the owl's precarious viability in this Forest. *See* Blakesley 2006a & b; 2005; 2004; Verner 2003; Blakesley and Noon 2003; Noon 2004; Peery 2004; Bond 2003; Franklin et al. 2003.

As discussed, the FEIS notes that logging within HRCAs and home range areas may increase competition among remaining owl pairs, but does not describe the significance that PACs PL039, PL040 and PL017 are all occupied by the same pair or that several PACs are currently unoccupied. Given that existing PACs are not supporting owls, the FEIS must analyze how further logging in HRCAs, including the removal of almost 1,500 acres of nesting habitat, will not have significant impacts on owl populations. Rather than assess the condition of these PACs and their surrounding HRCAs, the Forest Service responds by saying that only a small percentage of this habitat will be adversely affected by logging. This reasoning avoids the point that if already inadequate habitat is further reduced in quality, viability for local owl populations is not ensured. (*See* Bond 2006, 2005, Tempel 2005a,

2005b).

Another example is provided by the Forest Service's failure to describe the character of individual home range habitat. As discussed in prior comments, many owl home ranges in the project area have had marginal habitat quality. Here, the Empire FEIS and BE acknowledge the poor habitat quality for sensitive forest species between owl PACs and SOHAs, yet do not provide adequate information as to overall quality of home range and HRCA habitat for owls existing in the Assessment Area. (Bond 2005). An example of what kind of information is needed is set forth by Britting:

> Owl sites PL018 and PL352 are embedded within the treatment areas. The area surrounding these habitat areas will be intensively harvested and habitat quality will be degraded. Further, many of the areas outside of the treatments units are not presently suitable habitat. Several of the owl sites in the analysis area (including PL018) have not been occupied in recent years and suggest that poor habitat quality may already be an issue that limits owl reproductive success in this area.

(Britting 2005.) A similar analysis should have been undertaken by the Forest Service for the Empire Project. Instead, as Britting concludes: "The FEIS and BE fail adequately to assess the impacts to the owl and mature forest habitat of reducing suitable habitat in a setting where such habitat is already seriously limiting." (Britting, 2005).

Finally, the results of the Lassen Study demonstrate there is cause for concern for owl populations in the QLG pilot project areas. The Lassen Study area is north of the Empire Project but also guided by the 1999 H-F QLG logging plan. The Lassen study area is part of the overall QLG Administrative Study monitoring effort and is immediately adjacent to the area where owl demographic monitoring has occurred for approximately 15 years. Thus, this decline suggests that owl decline may be occurring in the QLG area given the projected trend on the Lassen, the low quality habitat in the Empire area and the Plumas NF in general (2001 Framework FEIS Volume II, Chapter 3, part 3.2—p.138) and the over-reliance on poor quality 4M/4D habitat in the effects analysis, as mentioned above and discussed in prior comments. The Forest Service has not adequately explained why the Empire project area is different from the Lassen Study, except to interpret the PLAS Study discussed above in a manner contrary to sound science.

Each of these factors dictate that the Forest Service continue to exercise caution when planning timber harvests in this area to ensure the maintenance and recovery of the spotted owl population. *See* Bond 2006. *See* SCR 2005 (given the uncertainty regarding the quality of available habitat and potential impacts on owls, the Forest Service should limit its suitable habitat categories to 4D, 5M and 5D.) Instead the Forest Service is applying the maximum intensity harvest permitted under the 2004 Framework and QLG Act, as if the owl population was flourishing. As discussed below, alternatives with lesser intensity harvest can meet the project purposes. *See* Bond 2006 ("I do not believe the Forest Service has any basis to claim that further reductions in habitat quality will not threaten owl viability in the project area.")

See also Bond 2005, Tempel 2005a &b; Britting 2005 & 2006.

d. The Forest Service is Not Taking a Hard Look at the Possibility of Fragmenting Owl Habitat

As discussed above, the Empire project documents do not provide critical information on availability and quality of habitat for spotted owls at three spatial scales, nest core, home range core area and home range. In the absence of any analysis to determine whether adequate habitat exists at these scales, the Forest Service cannot accurately assess the potential for future habitat reduction to fragment owls. *See* Britting 2005, Bond 2005, 2006, Tempel 2005a & b. The Legacy incorporates by reference its prior comments made on this issue at the DEIS, FEIS and SDEIS stages. As discussed above, the Empire project documents to not provide adequate information to evaluate whether owls have sufficient amounts of habitat at the relevant circular scales surrounding the nest site, thereby leading to fragmentation. *See e.g.*, Verner 1992, pp. 15-16.

As stated in our prior appeal, the FEIS states that although owl HRCAs are well distributed across the wildlife analysis area, they are also confined across the Empire Project area by large blocks of unsuitable habitat." (FEIS, p. 3-77.) Thus the FEIS concludes that it is uncertain whether the same number of owl sites occupied in 2002, 2003 and 2004 would be occupied post-project. (*Id.*, p. 3-78.) Yet despite these findings, the Forest Service continues to assert that "the potential risk of reduced PAC/HRCA occupancy resulting from project implementation would be low." (FEIS, p. 3-78; *see also* DEIS, p. 112.)

There is considerable evidence that owls require home range habitat to retain certain minimal habitat components such as interior forest habitat, multiple canopy layers and minimum canopy coverage. Yet here, the Forest Service appears satisfied to relegate owls to 300 acre habitat blocks, the size of the PACs that are to be protected. As noted by the 2001Framework:

> PACs alone are not an adequate conservation strategy for maintaining a viable population of owls. They are important because they do provide protection to nest sites. However, the distribution and abundance of owl habitat around PACs and across the landscape are critical considerations that will determine the ultimate adequacy of a PAC-based conservation strategy for maintaining owl viability in the Sierra Nevada.

(USDA Forest Service, 2001a, Chap. 3, part 4.4, p. 85.) This finding is a continuation of the prior rejection by federal scientists of the SOHA strategy of isolating blocks of habitat from each other, which was found not to be a viable strategy for preserving owl populations. (See Verner 1992, p. 15 ("We expect that owl pairs in SOHAs would disappear at a relatively high rate, leaving the SOHAs unoccupied and at least temporarily nonfunctional.")

The BE (p. 29) acknowledges that even areas in which owls have been cited but not

yet designated for protection may be logged unless site occupancy is reconfirmed prior to project implementation. However, as noted by the Sierra Nevada Framework, "[p]rotecting occupied, as well as suitable but unoccupied habitat, over the long term is important to insure species viability. (USDA Forest Service, 2001a, Chap. 3, part 4.4, p. 82.) According to the Framework:

> [C]onservation efforts should therefore consider not only occupied habitat, but also suitable unoccupied habitats, in developing conservation strategies for species for which dispersal may function as a primary limiting factor. (*Id.*)

Indeed, Framework scientists specifically found that timber harvesting poses serious short term risks to the owl due to habitat fragmentation:

> [R]etaining existing suitable habitat and improving habitat conditions over the next couple of decades may be particularly important for stabilizing owl populations. Research into population dynamics at larger scales has suggested the possible existence of habitat thresholds, below which populations may go extinct in the presence of suitable habitat due to constraints on successful dispersal. With current population declines, vegetation treatment impacts over a short time period may involve risks to the spotted owl population that are not evident by considering longer-term habitat projections alone.

(See e.g., USDA Forest Service, 2001a, Chap. 3, part 4.4, p. 95. *See also id.* at p. 96 ("[W]here a greater proportion of owl home ranges have less than desired amounts of habitat to begin with, reducing the amount of habitat within the few home ranges that exceed the habitat threshold, prior to increasing amounts of habitat in other owl home ranges, could increase the risk of worsening conditions and increasing nearest neighbor distances for owl sites within these areas.")

Ostensibly in response to these concerns, the Forest Service chose Alternative D based their determination that group selection should be limited to not more than 11.4% of any planning area. The value 11.4% is derived from the HFQLG legislation which directs the implementation of group selection on 175 year rotation cycles based on 20 year reentry intervals. The level of group selection harvest was not set based on a habitat analysis of forest edge versus interior and the amount and arrangement of group selection openings that preserves continuous forest cover habitat created by the forest canopy openings resulting from group selection harvest. Thus, the Forest Service claims to have established a biological threshold of 11.4% above which the adverse impacts to continuous forest cover from group selection must be mitigated, yet they provide no quantitative biological evidence to support this threshold. Further, the evaluation provided in the FEIS is speculative and overlooks previous analysis completed by their own agency on this topic with findings to the contrary.

The 1999 HFQLG BE found that this intensity of group selection would have significant, potentially destabilizing impacts on the spotted owl, which would preclude the Forest Service from insuring viability. (See Discussion below.) Nothing in the 2004 Framework ROD changes the findings in the 1999 HFQLG BE regarding habitat fragmentation due to group selection logging. In fact, the 2004 Framework FSEIS cites to the 1999 HFQLG FEIS to conclude that "the group selection units within the HFQLG Pilot Project Area, in conjunction with the placement of DFPZs, could lead to an increase in habitat fragmentation by 2009 (USDA Forest Service 1999)." (2004 Framework FSEIS, p. 274). In addition, the 2004 Framework FSEIS projects that 65,000 fewer acres of suitable habitat will be available to spotted owl in Alternative S2 compared to S1 primarily due to implementation of group selection harvest and lack of minimum canopy cover retention values for CWHR type 4M and 4D. (2004 Framework FSEIS, p. 269) Thus, recent analyses completed by the Forest Service conclude that group selection logging at a rate of 11.4% in 20 years leads to increased forest fragmentation and substantially reduces suitable owl habitat in the short term.

Group selection harvest was also considered in 1992 by the CASPO technical team (Verner et al. 1992) and in the CASPO interim guidelines environmental assessment (USDA Forest Service 1993). In the CASPO interim guidelines, the technical team proposed a long term strategy for using small, even-aged groups of 0.25 to 2 acres to manage the forest for owl habitat. Their proposal identified a 240-year rotation and suggested entering a stand once each 40 years to make group selection openings in about 17% of the stand. (Verner et al. 1992, p. 272). This equates to making group selection openings on 8.5 % of the stand in 20 years, considerably less than the 11.4% adopted in the Empire Project. The CASPO environmental assessment also considered the effect of group selection on continuous forest cover. They defined group selection harvests as occurring within stands that retained 50-80% canopy cover in trees > 20 feet tall. (USDA Forest Service 1993, p. IV-65). Group selection openings also were limited to 1,320 acres per year over the seven national forests covered by the decision. (USDA Forest Service 1993, p. IV-74). Based on these limitations, the CASPO environmental assessment determined that this level of group selection would continue to provide continuous forest cover. In contrast, the Empire Project estimates that canopy cover in treated stands adjacent to group selection openings could be reduced below 50% and to as low as 30%. Further, the Empire Project alone contemplates creating almost as many acres of group selection openings as was contemplated for all 7 nationals forests in one year under the CASPO environmental analysis. (USDA Forest Service 1993, IV-74). Thus, the group selection logging proposed in the Empire Project is far more aggressive and intensive than approaches historically proposed that were viewed as consistent with owl management.

Lastly, the analysis in FEIS is speculative and fails to evaluate effects in context with the existing condition. The analysis rests on a "visual display" of the placement of group selection openings in 2 units. (FEIS, p. 3-95). No attempt was made to quantify the amount of interior forest or edge habitat even though the tools (e.g. spatial analysis software) to do so were available to the national forest. Limiting the "visual" analysis to two units also

precludes an examination the treated areas in context with the existing landscape. As noted by Britting (2005):

> The proximity of the treatment units, existing CSO habitat areas and the presently unsuitable habitat was not evaluated in the environmental analysis. Figure 2 shows the distribution of habitat with respect to CSO PACs and SOHAs. Suitable habitat for this analysis was based on recommendations in Verner et al. 1992 (and referenced in the BE, p. 26) and included conifer stands >12" dbh with canopy cover exceeding 50%. Owl sites PL018 and PL352 are embedded within the treatment areas. The area surrounding these habitat areas will be intensively harvested and habitat quality will be degraded. Further, many of the areas outside of the treatments units are not presently suitable habitat. Several of the owl sites in the analysis area (including PL018) have not been occupied in recent years and suggest that poor habitat quality may already be an issue that limits owl reproductive success in this area.

The national forest also had information available to them from the CASPO technical report regarding the definition of edge versus interior forest habitat yet they failed to use this to quantify the effects of group selection logging on the amount and arrangement of interior forest. (Verner et al. 1992, p. 15). Ultimately, the FEIS fails to draw any conclusions about the absolute effects of the proposed group selection logging on forest fragmentation and instead merely concludes that Alternative D will pose "less risk" than Alternatives A and C. (FEIS pp. 3-85, 3-97.)

In light of previous conclusions by the Forest Service regarding the adverse effects of group selection harvest on owl habitat (Verner et al. 1992, USDA Forest Service 1993, USDA Forest 1999, USDA Forest Service 2004), the discussion in the FEIS is not adequate to assess impacts of the proposed action on spotted owl and other species dependent on interior forests or its effect on spotted owl viability. (*See also* Tempel 2005a, 2005b; Bond 2005).

Further, as noted by Blakesley (2005):

> The positive association we found between habitat classes affecting survival and fecundity contrasts with the trade-off found for northern spotted owls in northwestern California, in which the amount of interior mature and old-growth forest was positively associated with survival and negatively associated with reproductive output (Franklin et al. 2000). Both survival and reproductive output were positively associated with the length of edge between mature/old-growth forest and other vegetation types, including younger forest (Franklin et al. 2000).

In sum, the Forest Service's has simply not provided enough information to determine that the Empire project is not fragmenting the local owl population leading to its ultimate extirpation from the planning area.

e. The Empire Project Does Not Consider Impacts to Owls from Stand Density Based Thinning

The Empire Project also fails to take a hard look at how the Forest Service's adherence to its stand density prescriptions is likely to eliminate small pockets of large trees and old forest important for associated wildlife like the California spotted owl (Blakesley 2003; Moen and Gutierrez 1997). California spotted owls use small aggregates of large trees for and nesting sites, even within larger stands that do not constitute old growth. (USDA Forest Service 2001a, Volume 2, Chapter 3, part 3.2, p. 131). Failure to protect these small but important stands could degrade potential owl nesting habitat and reduce the likelihood of nesting success (Verner 2003, p. 4; Blakesley and Noon 2003).[5]

The Forest Service also still fails to analyze adequately impacts to spotted owls through large scale fuel reduction that decreases prey species such as flying squirrels, which are spotted owls preferred prey based in the mixed conifer and red-fir forest habitat above 4,000 feet. (Verner et al. 1992, p.69.) See USDI Fish and Wildlife Service 1999, p. 10 ("Due to the level of snag and large woody debris removal as proposed, the Service is concerned that [the pilot project] will remove suitable den sites and food sources of northern flying squirrels and consequently reduce the prey base for California spotted owls.")

f. The Forest Service is Not Taking a Hard Look at the Impacts of Treatments On the Suitability of Owl Habitat due to Loss of Prey Species

As stated in prior comments, the Empire Project documents to not adequately assess how fuel reduction and other treatments that meet the CWHR 4 and 5 standard will actually retain suitable habitat for owls. The DFPZ and thinning do not leave multiple canopies which are necessary for "suitable" habitat. *See* Preston 2005, Bond 2006. Treatments" may include mastication, burning, and tree removal. These activities may substantially reduce prey habitat, snags, downed wood material and other habitat elements that are not considered in the Forest Service's determination what constitutes "suitable habitat" for owls. However, removal of such elements could have a significant effect on owl habitat quality due to loss of prey species.

DFPZ treatments eliminate understory altogether, thereby eliminating prey species such as dusky-footed woodrats, flying squirrels and other small rodents needing cover and downed woody material. *Id.* For example, evergreen and live oaks and thick-leaved shrubs are important habitat components for the dusky-footed woodrat, a primary prey species for

[5] Because of their ecological importance, the 2001 Framework protected these small old growth stands from intensive logging. In the 2004 Framework process, the FWS concluded that the removal of protections for these pockets of denser forest could "have significant effects on old forest habitats used by the owl" by allowing "reduction of structural complexity within treated habitats," which "could allow stands of potential owl nesting habitat to be removed." (USDI Fish and Wildlife Service 2003, pp. 4- 5).

the spotted owl (Williams et al. 1992). It is well-known that removal of shrubs has a negative impact on the woodrat. *See* Bond 2006. Further, as noted by Blakesley (2005):

> The primary prey of California spotted owls on the Lassen study area were northern flying squirrels (Verner et al. 1992). Flying squirrel densities in the Lassen study area were highest in old forest stands, lowest in Blakesley 15 shelterwood logged stands, and intermediate in young forest stands (Waters and Zabel 1995). Although the interspersion of young and old forest stands appeared to benefit spotted owl reproduction where dusky-footed woodrats dominated the owls' diet, young forest stands did not appear to benefit spotted owl reproduction where flying squirrels dominated the diet.

The Project documents acknowledge the impacts of group selection, large scale fuel reduction, and understory elimination on flying squirrels, the preferred prey based of spotted owls in the mixed conifer and red-fir forest habitat above 4,000 feet. (Verner 1992, p.69.) Flying squirrels would likely be absent within the group selection openings and thus these small openings within the forest may be marginal for foraging spotted owls due to isolation from the forest interior. *See* USDI Fish and Wildlife Service 1999, p. 10 ("Due to the level of snag and large woody debris removal as proposed, the Service is concerned that [the pilot project] will remove suitable den sites and food sources of northern flying squirrels and consequently reduce the prey base for California spotted owls.") *See also* Tempel 2005a (DEIS (p. 112) fails to provide a real analysis concerning the habitat requirements for key prey species for the California spotted owl (woodrats and flying squirrels) and how they will be impacted by the proposed action.) Here, while the Project documents acknowledge that flying squirrels are an important element of spotted owl diet, they do make any determination how flying squirrels will be affected by this project. Thus, the Forest Service has no basis to conclude that impacts to owls will not be significant.

2. The Empire Project Still Fails to Take a Hard Look at Impacts to American Marten

a. The Forest Service Has Still Not Considered or Assessed Impacts to the Marten in Light of the Information Showing the Absence of Marten in the Central Plumas National Forest

The Empire Project documents still do not take a hard look at the impacts of this project on the American marten. Our previous comments have continually raised the issue that the Forest Service project documents do not address the impact of this project and other OLG projects on the marten in light of the recent survey information presented by Zielinski *et al.* that martens are absent from much of their historic range in the northern Sierra Nevada, especially on the Plumas and Lassen national forests (USDA Forest Service 2001a, Vol. 3, Chap. 3, Part 4.4, p. 22; Zielinski 2002, 2004, 2005).

Throughout this process the Forest Service has not addressed this important

information. *See Sierra Nevada Forest Protection Campaign v. Tippen, supra.* The Forest Service's failure to acknowledge and analyze the meaning of the marten population gap in this area renders their NEPA analysis of impacts to marten inadequate since the NEPA process is uninformed, the impacts to marten not properly assessed, yet the Forest Service still proposes significant reductions in marten habitat in the project area. *See* Kucera 2006, 2005a & b.

The FSEIS acknowledges this information, but then discards its significance by finding that "[b]ased on known detections of marten on the PNF, no changes in Marten occupancy or distribution on the PNF would occur."

This analysis does not meet the "hard look" required by NEPA because it assumes, without information, that further reductions in habitat quality will not limit marten survival in the Plumas National Forest. The Forest Service has not assessed how marten can survive over the next 30 years, isolated in the Lakes Basin area, without any connectivity to the northern populations in the Lassen National Forest. As indicated by Kucera (2005, 2006), and discussed below,, this approach is a recipe for local extirpation, similar to the fate that has befallen the Pacific fisher over the last century. In short, the Forest Service cannot rely on the local extirpation of marten to find that further reductions in habitat quality, including to the designated habitat corridor, will not have significant adverse impacts on marten. In doing so, the Forest Service fails to consider that the existing environmetnal settting must be considered as part of the their cumulative impact analysis. As a result, the Forest Service continues to approve projects with adverse effects on Marten habitat, without any plan or proposal for how marten distribution will be restored.

In light of the population gap for marten in this area, the Forest Service's conclusion that further reductions in marten habitat will not cause significant impacts does not constitute the requisite hard look under NEPA. Zielinski 2005 describes areas such as the Empire Project where marten are now absent as having " relatively little forests with late seral/old growth attributes," which is probably due to "the influence of timber harvest and forest management during the historical and contemporary periods." As noted by Zielinski 2005, areas where marten are now absent "have relatively little forests with late seral/old growth attributes," whereas the areas where marten were detected "coincide with protected areas (national parks and wilderness)" with greater LSOG attributes. However, the Empire Project reduces 1,581 acres of 4D, 5D to unsuitable and reduces 3,398 acres of 4M, 5M to unsuitable. The BE still does not provide a meaningful discussion of the spatial arrangement of suitable marten habitat nor any statement regarding the on-the-ground quality of the 4M, nor any explanation of the amount or spatial arrangement of older, high quality forest with "late seral/old growth attributes."

The gap in marten distribution raises a serious and unexamined concern that the current north-south habitat corridor for marten is not adequate. *See* Kucera 2006, 2005a & b. The Empire Project states that the north-south corridor network for forest carnivores running through the project area is designed to allow for an unimpeded carnivore corridor between

home ranges and allow for habitat population connectivity between the Tahoe NF and Lassen NF, which runs "southeast to northwest along Grizzley Ridge composed primarily of white fir and red fir habitat." This network "provides connectivity from the Beckwourth Ranger District to the south and connects with the Mt. Jura connection to the north." *Id*.

In light of the population gap for marten in this area, the Forest Service has not adequately considered why the current corridor network has not been adequate to maintain marten connectivity between the Lassen and Tahoe National Forests. Here, all that appears to be known is that the Plumas has become a habitat gap that threatens to isolate the northern and southern populations. *See* Kucera 2006, 2005a & b.

Despite these concerns, no information is presented why this is so or what can be done to correct this problem. Instead, the Forest Service simply relies on its reference to the existing network, without considering how the Empire project area might provide corridor habitat for the marten critical for future survival. Meanwhile, the Forest Service allows such habitat to become further fragmented, thereby decreasing the likelihood that effective connected marten habitat can be successfully established.

> Alternative D will "break up larger blocks of contiguous habitat" thereby creating more small-habitat blocks. I believe this approach risks fragmenting marten habitat even more than already exists in this area. However, without more information such as how these habitat blocks function across the landscape, it is impossible to evaluate this important aspect of marten ecology. ...

Kucera 2005a 2005b. However, as discussed in prior comments, no information is given in the Empire Project documents regarding the percentage of open habitat in areas that would be assumed to function as marten home range were martens again to occupy this region.

The Forest Service's review of impacts of logging on the marten does not constitute the hard look under NEPA to determine what measures are necessary to avoid long term fragmentation of northern and southern marten populations. According to Kucera, the Forest Service should be assessing why marten are unable to disperse north or south through the corridor area. If the project area represents a critical bottleneck, the Forest Service must consider the necessity of adding more habitat, including habitat in the Empire Project area, to the existing north-south corridor network. *See* Kucera 2006. The Empire Project documents state that the project area "may not support habitat attributes needed to contribute to the potential recovery" for forest carnivores. However, if this is true, the Forest Service has not taken a hard look at how the Project area will be able to provide adequate habitat for the marten, or how further reductions of such habitat will not have significant adverse effects. Kucera 2005a notes that the project area appears to be extremely important to the marten population at a landscape scale. Instead of enhancing the corridor habitat, the project documents state that 2,148 acres of the forest carnivore network will be potentially treated and 224 acres of this habitat rendered unsuitable.

Further, the Forest Service still fails to consider the cumulative impacts of other projects to the existing corridor. *See* Kucera 2005a. The Empire project documents in fact do not assess the cumulative effects of different QLG projects on this habitat corridor. Instead, the project assesses cumulative effects to the marten using the assessment area derived for spotted owls, thereby ignoring the likely effects of several other QLG projects that will affect the quality and overall suitability of the marten's north- south habitat corridor, including such projects as Happy Jack, Freeman, Grizzley and Diamond. *See* Kucera 2005a & b, 2006; Britting 2006 & Figure 3.

The Forest Service does not appear to consider or propose any attempt at an adaptive management approach to understand the cumulative effects of this suite of projects, including Empire, on marten, Kucera 2006, even though the harmful effects of both the 2004 Framework and OLG were intended to be avoided through adaptive management. Here, however, the Forest Service is neither considering, collecting nor evaluation the information necessary to determine what is happening.

b. The Forest Service is Not Taking a Hard Look at the Impacts of Treatments On the Suitability of Marten Habitat

As set forth in our previous comments, American martens are associated with late-seral coniferous forests with abundant large structure, including live trees, snags, and logs, and relatively closed canopy cover. As described by Dr. Kucera, medium and large trees with diameter 20" and greater constitute an important structural element of marten habitat. (Kucera 2005a, 2005b). Particularly on the west slope of the Sierra Nevada, martens are closely associated with dense canopy forests. In general, martens prefer dense forests with canopy cover of 70 percent or greater and avoid relatively open forests with canopy cover of 40 percent or less. As noted in the BE (p. 41), research indicates that marten avoid stands with less than 50 percent canopy cover. Reducing canopy cover to 40 percent in such forests is likely to adversely affect the marten's use of the area.

Martens are known to avoid fragmented forest with many open areas. Hargis and Bissonette (1997) and Hargis et al. (1999) found that martens did not occur in forests that contained more than 25% openings, including natural openings and those resulting from timber harvests. Additional research (see e.g., Chapen et al. 1998, Potvin et. al. 2000) also documents the deleterious effects of extensive forest openings on marten distribution and habitat use. For example, Potvin et al. (2000, p. 854) found that marten were "fairly intolerant of fragmentation and can not tolerate more than 30-35% cutovers (OR + CR) in its home range."[6] These results led them to recommend that less than 30% of the area managed for martens be "clearcut over a 30-year period." *Id*. The Empire documents conclude that even though the action alternatives would create habitat fragmentation, the project "would not increase any large-scale high-contrast fragmentation above existing levels." However,

[6] OR + CR refers to open regenerating stands less than 20 years in age and closed regenerating stands less than 20 years in age. (Potvin et al. 2000, Table 1, p. 849)

when combined with past, present and future projects, the implementation of this Project could result in significant reductions in habitat quality and quantity marten habita. *See* Britting, 2007b, Figure 3. Given the marten's sensitivity to forest fragmentation and habitat degradation, the implementation of the proposed action could threaten marten's viability and further restrict its distribution.

In a similar manner to the spotted owl discussed above, the Empire project documents do not discuss how DFPZ and thinning activities do not leave multiple canopies necessary for "suitable" habitat can retain "suitable" habitat for marten. DFPZ treatments eliminate understory altogether, thereby eliminating prey species such as dusky-footed woodrats, flying squirrels and other small rodents needing cover and downed woody material. *See* Bond 2006, Preston 2005. Further, as discussed above and in prior comments, treatments" such as mastication, burning, and tree removal may eliminate snag retention and recruitment and downed woody materials, all critical habitat components for marten. *See also* Discussion *infra*; Kucera 2006, 2005a & b.

3. The Analysis of Cumulative Impacts on Wildlife is Still Inadequate.

As discussed above, NEPA requires the Forest Service to assess the cumulative impacts of a proposed project in light of that project's interaction with the effects of past, current, and reasonably foreseeable future projects. *See* 40 C.F.R. " 1508.7, 1508.25; 1508.27(b)(7). *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 894-895 (9th Cir. 2002); *Neighbors of Cuddy Mountain v. United States Forest Serv*., 137 F.3d 1372, 1379-80 (9th Cir. 1998); *Muckleshoot Indian Tribe v. United States Forest Serv*., 177 F.3d 800, 809-10 (9th Cir. 1999.) Cumulative impact "is the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions." 40 C.F.R. " 1508.7 Cumulative impacts "can result from individually minor but collectively significant actions taking place over a period of time." *Id*.

The Ninth Circuit has recently clarified NEPA's cumulative effects analysis requirement as applied to timber sales proposed by the Forest Service. *The Lands Council v. Powell*, 379 F.3d 738 (9th Cir. 2004). As the Ninth Circuit held in overturning a timber sale EIS, "for the public and agency personnel to adequately evaluate the cumulative effects of past timber harvests, the Final Environmental Impact Statement should have provided adequate data of the time, type, place, and scale of past timber harvests and should have explained in sufficient detail how different project plans and harvest methods affected the environment." Here, as in *Lands Counc*il, the FEIS "generally describes the past timber harvests … and asserts that timber harvests have contributed to the environmental problems in the Project area." But, as the Ninth Circuit ruled, such a general discussion is not adequate to satisfy NEPA's cumulative effects requirement.

The Legacy reiterates its prior comments submitted through the Campaign that the Empire Project documents do not provide an adequate discussion of the cumulative impacts and location of past, present, and planned projects in the vicinity of Empire that are likely to

affect owl or forest carnivore habitat. As discussed above, the BE does not adequately disclose the extent to which such other projects may cumulatively affect the distribution and connectivity of habitat for these species.

First, as discussed above, the Empire documents still do not assess the cumulative effects of other projects on the habitat corridor designated by project documents to ensure long term north-south connectivity for the marten The Forest Service instead assesses cumulative effects to the marten using the assessment area derived for spotted owls. This ignores the effects of other QLG projects that will affect the quality and overall suitability of the marten's north- south habitat corridor. *See* Kucera 2005a & b, 2006; Britting 2006 & Figure 3; Britting 2007 & Figure 3..

Further, although the BE indicates the amount of marten habitat that may be degraded in other projects, it does not disclose the extent to which these projects will create additional forest openings, thereby potentially exceeding the marten's habitat threshold, blocking dispersal corridors or creating large areas in which marten are not present, thereby isolating populations and increasing the chances of local extirpation. As stated by Kucera, the reduction in overall quality marten habitat is "particularly problematic given that the marten has not been detected in the project area in recent years, thereby raising the likelihood that this project may further reduce or eliminate north-south habitat connectivity between the Plumas and Lassen National Forests, thus further isolating marten populations to the north and south." (Kucera 2005a). However, the Empire Project does not conduct any meaningful cumulative impact assessment regarding these potential impacts.

The Empire Project's failure to conduct any meaningful cumulative impact assessment regarding these potential impacts in light of the project's interaction with the effects of past, current, and reasonably foreseeable future projects is contrary to NEPA. *See* 40 C.F.R. " 1508.7, 1508.25; 1508.27(b)(7). *Native Ecosystems Council v. Dombeck*, 304 F.3d 886, 894-895 (9th Cir. 2002); *Neighbors of Cuddy Mountain v. United States Forest Serv.*, 137 F.3d 1372, 1379-80 (9th Cir. 1998); *Muckleshoot Indian Tribe v. United States Forest Serv.*, 177 F.3d 800, 809-10 (9th Cir. 1999.) Cumulative impact "is the impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions." 40 C.F.R. " 1508.7 Cumulative impacts "can result from individually minor but collectively significant actions taking place over a period of time." *Id*.

Second, the project documents continued to avoid the requisite hard look for cumulative effects on spotted owls. As stated in our previous comments, cumulative impacts analysis is important for species migrate or disperse into and out of the Assessment Area. Juvenile spotted owls for example move on average 14-16 miles (Tempel 2005) from the nest into new territories which could easily be impacted by additional projects outside the Empire analysis area that would have a cumulative impact on the subpopulation. *See also* Blakesley 2006a. Unfortunately, the Empire cumulative effects analysis carries the flawed view that the cumulative effects analysis need not address the impacts of other logging activities

outside the Assessment Area defined by the Project, instead of correctly focusing spatially and temporally, on the species of concern in the Project. It is likely that logging adjacent to the Empire Project area will exacerbate the north-south habitat connectivity problem identified in the BE. However, the BE does not include the information that would be necessary to assess this issue. (Britting 2005).

Further, as previously discussed, the Forest Service has implemented or is planning to implement a at least ten large (~1,000 acres) fuel reduction projects in the meadow valley region, treating a total of approximately 70,000 acres would be treated (*See* Table 2, below.) Most of these acres would be turned into DFPZs where canopy cover in forest types suitable for CSO use can be reduced to 30 percent. Forest stands with canopy cover less than 50% are recognized in the Empire BE as being marginally to unsuitable for CSO foraging and nesting. Thus, the cumulative effect of these projects, which are proposed for implementation at approximately the same time as the Empire Project, is to reduce the suitability of many thousands of acres of nesting and foraging habitat for CSO. (*See* Bond 2005, Temple 2005b).

Table 2. Summary information for ten timber projects on the Plumas National Forest that individually cover more than 1,000 acres and that have decision documents signed or for which scoping has been initiated since the 2004 Record of Decision of the SNFPA.

Project	Total Area Treated (ac)	Group Selection (ac)	DFPZ Thinning (ac)	Individual Tree Selection (ac)	Status of Project
Diamond	9,000	1,128	5,373		Proposed July, 2006
Freeman DFPZ/GS	5,792	175	3,066	2,727	Decision September, 2006
Happy Jack DFPZ/GS	6,256	91	2,866	2,262	Decision 6/1/05
Mabie DFPZ	7,185		7,185		Decision in 2004
Basin Group Selection	1,750	1,750			Decision 8/30/04
Watdog DFPZ/GS	4,260	260	4,000		Decision March, 2007
Slapjack DFPZ/GS	4,800	240	3,872	148	Decision 9/13/06
Empire Project	11,900	1,300	6,600	4,000	Decision 5/18/05
Meadow Valley DFPZ/GS	6,435	735	5,700		Decision 4/16/04
Keddie	6,506	800	5,706		Scoping initiated December, 2006
Sugarberry	3,415	1,315	2,100		DEIS released May, 2007
Grizzly DFPZ	3,482		3,482		Proposed for 2007
TOTAL	**70,781**	**7,794**	**49,950**	**9,137**	

In addition, the Forest Service is still not conducting a meaningful assessment of the Empire project in combination with other projects within this region containing Areas of Concern within or adjacent to the Plumas National Forest. The projects set forth in Table 2 above are located directly between Areas of Concern identified in the CASPO Report

(Verner et al. 1992). Concern for these areas includes known low densities of CSO, fragmented habitat, and impediments to north-south travel for owls and forest carnivores. (*Id*., pp. 45, 48). The timing and scale of habitat degradation proposed in the projects listed in Table 2 could well lead to an expansion of existing AOCs 2 and 3 that are to the north and south of this area or the creation of a new AOC. This potential cumulative effect is not considered in the FEIS. (Britting 2005).

The presence of AOCs and potentially limited amounts of regional habitat demonstrate that the Forest Service needs to conduct a cumulative impact assessment to assess impacts to species due to activities occurring outside the Assessment Area. *See Native Ecosystems Council, supra*, 304 F.3d at 897 ("Because the amendments are reasonably foreseeable and may have cumulative impacts within the Gallatin National Forest, the Forest Service has a duty to consider them in its analysis of impacts within the Darroch-Eagle EA."); *Kern v. U.S. Bureau of Land Management*, 284 F. 3d 1062, 1078-1079 (9th Cir. 2002) (holding that cumulative impact analysis must include "reasonably foreseeable future actions" outside the geographic area but within the range of the Port Orford Cedar, the affected resource at issue); 40 C.F.R. ' 1508.7.

In addition to the particular sensitivity of this region containing AOCs and limited quality habitat, the life history of sensitive species such as the spotted owl indicates the need to assess the impacts of logging activities outside the Assessment Area. *See NRDC v. Hodel*, 865 F.2d 288, 299 (D.C. Cir. 1988); *Save the Yaak Comm. v. Block*, 840 F.2d 714, 720-721 (9th Cir. 1988); *Washington Trails Association v. United States Forest Service*, 935 F. Supp. 1117, 1122-23 (W.D. Wash. 1996).

Finally, as discussed above, the Forest Service's failure to provide spatially relevant habitat information for the owl renders its cumulative impact analysis, even within the Assessment Area, invalid. As noted by Tempel:

> Because foraging and nesting habitat will be reduced in each of these projects (see table below) and spotted owls migrate and disperse over areas much larger than the individual analysis areas (see below), the Forest Service has failed to provide adequate documentation, at the appropriate scale, to support its conclusions that the projects will not significantly reduce the viability of the northern Sierra Nevada spotted owl population.

(Tempel 2005) The failure to obtain and analyze this important information violates the Forest Service's duty under NEPA to gather missing information or to analyze likely environmental consequences if the data cannot reasonably be obtained. 40 CFR 1502.22.

As discussed in prior comments, the Sierra Nevada Framework found that the California spotted owl utilizes and selects habitat at three different spatial scales: nest, roost, or foraging stand; home range or core area; and landscape. (USDA Forest Service 2001a, Volume 3, Chapter 3, part 4.4, p. 72. See also id. at 82 ("Conservation measures must

consider habitat distribution, abundance, and quality at the landscape, home range, and stand-level scales.") The Sierra Nevada Framework also found that timber harvesting could have significant impacts only detectable at the home range scale:

> Reproduction would drop below replacement rate at some threshold percentage of suitable habitat between 30 and 50 percent in home ranges and in the larger landscape in general. Recently completed analysis in the Sierra National Forest demographic study area concludes that canopy cover composition within owl home ranges is significantly correlated with owl occurrence and productivity .... Productivity was positively correlated with the proportion of the analysis area having greater than 50% canopy cover and negatively correlated with the proportion having less than 50% canopy cover. The values ranged from 75% of the smallest analysis area (178 acres) with greater than 50% canopy cover to 60% of the largest analysis area (1,062 acres) having greater than 50% canopy cover.

(USDA Forest Service, 2001a, Chap. 3, part 4.4, p. 76.)

At the landscape scale, suitable habitat must be distributed across the Sierra Nevada in a manner that is consistent with spotted owl life history. The spatial distribution of owl home ranges was an important consideration in the development of both the conservation strategy for the northern Spotted Owl (Thomas et al. 1990) and the interim guidelines for the California Spotted Owl (Verner et al. 1992). Both plans considered it important that enough home ranges be located in close proximity so that dispersing juveniles had a high probability of locating vacant territories and recruiting into the population.

The Framework states the importance of assessing impacts to the owl at a regional landscape level:

> At the landscape scale, the issue is to provide for sufficient amounts and distribution of high quality habitat to facilitate natal and breeding dispersal among territories and to maintain California spotted owls well-distributed throughout their historic range in the Sierra Nevada. For this purpose, protecting occupied, as well as suitable but unoccupied habitat, over the long term is important at this scale. A species with obligate dispersal and experiencing habitat limitation would be expected to show a pattern of less than full occupancy of habitat due to the uncertainty of the search process and the survival costs associated with searching for low-density habitat. Conservation efforts should therefore consider not only occupied habitat, but also suitable unoccupied habitats, in developing conservation strategies for species for which dispersal may function as a primary limiting factor.

(USDA Forest Service, 2001a, Chap. 3, part 4.4, p. 82.) The need for a landscape level identification of suitable habitat is in part due to the recognition by federal scientists that owls may disperse across large areas encompassing many watersheds and that such dispersal can be expected to occur "in random directions, with no relation between dispersal direction

and the geographic orientation of drainages or ridges." (See e.g., Verner 1992, p. 66 (Technical Report describes dispersing juvenile owls ranging from 2.1 to 68 miles from natal area). Recent FWS data suggest that the median dispersal distance of 42 juvenile owls within the HFQLG area was 14 miles for males and 16 miles for females (Federal Register 2005; Tempel 2005). *See also* Blakesley 2006a. The success of such dispersal may depend on the quality of matrix habitat between owl home ranges. Additionally, adult owls in the Sierra Nevada may migrate to lower elevations during winter for distances up to 36 miles (Laymon 1989). All of these factors reinforce the need to maintain habitat quality on matrix lands outside of designated HRCAs. Tempel 2005a & b. *See also* Verner, 1992, p. 66.

Third, the Empire Project planning documents avoid assessing the habitat quality, and activities affecting such habitat quality, outside the Assessment Area by tiering to the 1999 QLG FEIS and 2004 Framework FEIS. Thus, the Empire project documents continue to avoid a cumulative effects assessment of implementing the OLG project on owls, marten and other wildlife as further information is known about how such projects will be implemented with respect to the current population's status of these sensitive species. As discussed in prior comments, however, the Framework's analysis is incomplete and uncertain, and, moreover, cites the need for further regional cumulative impact assessment at the project level. For example, the Administrative Study, designed to assess impacts of the QLG Pilot Project, acknowledges the necessity of assessing impacts from forest management at the landscape level.

> Landscape fuels treatment strategies are implemented at large spatial scales and will be the dominant management activity affecting CSOs and the forest landscape. Resulting changes in vegetation structure and composition from treatments may affect [California spotted owls] and their habitat at multiple spatial and temporal scales. Key uncertainties regard the effects of landscape-scale fuels treatments strategies that thin large areas of forest on CSO density, population trends, and habitat suitability at the landscape scale and how thinning effects habitat quality at the core area/home range scale....It is necessary that research address management effects on CSOs at the appropriate scales at which management is being conducted. Proposed landscape treatments may have effects at either, or both, the individual territory or owl site scale as expressed through change in occupancy, diet, use of vegetation patches, survival or reproduction, or at the population level as expressed through change in the density or spatial distribution of territorial breeding pairs at the landscape-scale. The individual site scale and population level perspectives are complementary in that the population level provides context for interpreting change at the site scale. Most importantly, both perspectives are required by managers concerned with managing for high habitat quality sites, as well as, well-distributed, viable populations across landscapes while implementing management strategies to deal with large-scale fire and fuels issues.

(USDA Forest Service 2003b.)

Further, the QLG EIS also acknowledges the potential for cumulative impacts from

implementation of logging projects under the QLG plan, stating that "[f]urther cumulative effects analysis on wildlife habitat will be conducted at the project level. *See* QLG App. AA, 12-13. As Tempel concludes:

> [T]he conclusion of the 2004 ROD was reached without any consideration of site-specific impacts, and despite a projected decrease of approximately 65,000 acres in suitable owl habitat after 20 years compared to the original 2001 ROD. In addition, the 1999 HFQLG EIS acknowledged that habitat loss due to implementation of the Pilot Project could pose a significant threat to the long-term viability of the spotted owl within the HFQLG Project area. (Tempel 2005a, 2005b).

Fourth, the Empire Project's cumulative Impacts analysis is still flawed since it fails to take a "hard look" at impacts, as noted in the 2005 and 2006 Empire appeal decisions, which stated that "merely listing past, present, and reasonably foreseeable future actions does not constitute adequate cumulative effects analysis." Although the list of projects has been embellished, the Empire project documents still fail to explain how various past, present and future activities cumulatively impact wildlife in the analysis area and beyond. The FSEIS appears to list effects by activity type rather than disclose effects in combination…that is cumulatively. The Legacy reiterates its prior comments on this point. In sum, the cumulative effects analysis in the Empire Project documents with respect to past, present, and reasonably foreseeable future logging, fails to comply with NEPA.

4. The Empire Project Does Adequately Analyze the Cumulative Impacts to Soil Resources

NFMA directs the Forest Service to promulgate regulations specifying guidelines for forest plans that "insure research and (based on continuous monitoring and assessment in the field) evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land." 16 U.S.C. § 1604(g)(3)(C). The guidelines must also "insure that timber will be harvested from National Forest System lands only where . . . soil, slope, or other watershed conditions will not be irreversibly damaged." *Id*. at 1604(g)(3)(E)(i). NFMA regulations further provide that "[a]ll management prescriptions shall . . . conserve soil and water resources and not allow significant or permanent impairment of the productivity of the land." 36 C.F.R. § 219.27(a)(1) (1999). In addition, "[m]anagement prescriptions that involve vegetative manipulations of tree cover for any purpose" must "avoid permanent impairment of site productivity and ensure conservation of soil and water resources." *Id*. at § 219.27(b)(5). The Plumas forest plan incorporates these NFMA and regulatory requirements with general direction to "prevent significant or permanent impairment of soil productivity." Plumas LRMP at 4-43.

Region 5 soil quality standards adopted pursuant to NFMA's requriements to avoid soil impairment are a recognized part of the regulatory framework governing this project and establish soil properties, conditions, and associated threshold values [that] are used to avoid detrimental soil disturbance. The 2004 Framework process indicated Forest Service intent to comply with these standards for QLG projects, which direction the Plumas National Forest has followed in other projects. However, as set forth below, the FSEIS still fails to provide an accurate analysis using the best available science whether the Empire Project is consistent with regional standards for soil compaction and downed woody material. Failure to evaluate these effects on soil quality is a violation of NEPA. It is also not known whether regional standards are met currently and following the project, and thus the project also violates NFMA. In addition, opportunities to mitigate the effects of the proposed action or remediate historic deficiencies have not been explored.

a. The Forest Service Does Not Use the Best Available Science in Estimating Soil Compaction

The regional soil quality standards set a threshold of 10% reduction in soil porosity; above this level, there is detrimental soil compaction. Detrimental compaction was not measured on any of the treated areas even though such monitoring is common practice in the larger Herger-Feinstein Quincy Library Group project area. (USDA Forest Service 2005, pp. 43-44; USDA Forest Service 2006, pp. 57-58).

The standard procedure for measuring soil compaction is as follows**:**

> The accepted methodology for measuring whether soil has suffered such a loss of porosity cannot be determined visually. The accepted standard for conducting soil transects is to randomly locate multiple transects across the proposed activity area (harvest unit). Then along each transect predetermine a uniform spacing that will achieve the required number of sample points. At each sample point you dig into the soil and physically assess the soil structural characteristics. A further need is that for each area being transected, a baseline determination of what constitutes the undisturbed condition needs to be made by the sampler to calibrate themselves by sampling areas of undisturbed soils. This forms the basis to determine whether the threshold has been exceeded, i.e. porosity has increased more than 10 percent.

Johannson 2007b. NFMA, NFMA regulations and Regional Standards all require onsite monitoring to assess soil compaction. (*See e.g.*, FSH 2509.18 – SOIL MANAGEMENT HANDBOOK, R5 Supplement No. 2509.18-95-1 directs the use of soil quality analysis standards that evaluate existing soil conditions and potential project effects on soil quality in terms of soil porosity, etc.) .As set forth below, without such onsite monitoring, there is no way for the Forest Service to insure that the effects of its management system is not producing substantial and permanent impairment of the productivity of the land.

b. The Forest Service's Visual Observation of Skid Trails and Landings does not Provide Adequate information Whether Detrimental Soil Compaction is Occurring

The Plumas forest plan states that that "[t]o avoid land base productivity loss due to soil compaction, dedicate no more than 15% of timber stands to landings and permanent skid trails." However, this Forest Plan standard, adopted years before the Regional Standards defining soil compact thresholds, is obsolete and unusable becuase the Plumas National Forest does not dedicate permanent trails.

Instead, the Empire Project documents assert that detrimental compaction can be adequately measured by visual observation of skid trails and landings to determine the percent of the area or timber stand that is detrimentally compacted. For a number of reasons, this approach does not meet the minimum standards achievable by onsite monitoring, as required by applicable NFMA based laws to avoid impairment as well as NEPA laws to use the best available science.

First, as discussed in Johannson 2007b, skid trails and landings created over the last 10-70 years are not readily identified by visual observation. The Plumas Forest Plan refers to "landings and permanent skid trails" but there are no such "permanent skid trails' in the planning area for the Empire Project. Instead, as has been true for decades, each new treatment in the forest creates its own incremental soil compaction, including landings and skid trails. These areas may or may not be used again in the future and thus may not be visually apparent to observers more than 10 years after treatment entry.

As noted by Johannson 2007b, visual identification of a skid trail becomes progressively harder as time passes:

> Over time some level of vegetation tends to occupy these areas and to thoroughly diagram the skid trail system from 10 years ago and longer can not be done. Although vast amounts of these legacy skid trails can have vegetation growing on them, they can still be detrimentally compacted (Froehlich, H.A.; McNabb, W. 1984. Sullivan, T.E. 1988. Tepp, J.S. 2002). There can also be areas where little to no vegetation reoccurs after 30-40 or more years. This speaks to the variability that occurs in nature and why the USFS approach is inadequate.

The Forest Service's current apprach cannot reveal the level of compaction from past skid trails and landings within the planning area. The USFS has no operational procedure in place to actually keep track of what is happening with regard to skid trails. The Forest Service has no maps that show this information, nor does the Forest Service document that any quality assurance training occurred or, if it did what it consisted of, with the field crew used to observe skid trails. The project documents contain no record of personal training of the resident soil specialist or prior monitoring work product to substantiate a level of expertise in assessing either skid trail patterns years after the fact or in measuring detrimental

compaction by calculating a 10 percent loss in soil porosity.

Second, as discussed in Johannson 2007b, within harvest areas there can be detrimentally compacted soils that aren't a skid trail or a landing:

> This happens when a skidder or other heavy equipment operates off a designated skid trail. During any harvest operation, equipment operations commonly occur on areas not identified as skid trails and this equipment traffic can decrease soil porosity sufficiently to result in detrimental compaction. In other instances, current harvest operations can occur upon areas where previous harvest operations caused a limited loss in soil porosity. The incremental increase in soil density is a cumulative effect of these multiple harvests and can result in soil porosity being reduced more than 10 percent and generate detrimental compaction. The USFS would never know if this occurred with the sampling scheme their using. There is a substantial data base showing that legacy compaction from previous harvests can last 30-70 years and more (Wert, S.; Thomas, B.R. 1981. Landsberg, J.; Miller R. 2003). By not measuring the physical soil properties relevant to soil compaction, the USFS has not established the existing condition. Therefore, they can not make an informed decision on the magnitude and extent of existing detrimental compaction.

Johannson 2007b. Johannson notes that during the sampling for the HFQLG soil monitoring program, numerous individual sampling points were "determined to be detrimentally compacted yet were not located on a legacy skid trail." *Id. See also* data on file with Forest re HFQLG soil monitoring.

Third, even if simple observation of skid trails and landings were an adequate proxy for onsite soil testing and monitoirng, the evidence shows that existing skid trails and landings were likely underestimated in the planning area. Skid trail and landing density was estimated by the use of points sampled along a transect. (CWE and Soils Assessment, pp. 16-17). To evaluate this, transects "were designed to run across the slope." (*Ibid*., p. 17). Johannson identifies that this sampling approach is inadequate because it is not likely to include landings. He states:

> "My reading of the protocol was that since it was designed to travel between roads and on the contour, it would not be expected to encounter any landings. Yet there was no acknowledgement of this and corresponding adjustment to the data in Table 12 on page 48. There should have been an acreage added for the landings to the data to reflect this or state that it only included the observed skid trails."

(Johannson 2006, p. 2). Thus, the area estimated to be occupied by skid trails and landings is underestimated by some unknown amount. This has not been disclosed in the analysis. The Forest Service attempts to use an estimate of the area occupied by skid trails and landings as a surrogate for measuring soil porosity. The FSEIS concludes that if skid trails and landings

are kept to less than 15% of the area that the extent of detrimental compaction would be at or below the existing pre-project condition.

Finally, the evidence shows that detrimental soil compaction, when it is measured, is common place follwoing timber harvests, and is increasing throughout the Plumas National Forest. This point is supported by evidence showing that in monitoring on GS and DFPZ units within the HFGLQ pilot project, the average disturbance density was 19 percent, with 15% for DFPZs and 26% average for GS. *See* Johannson 2007b.
Further, the evidence indicates that the thinning projects such as Empire are likely to leave an even higher percentage of detrimentally compacted soil. *Id*.

Two recent status reports to Congress for the Herger-Feinstein Quincy Library Group Recovery Act (USDA Forest Service 2005, 2006) each show increasing levels of detrimental soil compaction as a result of project related activities.. *See* Johannson (2006, p. 3), The 2005 report (USDA Forest Service 2005, pp. 43-45), found that pre-treatment compaction for six stands covered 15% to 33% of the area and post-treatment compaction was occurring over 20% to 58% of the given stand. The 2006 draft report (USDA Forest Service 2006a) also found that following treatment there was a significant and consistent increase in detrimental compaction that exceeded regional standards.

Further, the Empire Project does not disclose the local monitoring data that also documents the repeated high levels of detrimental compaction that routinely results. The USDA Forest Service. 2002. Plumas National Forest Soil Resource Assessment for Implementation of Project Work, Plumas National Forest, Quincy, CA, states:

> Westmorland (1999) conducted an in depth study of the effects of thinning on soil porosity on 87 harvest units within the Lassen, Plumas and Tahoe National Forest. Nineteen of these units were evaluated for existing compaction and then thinned utilizing feller-bunchers; the same harvest method planned for units on this project. A separate analysis of the data from the 19 units generated Figures Two and Three. As Figure Two indicates, prior to harvest less than 10 percent of the units had detrimental levels of compaction greater than 5 percent. Following harvest, the shift in detrimental compaction is clear; 79 percent of the units have detrimental compaction levels greater than 15 percent.

Soil monitoring is presently being conducted under the Herger-Feinstein Quincy Library Group Forest Recovery Act (HFQLG). Pretreatment data has been collected in field seasons 2001 and 2002 on 91 randomly selected units. Soil compaction levels range from 0 to 88 percent of the area detrimentally compacted. Average compaction within the units is 21 percent, and 53 percent of the units exceed the threshold of 15 percent detrimentally compacted prior to current planned entry (Johannson, W. and R. Westmorland, 2002). This is significant. More than half of all units have legacy compaction exceeding the thresholds

before the current entry occurs. Given the expected increase from the current entry as demonstrated in the above shift, this is a real issue of soil productivity at risk.

See Johannson 2007a, *See also* Johannson 2007b.

The Forest Service's approach is inconsistent with its obligation to use the best available science in assessing the impacts of the project and compliance with applicable standards. As noted by Johannson (2007a)

> The Forest Service process used transects that only estimated the extent of detrimental compaction by visually characterizing whether a sample point was located on a skid trail, landing or non-system road. The standard for detrimental compaction analysis is quantitative; the threshold for detrimental soil compaction to occur is a 10 percent loss in soil porosity. This cannot be determined visually. It is insufficient to rely on visual recognition of old skid trails and landings and present that they are the only areas exceeding the standard. The accepted standard for conducting soil transects is at each transect point to dig into the soil and physically assess the soil structural characteristics. A further need is that for each area being transected, a baseline determination of what constitutes the undisturbed condition needs to be made by the sampler to calibrate themselves by sampling areas of undisturbed soils. This forms the basis to determine whether the threshold has been exceeded, i.e. porosity has increased more than 10 percent.

See also Johannson 2007b.

In sum, the Forest Service's proxy approach does not analyze what proportion of the activity area has a loss of 10% or more of soil porosity as required by the standard. Further, there is no discussion about the failure to assess soil porosity. *See also* QLG Status Rpt. to Cong. FY 2004 at 43 ("The threshold that indicates a significant impairment to soil productivity is 15 percent or more of an activity area having detrimental compaction. Detrimental compaction occurs when soil porosity is reduced more than 10 percent as compared to undisturbed conditions.") In doing so, the Forest Service has failed to take the hard look based on the best available science that is required under NEPA. (As discussed below, the Empire Project's analysis is also contrary to NFMA's requirements.)

2. The Forest Service has Not Taken a Hard Look at Whether Minimum Standards for Organic Matter are Being Met

The R5 Soil Quality Standards (FSH 2509.18,2[1]) require that "organic matter is maintained in amounts sufficient to prevent short or long-term nutrient cycle deficits, and to avoid detrimental physical and biological soil conditions." One element of the regional standards for organic matter is the retention of large woody material. Large logs are defined as those that are "at least 20 inches in diameter and 10 feet long." *Id.*.

The FSEIS does not provide any data regarding the amount or coverage of large logs on the Empire project. Instead, the DEIS (p. 3-202-203) provides statistically suspect data regarding the amount of coverage for woody debris greater than 6" in diameter. The FSEIS then refers to a study in a different forest (El Dorado National Forest) to conclude that its data on small downed woody material can be translated to a finding that there is adequate "large" downed wood to satisfy the Regional 5 soil quality standards of five large (greater than 20" diameter) logs per acre.

As demonstrated by other projects, surveys for large down wood are routinely completed and discussed in project analyses. (See for example the Phoenix Project on the Sierraville District, Tahoe National Forest.). Estimates of large down wood per acre have also been reported. (*Ibid*.) The Region 5 soils quality standards require the survey of large wood during project planning. For reasons that have not been addressed in the analysis, the density (logs per acre) of large wood has not been determined in the Empire Project area. Such an assessment is necessary to determine if the Region 5 soils quality standards are being met and to further determine if the "changes in soil properties and soil conditions would result in significant change or impairment of the productivity potential, hydrologic function, or buffering capacity of the soil."

Even if one accepts the integrity of the analysis method used to estimate the amount of large wood in the project area, the soils analysis fails to identify that nearly half (16 out of 36) of the units to be treated currently do not have any large down wood. In fact, only 25% of the units have 2% or more of the transect points with large woody debris. The soils analysis makes an issue of comparing the survey data to a study describing the nature of down wood in circumstances where 2% of the area is covered (and by inference seems to suggest that sufficient large wood occurs in such units) (*Ibid*., p. 34); however, relatively few units in the Empire Project meet or exceed this inferred level of large down wood. The lack of down wood in nearly half of the affected units must be discussed in relation to the failure to meet regional soil quality standards and the effect this has on detrimental effects to soil condition. Further, the Project's failure to meet the regional direction for large downed wood has the potential for significant impacts on sensitive wildlife such as spotted owl and their prey flying squirrel, which have not been addressed.

The only mitigation measure addressing any potential deficit is to generally retain 10-15 tons per acre of large down woody material. Because this standard only requires retention of existing down wood, it does nothing to mitigate or redress any potential shortfall. The Region 5 soils quality standards identifies the following to alleviate detrimental effects: "Import organic material, incl. cull logs." (FSH 2509.18,2[1]). Once an appropriate analysis has been completed, the project or an alternative should be designed to include this mitigation measure.

In response, the FSEIS states that 'over time, falling snags and blowdown will contribute to additional woody debris inputs. However, nothing in the project documents provide any plan or mitigation measures proposed by the Forest Service to meet these

minimum regional standards intended to implement NFMA requirements. *See Ecology Center v. Austin,* 430 F.3d 1057, 1069-1070 (9th Cir. 2006).

5. The Empire Project Still Fails to Take a Hard Look at Alternatives

The "touchstone" for courts reviewing challenges to an EIS under NEPA "is whether an EIS's selection and discussion of alternatives fosters informed decision-making and informed public participation." *Westlands Water Dist. v. U.S. Dep't of Interi*or, 376 F.3d 853, 872 (9th Cir. 2004). The Ninth Circuit has held that an agency's consideration of alternatives is inadequate where it does not examine a viable alternative using correct scientific analysis. *Natural Resources Defense Council v. U.S. Forest Service*, 421 F.3d at 814; *see also Alaska Wilderness*, 67 F.3d at 730-31.

As discussed in prior comments and further below, due to the real potential for significant impacts to wildlife, including the inability to ensure viability of such species as the spotted owl and marten, as discussed below, the Forest Service has an obligation to take a "hard look" at alternatives that will meet project objectives, but with less harmful impacts to wildlife. *See e.g.,* (Tempel 2005a); *Sierra Club v. Bosworth*, USND Case No. 05-00397, p. 14:9-17 ("However, the proper question given all the available science is not only whether a project protects the Forest from catastrophic fire, but also whether it does so in a manner that has the *least impact* on sensitive species."); *Sierra Nevada Forest Protection Campaign v. Tippen.*

a. The Empire Project Fails to Take a Hard Look at Alternatives With Less Harmful Impacts

The Forest Service continues to claim that alternatives E & F, with lesser impacts on wildlife, do not meet project purposes based on three grounds: 1) fire risk; 2) forest health and 3) economic recovery. The Forest Service's analysis on each of these points does not constitute the "hard look" required by NEPA.

(1) The Empire Project Fails to Take a Hard Look at Alternatives that Can Meet Applicable Fuel Reduction Goals

The Forest Service's continued failure to present an accurate picture of the fire risk posed undermines the conclusions in the FEIS that the proposed level of harvesting for fuel reduction purposes is necessary to avoid such catastrophic wildfire. The Forest Service's analysis ignores that resiliency to a wildfire means a greater ability to withstand a fire and that larger trees have a greater ability to withstand fire. The adaptations of larger pines and cedars are many, most notably a greater bark thickness and higher height of live foliage above the forest floor. As discussed in prior comments, retaining the largest trees in the stand offers the greatest likelihood of increasing overall stand resiliency. The Forest Service's failure to follow this basic proposition and to instead rely on a flawed methodology

and analysis means it has failed to apply a hard look to its fuel reduction analysis, failed to use the best available science, failed to consider alternatives in a non-arbitrary manner and failed to consider the environmental impacts of its decision-making process, all contrary to NEPA. *See e.g., Sierra Nevada Forest Protection Campaign v. Tippen.,*

As discussed in prior comments, Alternatives E & F meet the stated fuel reduction standards for this Project. In response to prior comments, the FSEIS conceded that the potential for passive crown fire (torching) in Alternatives E and F would be similar to Alternatives A, C, and D. However, the FSEIS continues to claim 1) crown fire potential is relatively higher under Alternatives E & F; and 2) higher canopy cover may result in reduced penetration of aerial retardants through the canopy to surface fuels, which may result in a higher likelihood of a fire to escape initial attack.

In making these conclusions, the FSEIS and prior project documents do not meet the hard look standard required under NEPA. *See e.g., Sierra Nevada Forest Protection Campaign v. Tippen*. *See also* Rice 2005, 2006a, 2006b, 2007a, 2007b.

First, the project documents do not acknowledge nor use the criteria used by the Forest Service to determine whether fuel reduction objectives are being met. In fact, the forest-wide Standards and Guidelines for Fire and Fuels set forth in Appendix A of the 2004 ROD (p. 50) require the Forest Service to: "Design a sequence of fuel reduction treatments in conifer forest types... to achieve the following standards within the treatment area:

1. An average of 4-foot flame length under 90th percentile fire weather conditions.

2. Surface and ladder fuels removed as needed to meet design criteria of less than 20 percent mortality in dominant and co-dominant trees under 90th percentile weather and fire behavior conditions.

3. Tree crowns thinned to meet design criteria of less than 20 percent probability of initiation of crown fire under 90th percentile weather conditions.

As set forth in several prior submissions and in the declarations of Carol Rice, Alternatives E & F each meet these criteria. *See* Rice 2005, 2006a, 2006b, 2007a, 2007b.

The 2004 ROD criteria represent the Forest Service's determination as to what performance standards are relevant to acceptable fire risk and sets those standards. Here in contrast, the Empire project relies on different standards that are not part of the desirable fuel reduction condition.

The FSEIS claims there is a need for further thinning of the forest crown, despite the fact that the surface fuel conditions are met for each alternative. However, the Forest Service criteria do not address any such criteria for crown thinning beyond the need to reduce "the initiation of crown fire under 90th percentile weather conditions." Here, the Forest Service

concedes that the possibility of crown fire "initiation" is the same for each alternative. In the Empire project documents, the Forest Service appears to have created a "ghost" standard that fails to recognize the physical linkage of surface and ladder fuels to crown fire initiation and behavior. *See* Rice 2007a, & b; 2006a & b, 2005.

The same is true for retardant drops. Nothing in the 2004 ROD or the 1999 QLG EIS ROD refers to the need for "increased penetration" of retardant drops. Instead, surface fire is controlled by the removal of surface and ladder fuels to ensure that flame lengths do not exceed four feet under 90th percentile fire weather conditions. Rice 2007a & b, 2006b

Second, since the Forest Service criteria do not apply to determine whether the project purpose of reducing fire risk is reducing project objectives, the Forest Service's conclusions are based on purely relative criteria, which are neither relevant under the Forest Service criteria discussed above, nor have any measurable standard against which a decision maker or the public would be able to assess whether the proposed project purposes were being met. The 9th Circuit has, however, found that the Forest Service analysis under NEPA must be conducted in relation to actual standards or thresholds.. *See Ecology Center v. Austin*, 430 F.3d 1057, 1067-1068 (9th Cir. 2005) ("Because the EIS does not disclose what this threshold is, much less explain how the threshold was determined, we cannot evaluate the Service's decision.")

Here, as described in Rice 2007a & b, 2006, neither crown thinning nor flame retardant penetration have any acceptable standards against which one might measure project purpose success or failure. The Forest Service's failure to set forth, explain and defend such a standard renders its NEPA analysis inadequate.

Third, as set forth in Rice 2007a & b, 2006b and prior comments, the Forest Service's analysis is not based on accurate, relevant or appropriate scientific information and thus does not constitute the hard look required under NEPA. For example, based on speculative visual observations (Moghaddas 2006) during a fire event the Forest Service presents a defense for increased logging absent any quantitative data or comparative study of 40% v. 50% canopy fire retardant performance (Rice 2006b). Further, wind speed factors presented in the Empire project fire analysis are projected by the Forest Service to be almost four times the theoretical gust as determined by NOAA and over ten times the 90th percentile value for 20-foot wind speed, the value specified in the 2004 ROD (Rice 2006b).

In addition, the Forest Service's entire analysis fails to acknowledge how the use of strategic landscape level fuel reduction planning could greatly reduce or even eliminate the threat of large scale, stand replacing fires with only a fraction of the logging proposed in the Empire project. *See* Rice 2007a & b. This failure further undermines the Forest Service's fuel reduction methodology, which is to assume that a crown fire will initiate and then spread uncontrolled across the landscape, irrespective of surface fuel conditions or variations in natural topography. *Id.*

These are just the highlights of a number of technical and scientific inaccuracies presented by the Forest Service as it has continually refined its untenable justification of intensive logging to achieve artificial fuels reduction goals. *See* Rice 2005, 2006a; 2006b; 2007a & b; Heald 2006, Campaign Comments and Prior Appeals. In sum, these unsupported and inflated positions of the Forest Service do not constitute the hard look required under NEPA. *See e.g., Natural Resources Defense Council v. U. S. Forest Service*, 421 F.3d 797, 812-813 (9th Cir. 2005) (Forest Service's presentation of misleading information significant to its evaluation of alternatives did not permit the public to allow an informed comparison of the alternatives considered in the EIS.)

(2) The Empire Project Fails to Take a Hard Look at Alternatives that Will Meet Forest Health Objectives

The Forest Service argues that forest density must be reduced to meet forest health objectives, which the Forest Service claims are adversely affected once "density related mortality" occurs at from 55% to 60% of the maximum stand density index. This reasoning cannot be the basis to reject Alternatives E or F for several reasons.

First, as discussed in prior comments, the post-treatment stand densities for Alternative E or F are well below the 55-60% figure used by the Forest Service to define "forest health." *See e.g.,* Vegetation Report, p. 11, Table 6; p. 21, Table 9. Further, the project documents show that even 50 years after harvest, alternatives E or F would still be under this SDI threshold. *Id.* This is well beyond the Regional direction for lowering stand density, which suggests retaining SDI below the 60% level for at least 20 years post harvest. (*See* July 14, 2004 Memo from Jack Blackwell to Forest Supervisors.) Given the significant impacts to wildlife from the proposed level of harvest, the Forest Service's determination to reduce forest stands to such low density is contrary to law. *See e.g., Sierra Club v. Bosworth*, USND Case No. 05-00397.

The project documents do not provide any explanation or information to justify tripling this level of stand reduction beyond the Regional direction. The FSEIS discusses the need to achieve the maximum possible reduction within the scope of regional direction. Yet nothing in the Forest Service documents supports the need to eliminate large trees over 20" dbh in order to promote forest health. In fact, as is clear from the Empire Project documents, the planning area is sorely lacking in medium to large trees. Nothing in NFMA, the 2001 and 2004 Framework decisions, or regional direction requires the Forest Service to cut the maximum number or large trees to reduce stand density.

The Legacy notes that, to the extent the Forest Service is intending to rely on Powel (1999) as supporting thinning to 35% SDI, this paper actually identifies a "lower limit of the management zone" (LLMZ) at about 40%. The FSEIS purports to quote the author in response to our comments, but the cited paper stands for itself. As discussed in our prior comments. Powell notes that "stand densities below the LLMZ could be considered understocked because growing space is not fully occupied (utilized) by the trees." Thus, at

best, the 35% SDI figure goes *below* the *minimum* level necessary to ensure normal growing rates for the forest. In no way does it provide any relevant information regarding the effect of density on "forest health." Instead, as noted by Heald 2006b, "the 35% to 45% canopy levels proposed in options A, C and D would likely significantly reduce stand growth hence reduce future harvest potential and future local economic viability unnecessarily."

Second, the Forest Service does not provide a reasoned explanation for why stand density must be lowered by removing co-dominant 20-30" dbh trees as opposed to a thinning from below prescription. As set forth in Heald 2006a & b, the Forest Service has improperly used landscape level averages to arrive an at artificial reverse "J" curve model for older forests, which is contrary to the data on which the Forest Service relies. (*See* also Campaign's Comments on DSEIS dated April 10, 2006.) This model does not account for the heterogeneity of stands across the landscape including ones with higher numbers of large trees based on site conditions and other environmental variables. Indeed, this is considered one of the purposes of group selection, to establish heterogeneity at the landscape but not the stand level by rotating even aged-groups over a 175 year rotation. *See e.g.*, Heald 2006a & b. As noted by numerous. In sum, the Forest Service's application of a uniform "stand density" prescription across the landscape is arbitrary and does not comply with the best available science because it ignores the lanscape variation in which favorable environmental variables – such as above average moisture availability or deep favorable soils – allow for pockets of dense large trees to mature together, providing precisely the type of LSOG habitat preferred by spotted owls, flying squirrels, marten and other old forest dependent speces.

Finally, the Forest Service has not provided any evidence to support the idea that the threshold of "density related mortality," whether 55% as the Empire Project claims, or the 60% standard proposed by Region 5, is synonymous with forest health. "Density related mortality" is part of the natural thinning process in the forest. As stated by Heald, 2006b:

> Pest management experts agree that while very high stand density leads to poor individual tree vigor hence increased problems when pest epidemics occur, all the proposed residual stand densities (specifically including the >=50% canopy retention of alternative E) are well below that threshold and would likely remain so for the duration of an average ~20 year cutting cycle post harvest.

The only specific reference provided by the Forest Service relating to density related forest health impacts is susceptibility to bark beetles, yet the Empire project documents demonstrate that while most of the current stands currently exceed 55 or 60% SDI, the level of beetle related mortality is constant but considered to have insignificant impacts on forest health. As set forth in Heald, 2006b:

> [T]he DSEIS documents over a decade of surveys at the existing high density levels that show very few significant mortality problems. "All mortality, except one polygon, was attributed to bark beetles, which indicates that the level of mortality

> may be attributed to endemic levels of these common forest insects" (Supplemental DEIS Empire Vegetation Management Project, p. 19).

Heald notes that "for Sierra Mixed Conifer, the likely key to keeping native beetle pest complexes within acceptable ….levels is maintenance of a diverse species composition."

For other diseases, the Forest Service provides no information showing that such low stand densities are necessary to avoid outbreaks. Instead, as noted by Heald 2006b, "the primary pathogen of concern, annosum root disease in white fir, would likely be increased by ITS." This point is supported by the project documents. *See* DSEIS, p. 20 ("Stands with repeated entry (typical of ITS prescriptions) in the Empire Project area have a higher incidence of the disease than un-entered stands".)

Again, the Forest Service provides no threshold or scientific information to explain the point at which forest density begins to harm forest health due to disease or insects.

The Forest Service's explanation of why ITS is necessary to achieve this condition is also contrary good science. As noted by Heald 2006b:

> [U]se of an Inverse J shaped project wide structure distribution either for the existing or desired future condition is inappropriate. In particular the display of the graph figure 3.1 (Supplemental DEIS Empire Vegetation Management Project, p. 15) inappropriately combines such diverse vegetation types as Sierra Mixed Conifer, White Fir, Red Fir and Ponderosa Pine. …This is exacerbated by displaying in figure 3.2 the combined distribution of all vegetation types in the planning area then inappropriately concluding "which indicates these species" (white fir, incense cedar, and red fir) "are generally comprised of smaller-diameter classes that may be characteristic of advanced regeneration" (Supplemental DEIS Empire Vegetation Management Project, p. 16).

Heald notes that the "real problem in these stands is not so much species composition as tree size," particularly "an excessive number of small diameter stems in the 1 inch to 9 inch diameter classes." However, ITS cannot effectively contribute to a multistory, fire-resilient forest without addressing this gross excess. *Id*.

The project documents also make offhand references to the need to regenerate shade intolerant conifers. However, the Forest Service provides no evidence that it is necessary to reduce canopy to 35% or 45% in order to encourage regeneration of intolerant conifers. *See also* Heald 2006a. Research at Blodgett Forest and elsewhere (Lilliholm, 1990) demonstrates that regeneration of all species in a Sierra Mixed Conifer forest is more than adequate following periodic harvesting, which occurs at post harvest canopy cover levels of 50% to 70%. Heald 2006a. Instead, it is the competition among excess small diameter trees that inhibits adequate growth of established regeneration. *Id*. Finally a key component of adequate regeneration is the retention of a sufficient number of species representatives. For the largest forest type in the planning area, Sierra Mixed Conifer, a typical well managed

post harvest stand should have approximately five conifer species -- and Black Oak -- with two trees per acre on average of each species in the 20" – 29.9" dbh size classes and at least one tree per species > ~30" dbh to insure adequate current and future regeneration. Here, the existing stands average only 17 TPA between 20 and 29.9 inches dbh and five TPA >= 30" dbh. Nearly all these trees would need to be retained for seed tree purposes in a well designed ITS prescription. *See* Heald 2006a & b.

(3) The Empire Project Fails to Take a Hard Look at Alternatives that Can Meet Economic Objectives

The Forest Service also states that Alternatives E & F do not meet the project purpose derived from the OLG to contribute to community economic stability. The problem with this analysis is that the Forest Service again identifies no threshold to determine whether the economic benefits of different proposed alternatives meet or do not meet the stated project purpose. The Campaign notes that all considered alternatives create full time jobs and generate income, thereby contributing to community economic stability. Thus the Forest Service is again rejecting alternatives based on the idea that one alternative goes farther in achieving a particular purpose than another. But this is not the standard for assessing alternatives under NEPA, particularly in the context of economics where the 9th Circuit has recently expressed its disapproval over "a disturbing trend in the Forest Service's recent timber-harvesting and timber-sale activities:"

> It has not escaped our notice that the USFS has a substantial financial interest in the harvesting of timber in the National Forest. We regret to say that in this case, like the others just cited, the USFS appears to have been more interested in harvesting timber than in complying with our environmental laws.

Earth Island Inst. v. U.S. Forest Serv., 442 F.3d 1147, 1178 (9th Cir. 2006). The Campaign also notes that under NFMA, economics cannot override other statutory mandates to maintain species viability and diversity on the Forest. *See e.g.*, 36 CFR 219.27(b)(3).

The FSEIS adds a new justification for logging larger trees than are necessary to achieve fuel reduction and forest health standards, which is to utilize "treatments using the most cost effective means available." The FSEIS goes on to state that "[w]hile alternatives E and F do create full time jobs and generate income, these alternatives also result in net negative values and thus are not cost effective. In comparison alternatives A, C, and D create more full time jobs and generate more income while resulting in positive net values, and thus are cost effective."

The Legacy does not believe that a proper interpretation of the OLG Act would lead to the conclusion that the "most cost effective treatment" is the treatment on which the Forest Service is able to make the most money from selling timber. Such an approach would effectively *require* the Forest Service to choose the timber option that maximizes profit to the Forest Service, contrary to Ninth Circuit precedent and contrary to NFMA's command that

the National Forests be regulated for a diversity of uses, including wildlife protection. In fact, the 2004 Framework assumed that project impacts would be mitigated at the project level, yet this direction would be avoided if the Forest Service were able to applying a uniform rule that districts must choose the "most cost effective" treatments, ie, the ones that make the most money.

We believe the only reasonable interpretation for the "cost effective" language is that the Forest Service must not waste valuable funds on treatments that are unnecessary and must not pay any more than necessary for treatments such as service thinning projects. We do not believe there is anything in the OLG legislative history that suggests that the "cost effective" standard requires the Forest Service to do an end run around its multiple use responsibilities in order to maximize timber revenue. This is particularly true given the Framework's shift in emphasis from maximizing timber production to achieving sustainable ecosystem management.

Further, the Forest Service's narrow focus on the "cost effective" language to justify increasing the profits of each logging treatment is particularly objectionable and contrary to NFMA – and the OLG Act – when one considers the bigger picture economic picture in which the Forest Service operates, as set forth below.

(a) Background

Title IV of the Herger-Feinstein Quincy Library Group Forest Recovery Act *Sec. 401 (e)* requires the Secretary to use the most cost effective means available, as determined by the Secretary, to implement resource management activities. Forest Service Handbooks FSH 1909.17 identifies the procedures for determining and disclosing cost-effectiveness in the NEPA process. While the Forest Service Handbook requires consideration of a broad spectrum of values including logging, hauling cost, and stumpage prices, it also requires a more holistic look and the cost and benefits of a project (see below)

FSH 1909.17, Section 12 - IDENTIFYING INPUTS, OUTPUTS, AND PRODUCTION PROCESSES.

Economic analyses must identify inputs, outputs, and production processes. Inputs are factors of production (land, trees, other raw materials, management, labor); outputs result from production (timber harvested, sediment created, **wildlife habitat developed or destroyed)**. Production processes describe how inputs are transformed into outputs (for example, acre X, when logged, produces 50 MBF net, 400 tons of slash, 3 tons of sediment, and so on). (emphasis added)

The Economic Analysis in the Empire Project merely examines economic benefits to communities in terms of the logging-milling related job base (Empire FSEIS 3-235 and 3-

236) but fails to address other reasonable costs such as road construction costs, road- related impacts including sediment production and mitigation costs, monitoring costs, damage to wildlife habitat, increase possibility of noxious weed invasions, slash clean up, and soil compaction and mitigation. This arbitrary approach misrepresents the larger issues of project costs/benefits and fails to present a complete picture of the socio-economic impact and benefits, contrary to NEPA.

NFMA 36 CFR § 219.27 (b) (3) requires that management prescriptions that involve vegetation manipulations of tree cover for any purpose shall "not be chosen primarily because they will give the greatest dollar return or the greatest output of timber." The Empire FSEIS selected Alternative D as the preferred alternative which did not produce the most timber volume, but Alternative D was selected because it preformed within the arbitrary and narrowly constructed economic analysis described above and in the FSEIS. Absent a holistic, all-together reasonable analysis of environmental costs Alternatives A, C and D would not have the same positive dollar outcome.

(b) Current funding expenditures of QLG project dollars creates an arbitrary "manufactured" funding situation that leads to environmental damage.

The amount of available funding for Forest Service projects in the QLG area from 2000 to 2008 is significantly higher (3X higher) than other national forests in the Sierra Nevada.

Fiscal Year Available Funding (in millions) From: USDA Forest Service-PSW budget figures

2001	31.2
2002	26.2
2003	29.6
2004	30.8
2005	31.0
2006	25.8
2007	26.2
2008 (planned)	26.2

These high levels of available project dollars should provide significant available funding to offset treatment costs in the QLG project area. The manner in which the QLG forests spend those dollars drives a funding scenario that arbitrarily affects cost effectiveness.

The available dollars in the QLG planning area are spread across an unreasonably large planning landscape in each fiscal year. There is no attempt to apply reasonable fiscal

constraints to project planning. Instead, the Forest Service over-spends their annual existing budget and then looks to group selection logging of ecological valuable trees (Example: Group Selection logging in high quality wildlife habitat in the Slapjack, Watdog, and Happy Jack projects) to bail these projects out of the "red" and make them economical, i.e., to pay their way in terms of a revenue producing sale.

If, on the other hand, available funding was expended with slightly more caution and constraint, projects such as Empire, Watdog, Slapjack, Happy Jack could rely on existing funding to support some service contract work and some timber sale work that could benefit the environment by avoiding group selection treatments in high quality habitat to pay for treatments. This might mean slightly less acres treated and less volume but it could lead to less public outcry, appeals and litigation focused on halting environmentally damaging logging. The net outcome could very well mean more acres treated then the current situation.

The issue of the available funding for QLG projects and how that funding is expended is a critical piece of the socio-economic discussion that is completely absent from the Empire FSEIS yet it is the issue that drives all the conflict and should have been analyzed in the socio-economic discussion in the EIS.

(c) Community Stability and Declines in Resource Extraction Industry in the Pilot Project area.

Community Stability, and the Forest Service's responsibility to sustain it, is a questionable social construct according to leading Forest Service-PNW social science researcher Richard W. Haynes. In his brief essay (see below) Dr. Haynes questions the whole notion of sustainable communities and examines the larger social forces at play that drive our thinking about communities and the ethics of trying to save some communities over others.

The issue of community stability and changing economic and societal values has never been fully examined or addressed in the NEPA process for the Empire project. The QLG "community stability" mythology is a fundamentally flawed social construct that should be examined in this NEPA analysis because it is at the heart of the debate over logging and environmental harm in the QLG "community stability proposal".

From 1990-1999 the timber industry declined 10% (Empire FSEIS 3-233). This tend was established prior to significant logging under the HF QLG Act of 1998. There has been a steady decline in forest product industry jobs after the Pilot Project was initiated (Status Report to Congress FY 2005 p. 18) and a rising economic trend in recreation and tourism industries in the Pilot Project area (Ibid p. 48)

It should also be noted that in the community of Portola, a community least dependent on the forest products industry, has shown improvements in both of the social indicators of youth education and family poverty (Ibid p. 48).

Also import is the income related to transfer payments from retired persons moving into rural environments and how that impacts community stability in a manner more stable that fluctuating resource extraction industries.

All of these conditions impact community stability and should be fully discussed and disclosed in the NEPA process. NEPA requires the Forest Service take a "hard look" at these socio-economic issues which drive this resource management debate. To do less is contrary to law. *See also* Exhibit 1, attached hereto.

b. The Forest Service Did Not Consider a Reasonable Range of Alternatives

In addition to not taking a hard look at Alternatives E & F, the Forest Service improperly rejected Alternative H, which limits fuel treatments to trees 15" dbh or less based on its assertion that this alternative did not meet certain project objectives regarding economic feasibility and amount of board feet to be logged. As discussed above, these criteria lack any measurable comparable standards and thus cannot constitute grounds for rejecting a less harmful alternative, particularly in the face of potentially significant and at best uncertain adverse impacts to wildlife. *See e.g. Lands Council v. Powell*, 379 F.3d 738 (9th Cir. 2004) (NEPA was passed by Congress to protect the environment by requiring that federal agencies carefully weigh environmental considerations and consider potential alternatives to the proposed action before the government launches any major federal action.)

Second, the Forest Service improperly rejected an alternative based on the more protective standards of the 2001 Framework. Although the Campaign has repeatedly asked for the Forest Service to consider such an alternative, it declined to do so stating that the 2001 Framework has been superseded and thus as a matter of law cannot meet the project purposes involved in implementing a OLG project under the 2004 Framework amendment. As stated previously by the Campaign, this position is incorrect. As recently set forth in *See Sierra Nevada Forest Protection Campaign v. Tippen*:

To the extent that defendants assert that the 2004 Framework supersedes the 2001 Framework such that implementation of a plan in accordance with the 2001 Framework would be inconsistent with the 2004 Framework, they are mistaken. The 2004 Framework amended the 2001 Framework to provide the Forest Service with increased flexibility, but did not mandate more intensive logging measures. CR 00119-20 (setting more flexible maximum guidelines for logging, but not mandating minimum requirements). ….As such, an alternative applying the 2001 Framework would not necessarily be inconsistent with the 2004 Framework.,,

The Legacy reiterates its prior position that the Forest Service should consider a fuel reduction and forest regeneration alternative that meets the less intensive logging that was permitted under the 2001 Framework. Implementation of a 2001 Framework alternative could have considered alternatives in which group selection and ITS units are confined to

areas of lesser habitat quality, as opposed to the critically sensitive habitat for owls, marten and other species that will be treated under Alternative D. For example, an alternative that implements the 2001 ROD standards would not allow group selection harvesting in HRCAs. (See USDA Forest Service 2001b, App. A, 40-44) and would limit the group selection amount to that allowed under the 2001 Here, instead, the Forest Service eliminates the less intensive logging Alternative F based on the argument that it does not meet the Forest Service's economic objectives, without ever considering a group selection option of lesser intensity and, as discussed above, without ever clarify the criteria that an Alternative must meet in order to meet an economic objective. This process thus does not allow the public to assess alternatives in the manner required by NEPA.

Third, the Campaign reiterates its prior comments that the project fails to provide a meaningful discuss alternative measures arguably superior to the group selection and reforestation proposed to insure an all aged, multistory, fire resilient forest. As discussed in prior comments, Group Selection is likely to establish an even-aged, single story canopy highly prone to crown fires. (*See e.g.*, Odion, 2005.) The Plumas National Forest has the least amount of old growth forest in Sierra Nevada (SNFPA FEIS Volume 2, Chapter 3, part 3.2, page 138). The Campaign notes that many of these parcels were subjected to thinning projects in the 1990s for these reasons. By implementing group selection on these previously treated stands, the Forest Service is simply restarting the cycle of even-aged, dense, small tree forest, with little habitat value and high potential for crown fire. (See Key, J. 2000; Odion et al. 2004; Stephens, 1998, Blakesley 2004.)

6. The Empire Project Fails to Take a Hard Look at Impacts to MIS and Other Sensitive Species

As discussed below, the Empire Project fails to comply with monitoring requirements for MIS and other sensitive species. However, population and other monitoring information is needed as a baseline in order to fully evaluate fully the effects of the Empire Project on the environment. Without such data, the Forest Service cannot present adequate information to determine what the impacts of the project will be on such species. In addition to being a NFMA violation, these failures constitute a failure to take a hard look under NEPA.

a. The analysis of effects to management indicator species is inadequate.

Section VI.B.3 below identifies a number of species for which the population monitoring was not completed or the data collected or analysis completed was inadequate. Among these species are numerous management indicator species (MIS) species for the Plumas National Forest. As identified in the Regional direction on the analysis of management indicator species and documentation in project level NEPA (USDA Forest Service 2006b), "when the governing LRMP requires population monitoring or population surveys, the MIS effects analysis for the project must be informed by population monitoring

data." Since the population monitoring data are absent or inadequate for many of the MIS species the effects analysis for these species is also inadequate.

b. Snag levels in the project area are not evaluated.

Large snags are an essential habitat element for many wildlife species that occur in the Empire Project area including California spotted owl, northern goshawk, marten and woodpeckers. (*See* for example species accounts in the BE, pp. 24-46). However, no assessment of the quality, density, and distribution of snags in the Empire Project area or the Plumas National Forest as a whole has been disclosed in the environmental analysis. Aside from such assessment being required by the forest plan monitoring requirements (*see* above discussion on this point), a baseline assessment of snag levels is necessary to understand the context for the effect that further reductions in snags will have on numerous species.

The FSEIS states that "past silvicultural and timber sale actions on both National Forest and private land described under cumulative effects...has contributed to a decline in snag and down log abundance across the wildlife analysis area." FSEIS, p. 162. The FSEIS continues this discussion in stating that "it is suspected" that snag recruitment has increased in the area since the mid-1990's. *Id*. There is, however, no data presented on the size and density (units per acre) of snags in the Empire project area or the Plumas National Forest. Any conclusions about snag size and density are speculative and not supported by evidence.

The FSEIS relies on the notion that some level of snags (where they exist in the project area) will be retained, but that this alteration will have a negligible effect on snag abundance in the assessment area since other areas remain untreated. This reasoning is unsound for several reasons.

First, we know nothing of the abundance of snags in the untreated areas except that their abundance has declined due to past practices. *Id*. Further, some of the past practices (i.e. clearcutting on private land) have resulted in the total loss of snags on the affected land. *Id*., p. 163. If these areas have levels of large snags that are lower than densities needed by the affected species, additional losses of large snags resulting from the project will contribute to an already degraded habitat condition. Thus, knowledge of the existing setting is essential to judging the relative effect of the Empire Project on the environment.

Second, large snag requirements for some species are considerably higher for species not evaluated by Bull et al. (1997). For instance, Verner et al. 1995 recommends retaining 8 of the largest snags per acre with the condition that snags less than 15" dbh do not count as large. (Verner et al. 1992, p. 22). Additionally, snag densities of 5 snags greater than or equal to 24" dbh per acre are considered necessary for suitable resting and denning for marten. (USDA Forest Service 2001a, Volume 3, Chapter 3, part 4.4, p. 20). Thus, reliance on Bull et al.'s suggestion that 4 large snags per acre are sufficient to provide for habitat needs applies to a limited number of species. Further, there are large areas (i.e. the fuel treatments and group selection units) within the Empire Project that intend to retain far fewer

than 4 large snags per acre.

Third, the FSEIS implies that since the snag retention applied in the Empire Project will result in 2 to 6 snags per acre retained in the treated areas, habitat needs will be met for cavity nesting birds such as woodpeckers (MIS analysis) and other species. This assumption, however, does not take into account that it is likely that no snags will be retained on the areas proposed for group selection. (FSEIS, p. 112). If group selection units are located in snag rich areas and are adjacent to snag poor areas, the effect of group selection on snag abundance could be disproportionately high. Similarly, the importance of snags relates to a combination of their abundance, size and distribution[7] -- such information is lacking in the project analysis. Overall, the lack of site specific information on snag quality, quantity and distribution make it impossible to evaluate the likely effect of the project on habitat quality. Thus, the FSEIS conclusion in the project will have minimal effects on habitat trend (see for example BE, effects to forest carnivores, p. 121) is not supported by site specific data on snag conditions.

As early as 1988, the importance of snags on the forest was recognized. The PLRMP (p. 5-12) requires that snags be inventoried annually "during timber sale planning, compartment exams, or fuel reduction programs." The failure to gather and report information on snag densities is a violation of the forest plan. The failure to consider this information in the environmental analysis is also a violation of NEPA since in its absence, the quality of the available habitat can not be known nor can mitigation measures that might improve poor conditions be identified.

c. Cumulative Impacts are Not Adequately Evaluated

The Empire Project documents still fail to assess adequately the cumulative impacts to the Plumas National Forest (PNF) MIS. The PNF Forest Plan and FSM (2620) require management indicator species to be identified, monitored and viable populations maintained. (Preston 2005a, 2005b). The PNF Plan identified monitoring requirements at the Forest level (1988 PNF Forest Plan, Chapter 5) and indicates that several PNF management indicator species assessed in the Empire DIES require annual monitoring. No PNF monitoring data appears in the FEIS or MIS report therefore the Plumas National Forest cannot support its speculative conclusions regarding the trends of specific MIS in the Empire project. *See* Preston 2005a, 2005b.

Overall, the Forest Service FEIS/MIS analysis fails to mention several other projects (proposed or decided) on the PNF that will impact forest-wide MIS cumulatively, including the Basin, Watdog, and Happy Jack projects. Many of the MIS identified in the Forest Plan and the Empire project move throughout the Plumas National Forest and are therefore potentially affected by a variety of cumulative impacts across the forest, not just limited to

[7] As an example, this relationship was emphasized by Bull et al. (1997) in their review of snags and cavity nesting birds.

the Empire project area. For example, Mule and Black tail deer migrate from winter to summer range, and fawning areas through migration corridors. These various habitat elements are not all confined to the Empire project area. (Preston 2005a, 2005b). The Empire FEIS/MIS analysis is flawed because the impact assessment focuses upon the analysis area and not the specific MIS identified in the project/forest plan. Further, the Empire FEIS and MIS report admits to no population or habitat monitoring for each of the woodpecker species mentioned in the MIS report p. 21. (*Id*.))

The cumulative effects analysis lacks necessary habitat and population data for several forest-wide MIS as discussed in Preston 2005a, 2005b. The spatial scale of the impact assessment is inappropriately focused on the analysis area and not on the species that migrate, disperse and complete various life-cycle functions outside the analysis area. The Forest Service can not treat the analysis area like a fence which limits MIS movement. Such a notion is contrary to sound science and existing law. *See e.g., NRDC v. Hodel*, 865 F.2d 288, 299 (D.C. Cir. 1988); S*ave the Yaak Comm. v. Block*, 840 F.2d 714, 720-721 (9th Cir. 1988); *Washington Trails Association v. United States Forest Service*, 935 F. Supp. 1117, 1122-23 (W.D. Wash. 1996).

Further, the Forest Service has still not conducted a meaningful review on the impacts of the H-F QLG pilot project on a variety of wildlife including the PNF MIS. The 1999 QLG FEIS section AA-18 identifies changes in habitat values for MIS in the pilot project area. Many of these predicted changes indicate significant adverse cumulative impacts and threat to viability of a number of MIS species. Preston 2005a, 2005b. For example, the Grey Squirrel is expected to see a 45% reduction in habitat due to group selection logging and a 9% reduction in habitat due to DFPZ construction. Pileated Woodpecker is expected to see a 35% reduction in habitat due to group selection and a 23% reduction due to DFPZ construction. Page 32 of the MIS report mis-states the habitat impacts to MIS from the 1999 QLG pilot project. Table 9 only show changes in habitat suitability from the DFPZ construction and fails to include the habitat loss from group selection logging as disclosed in the 1999 QLG FEIS APP AA-19. Preston 2005a, 2005b.

The Empire FEIS and MIS report fails to assess the cumulative impacts from the QLG project to forest plan MIS which migrate through, disperse young, and utilize habitat within and outside the project area. The MIS analysis is flawed for not considering the forest plan level cumulative impacts while utilizing forest plan level indicators and for failing to assess impacts from the HFQLG Pilot Project program of work. *See e.g., NRDC v. Hodel, supra.*

7. The Empire Project Fails to Present Adequate Information to Determine the Effects of Group Selection in Critical Habitat Areas

The Empire Project documents do not specify the location of Group Selection units, and thus the public is unable to assess the impacts of this treatment method in critical habitat areas such as within owl nest cores, home range core areas or home ranges, or marten

carnivore networks. The location of GS unit placement could have significant spatial impacts, however, to the extent they reduce core habitat below certain minimum thresholds, fragment habitat, cut off dispersal or movement corridors or open up the forest to predators such as the barred owl. Further, as discussed above, if group selection units are located in snag rich areas and are adjacent to snag poor areas, the effect of group selection on snag abundance could be disproportionately high.

The absence of information regarding GS placement location undermines the public's ability to review and assess the impacts of the Empire Project because research indicates that small pockets of large trees and old forest are important for associated wildlife like the California spotted owl (Blakesley 2003; Moen and Gutierrez 1997), Pacific fisher (USDA Forest Service 2004b, p. 139), and American marten. "Pacific fishers, American martens, and California spotted owls use small aggregates of large trees for denning, resting, and nesting sites," even within larger stands that do not constitute old growth. (USDA Forest Service 2001a, Volume 2, Chapter 3, part 3.2, p. 131). Failure to protect these small but important stands could degrade potential owl nesting habitat and reduce the likelihood of nesting success (Verner 2003, p. 4; Blakesley and Noon 2003) and eliminate potential denning and resting sites for fisher (Barrett 2004). (Bond 2005, Tempel 2005a, 2005b).

Because of their ecological importance, the 2001 Framework protected these small old growth stands from intensive logging. The 2004 Framework's removal of protection for old growth stands of 1 acre or larger was strongly criticized by the Fish and Wildlife Service and by the Forest Service's Washington Office. The Washington Office specifically cited this weakening of the Framework as a factor in its conclusion that the new standards "do not maintain owl habitat and substantially increase the risk that self sustaining owl populations will not be maintained." (Gladen 2003, pp. 10-11). According to the Fish and Wildlife Service, this change may "have significant effects on old forest habitats used by the owl" by allowing "reduction of structural complexity within treated habitats," which "could allow stands of potential owl nesting habitat to be removed." (USDI Fish and Wildlife Service 2003, pp. 4- 5). Therefore, it is critically important that the Empire project documents contain accurate information and analysis regarding these small old growth stands and how they will fare if the Empire Project is implemented. Without information indicating how such quality stands are being avoided by groups, the public is unable to adequately assess whether this treatment is having significant impacts.

B. THE EMPIRE PROJECT VIOLATES THE NATIONAL FOREST MANAGEMENT ACT

The National Forest Management Act (NFMA) directs the Forest Service to "provide for diversity of plant and animal communities" in the planning process. 16 USC 1604(g)(3)(B). The Forest Service's regulations that implement this statutory mandate require that "[f]ish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species." 36 CFR 219.19. "For planning purposes, a viable population shall be regarded as one which has the estimated numbers and

distribution of reproductive individuals to insure its continued existence is well distributed in the planning area." *Id*. With respect to Forest Service designated sensitive species - which includes the California spotted owl, American marten, northern goshawk, and Pacific fisher -- the agency is further required "to insure their viability and to preclude trends toward endangerment that would result in the need for Federal listing." (Forest Service Manual 2672.1.) Through these steps in this process, NFMA imposes substantive constraints on the management of forest lands to insure biological diversity. *See Neighbors of Cuddy Mountain v. United States Forest Service,* 137 F.3d 1372, 1379- 1380 (9th Cir. 1998).

The Empire Project would threaten the viability and distribution of wildlife species, including the California spotted owl, American marten, and Pacific fisher. The Project continues the Forest Service's approach of intensive fuel reduction and logging despite the science indicating that these species are in decline and that further reduction in quality habitat poses grave risks to their future viability in this area. Moreover, the project would contribute to a trend towards federal listing of these same species, contrary to law. The FEIS and BE rely heavily on the 2004 Framework to conclude that the Empire Project will not threaten the viability of sensitive species. However, as demonstrated in the Campaign's appeal of the 2004 Framework (SNFPC et al. 2004), that conclusion is unwarranted. In his review of the final Empire planning documents, Tempel concludes "that the FEIS action (Alternative D) will fail to ensure the long-term viability of the California spotted owl population within both the Empire Project area and the northern Sierra Nevada at an acceptable level of risk." (Tempel 2005).

1. The Empire Project Is Not Ensuring Viability for the California Spotted Owl

As described in our prior comments and Appeal, the Empire Project threatens the viability and distribution of the California spotted owl both within the project area and in the surrounding national forest. *See also* Tempel 2005a & b; Bond 2005, 2006.

The Empire Project does not ensure viability because, as discussed above and in prior comments: 1) the Forest Service has not provided sufficient information to determine that owls will have enough quality habitat to survive at each of the three relevant spatial scales, nest core, home range core area and home range; 2) the Forest Service lacks sufficient information to determine whether owls have the "estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area;" 3) to the extent such information exists, it suggests that owls lack these numbers and appropriate distribution in the planning area; 4) the Forest Service is not considering the adverse impacts of fuel reduction treatments on owl habitat that the Empire project documents are characterizing as suitable 4M; 5) the Forest Service has not adequately considered the potential for owl habitat fragmentation or cumulative impacts.

The SCR agreed that information on CSO population trends is uncertain...the uncertainty lies in whether populations are in fact declining, not whether they are

increasing." (SCR 2005). The SCR explained this point as follows:

> When presenting statistical information, scientists generally choose 95% confidence intervals and test hypotheses with an alpha level of 0.05 (5% chance of committing a Type 1 error...We are making an inference about the degree of difference between the observed population trend and a stationary (lambda = 1) population. When the 95% confidence intervals around lambda overlap 1.0, we are not 95% sure that the population is stable. Instead, we are NOT 95% sure that the population is declining. (SCR 2005)

Site-specific information from the Empire Project area exacerbates these concerns. Although owl HRCAs are well distributed across the wildlife analysis area, they are also confined across the Empire Project area by large blocks of unsuitable habitat." Thus the FEIS concludes that it is uncertain whether the same number of owl sites occupied in 2002, 2003 and 2004 would be occupied post-project.

As discussed above, the high risk posed by cutting in these areas is further demonstrated by 2004 monitoring results which show a downward trend in owl activity over the last 20 years. (*See* BE attachment # 5, California Spotted Owl Historical Information for Empire Project Analysis Area.") The 2004 QLG monitoring report shows that the number of territorial owls has dropped from 70 in 2003 to 50 in 2004 (OLG 2004, p. 132.) Further, the Empire BE attachments # 4-5 discloses several indicators related to low habitat quality. First, as discussed below, in PACs (017, 039,040) the same owl is using all three territories; Second, many of the PAC/HRCAs have no detections (PACs 011, 026, 036, 113, 180, 295 and SOHA 018) indicating the likelihood of existing low quality habitat conditions. In addition, barred owls are on the increase with 20 of the 31 barred owl records occurring between 2002-2004. (FEIS p. 3-82.) These factors indicate that that further intensive logging in and around areas where owls still persist poses grave risks by reducing habitat quality, limiting the ability of owls to survive in sufficient numbers in the Project and in the Assessment Area.

As discussed below, the quality of owl habitat in the project area is of particular concern given that the owl study areas are typically conducted in areas with higher quality habitat than in Empire. Thus elimination of further quality owl habitat poses grave risks due to the owl's uncertain viability. As noted by the SCR:

> One might also reasonably ask whether the study areas chosen for conducting demographic studies are representative of CSO populations in general or are at the higher end of quality (although possible, it seems unlikely that these study areas are at the lower end of the habitat quality spectrum for the species. If the reality of CSO populations is that they are declining, activities that further remove their habitat are likely to further contribute to their decline. If CSO populations are in reality stationary, activities that remove their habitat may or may not push the population from stationary to declining, depending on the magnitude of habitat loss and how close to declining the population currently is.

(SCR 2005)

Thus, in considering spotted owl viability, the Forest Service must proceed with extreme caution in implementing any project that adversely affects suitable owl habitat or dispersal matrix lands. Tempel 2005a & b. In sum, there is substantial uncertainty, and thus substantial cause for concern regarding the owl's population throughout the Sierra Nevada, within the Plumas National Forest, and within the Empire Assessment area. Tempel 2005. *See also* Franklin et. al. 2004 ("all demographic evidence available....suggests substantial caution in owl conservation and management efforts.") Bond 2005, 2006 ("Given the poor owl occupancy in these PACs and the limited amounts of existing suitable habitat, I do not believe the Forest Service has any basis to claim that further reductions in habitat quality will not threaten owl viability in the project area.")

As discussed above and in prior comments, the Forest Service also cannot insure the viability of the spotted owl as it implements the QLG in a manner consistent with the Empire Project. The Legacy refers the Forest Service to its prior comments and October 2005 appeal to support this ground for appeal.

2. The Empire Project Is Not Ensuring the Viability of the American Marten.

As described in our prior comments and Appeal, the Empire Project threatens the viability and distribution of the American marten both within the project area and in the surrounding national forest. *See also* Kucera 2005, 2006, Britting 2007b,, Figure 3.

The Empire Project does not ensure viability because, as discussed above and in prior comments: 1) the Forest Service has not considered or explained how marten's can remain viable when they appear to have disappeared from much of the Plumas National Forest; 2) the Forest Service lacks sufficient information to determine whether marten have the "estimated numbers and distribution of reproductive individuals to insure its continued existence is well distributed in the planning area;" 3) to the extent such information exists, it shows that marten lack these numbers and appropriate distribution in the planning area; 4) the Forest Service is not considering the adverse impacts of fuel reduction treatments on marten habitat that the Empire project documents are characterizing as suitable 4M; 5) the Forest Service has not adequately considered the potential for marten habitat fragmentation or cumulative impacts.

As discussed above and in prior comments, the Forest Service also cannot insure the viability of the marten as it implements the QLG in a manner consistent with the Empire Project. The Legacy also refers the Forest Service to its prior comments and October 2005 and 2006 appeals to support this ground for appeal.

3. The Forest Service is Not Complying with its Legal Obligations to

Monitor for Wildlife

The Legacy incorporates its prior comments and appeals on this issue.

The FSEIS still does not address the monitoring required by the Plumas Land and Resource Management Plan as originally adopted or amended by Appendix E. In several cases, the annual population monitoring required by the forest plan has not been completed. In addition, population monitoring required in Appendix E for species at risk is not addressed. In particular, the Forest Service does not appear to acknowledge it has any obligations with respect to Species at Risk (SAR) set forth in Appendix E. The failure to address these monitoring issues violates the forest plan and the National Forest Management Act.

a. The Annual Monitoring Required By The Forest Plan As Adopted in 1988 Has Not Been Completed.

The Plumas LRMP, as first adopted in 1988, requires annual population monitoring for several of the MIS species including three that are addressed in the Empire Project documents – golden eagle, prairie falcon, and goshawk. The MIS report for the Plumas National Forest (Plumas National Forest 2006) lists 20 species and summarizes the monitoring results for these species. Golden eagle, prairie falcon, and goshawk are addressed in this report.

The LRMP requires the national forest to "Report on territory occupancy and reproductive success at selected sites annually" for both golden eagle and prairie falcon. (USDA Forest Service 1988, p. 5-9, Table 5-1). For golden eagle, the number of birds counted on five consecutive years (1988 to 1992) is displayed in Figure 11 of the forest wide MIS report. (Plumas National Forest 2006, p. 25). Results are not reported for "territory occupancy" or "reproductive success," as required by the LRMP, for the five years of monitoring displayed. The LRMP also requires that golden eagle sites be monitored "annually," and there is no data reported in the MIS report for the period 1993 to 2006. The situation is similar for prairie falcon. Annual counts of birds from 1988 to 1992 are presented in Figure 12 of the MIS report. (Ibid., p. 27). Results are not reported for "territory occupancy" or "reproductive success," as required by the LRMP, for the four years of monitoring displayed. The LRMP also requires that prairie falcon sites be monitored "annually," and there is no data reported in the MIS report for the period 1993 to 2006.

Goshawk also is addressed in the forest wide MIS report which states that there are currently 144 protected activity centers (PACs) established on the forest. (MIS report, p. 31). The LRMP requires the survey for occupancy in 25% of established nest groves annually. (USDA Forest Service 1988, Table 5-1, p. 5-7). Thus, the LRMP monitoring requirement is to survey 25% of the 144 nest stands or 36 nest stands. The MIS report indicates that between 38, 28 and 21 active nest were monitored in 2004, 2005, and 2006, respectively. In all but the first year of this monitoring, less than 25% of the PAC across the forest had been

surveyed. Based on the data provided, it appears that the annual monitoring requirements of the forest plan as adopted in 1988 have only been met for one out of 18 years.

In sum, the type of monitoring and frequency required by the LRMP, as originally adopted in 1988, has not been completed for these MIS.

b. Monitoring For Species At Risk Has Not Been Completed.

Appendix E of the 2001 ROD (USDA Forest Service 2001a, Volume 4, Appendix E) was adopted by the 2004 ROD (USDA Forest Service 2004a, p. 70). This appendix outlines the monitoring requirements for a variety of species including forest sensitive, MIS, species at risk (SAR), and other species of lesser vulnerability. Ten species were identified in the appendix as being of particular concern and they were addressed individually in the narrative. The monitoring requirements for the remaining species are summarized in a series of tables. The appendix also states that "Population and/or habitat monitoring will be conducted for all MIS and species at risk." (USDA Forest Service 2001a, Volume 4, Appendix E, pp. 62, 75, 96). Further, Appendix E makes clear that such monitoring is to occur annually.[8] Thus, annual monitoring of "population[s] and/or habitat", for SAR is required by Appendix E.

There are a number of species at risk that were addressed in the project level environmental documents for which the monitoring requirements of Appendix E for SAR have not been met. The following table lists these omitted species.

Table 1. Species at risk (SAR) considered in the Empire Project for which the monitoring requirements in the Plumas Land and Resource Management Plan (as amended in 2004) have not been satisfied in the environmental analysis.

Species	Project Document where Addressed
Swainson's thrush	Empire Project Supplemental Wildlife Report, p. 2
White-crowned sparrow	Empire Project Supplemental Wildlife Report, p. 3
Olive-sided flycatcher	Empire Project Supplemental Wildlife Report, p. 3
Band-tailed pigeon	Empire Project Supplemental Wildlife Report, p. 4
Western red bat	Empire Project BE, p. 56
Townsend's big eared bat	Empire Project BE, p. 57

[8] See for example Appendix E, p. 63, in reference to "Management Indicator and Species at Risk Issue" for Old Forest and Associated Species, "It is possible that, after a period of annual population monitoring (distribution and abundance), we will have sufficient understanding of important habitat characteristics that we can confidently monitor habitat without annual monitoring of species' distribution and abundance." Similar statements are made on pages 75 and 96 of Appendix E.

For the four birds listed above, a habitat analysis is presented but the results of the annual population monitoring required in Appendix E are not presented. The two bats listed above and evaluated in the BE report on surveys and incidental sightings from 1991, 1992, 2001 and 2002. Annuals surveys were required by the LRMP as amended in 2001 and 2004. Despite this requirement, an annual survey on some portion of the national forest was only completed in 1 out of the five years since adoption of Appendix E.

There are additional SAR that may occur in the project area, based on their geographic range and the association of habitat types affected, for which the required monitoring has not been reported.

Table 2. Species at risk (SAR) from Appendix E (USDA Forest Service 2001a) that require population monitoring and that may be affected by the Empire Project. These species were not addressed in the environmental analysis.

CWHR #	Common Name	Habitat Type[1]
B129	Peregrine falcon	Woodland, forest riparian
M025	Long-eared myotis	Brush, woodland, forest; crevices, bark, snags
M026	Fringed myotis	Hardwood-conifer; crevices, mines
M027	Long-legged myotis	Woodland , forests, chaparral; rock tree bark, snags
M029	Small-footed myotis	Arid wooded and brushy uplands near water
M030	Silver-haired bat	Conifer, montane riparian
M034	Hoary bat	Dense foliage of medium to large trees
M037S1	Pacific western big-eared bat	Caves
M049S1	Sierra Nevada snowshoe hare	Montane riparian with thickets of alder/willow; young conifer with chaparral
M050	White-tailed hare	Early successional stages of various conifer
B272	Long-eared owl	Riparian, dense tree
B110	Osprey	Lakes, rivers; open forest for cover
B299	Red-breasted sapsucker	Montane riparian, montane hardwood-hardwood, mixed-conifer, aspen red fir; near meadows, lakes and slow streams
B430	Yellow warbler	Riparian (open canopy), montane shrub, open coniferous
FN02	Pacific lamprey	Stream

[1] Extracted from "California's Wildlife" edited by Zeiner, D.C. et al 1988-1990.

Additionally, the potential impacts of the Empire Project on these at risk species have not been evaluated in the environmental analysis. Such evaluation is warranted since elsewhere the Forest Service has determined that, for a majority of these species, a full viability analysis was required to satisfy NEPA and NFMA. (USDA Forest Service 2001a, Volume 4, Appendix E, p. 16).[9]

4. The Empire Project is Does Not Meet NFMA's Requirement that that the Forest Service Insure that Treatments Do Not Produce Substantial and Permanent Impairment of the Productivity of the Land.

NFMA directs the Forest Service to promulgate regulations specifying guidelines for forest plans that "insure research and (based on continuous monitoring and assessment in the field) evaluation of the effects of each management system to the end that it will not produce substantial and permanent impairment of the productivity of the land." 16 U.S.C. § 1604(g)(3)(C). As discussed above, other NFMA and regulatory sections require the Forest Service to avoid such impairment. *See* 16 U.S.C. § 1604(g)(3)(E)(i); 36 C.F.R. § 219.27(a)(1); 219.27(b)(5). *See also* Plumas LRMP at 4-43.

The Region 5 Soil Quality Standards (FSH 2509.18,2[1]), the service-wide soil management handbook (FHS 2905.18-91-1) establish the technical thresholds that determine impairment for soil cover, soil compaction and organic matter. The SQSs establish soil properties, conditions, and associated threshold values that are used to avoid detrimental soil disturbance.

The Empire FSEIS fails to explain or discuss how the analysis or the project as designed meets the soil quality standards with respect to soil compaction and organic matter. Further, the Empire Project documents do not "insure" research and continuous evaluation that will avoid substantial and permanent impairment of the productivity of the land." 16 U.S.C. § 1604(g)(3)(C). For these reasons, as described below, we ask that the decision for this project be reversed and that the Plumas National Forest be directed to undertake the appropriate analysis and to redesign the project to comply with the Region 5 soils quality standards and the forest plan.

a. The Forest Service is Not Insuring that Detrimental and Impairing Soil Compaction is not Occurring

As discussed above, the Forest Service relies on a faulty system of visually observing skid trails and landings as a proxy for actually measuring soil compaction in the field, as

[9] See also the Table of Contents for the 2001 FEIS (USDA Forest Service 2001a, Volume 3, Chapter 3, part 4) that lists the species for which viability assessments were completed.

required by NFMA, NFMA regulations and the Forest Service handbook. Even if the Forest Service were entitled to dispense with field measurements of soil compaction, visual observation of skid trails and landings is not an adequate proxy because 1) if fails to account for soil compaction that occurs from a host of logging activities in addition to skid trails and logging that can create detrimentally compacted soil over time; and 2) older skid trails and landings created on the Forest in the past will not generally be observable in the field even though the impacts of such activities may last for 30 to 70 years. *See* Johansson 2006, 2007a, 2007b. Further, the Forest Service's conclusions are directly contrary to the evidence indicating that detrimental soil compaction is increasing in the Plumas National Forest and is a likely consequence of future OLG projects, including the Empire Project. *See* Johansson 2006, 2007a, 2007b. As discussed above and in *See* Johansson 2007b, the Forest Service has no current methodology or evaluative technique in place that will insure that further impairment is not occurring. .

The regional soil quality standards set a threshold of 10% reduction in soil porosity; above this level, there is detrimental soil compaction. (FSH 2509.18,2[1]). The service wide direction on soil management establishes a threshold of 15% of the area affected with a detrimental condition as a "guideline for determining when the change becomes detrimental or significant." (FHS 2905.18-91-1).

The soils assessment did not report measurements on detrimental compaction as related to the loss of 10% porosity. As stated by soils expert Wayne Johannson:

> "During transects, extent of detrimental compaction was estimated by visually assessing whether a sample point was located on a skid trail, landing or non-system road. The standard for detrimental compaction analysis is quantitative; the threshold for detrimental soil compaction to occur is a 10% loss in soil porosity. This cannot be determined visually. It is insufficient to rely on visual recognition of old skid trails and landings and presume that they are the only areas exceeding the standard. The accepted standard for conducting soil transects is at each transect point to dig into the soil and physically assess the soil structural characteristics." (Johannson 2006, p. 2).

See also Johansson 2007a, 2007b.

It can not be determined from the analysis what proportion of the activity area has a loss of 10% or more of soil porosity. Further, there is no discussion about the failure to assess soil porosity. This omission is especially significant in light of the known levels of detrimental soil condition (i.e. the portion of the activity area with a loss of 10% or more porosity) reported for other project areas on the Plumas National Forest. As noted by soils expert Johannson (2006, p. 3), two recent status reports to Congress for the Herger-Feinstein Quincy Library Group Recovery Act (USDA Forest Service 2005, 2006) each show increasing levels of detrimental soil compaction as a result of project related activities. The 2005 report (USDA Forest Service 2005, pp. 43-45), found that pre-treatment compaction for six stands covered 15% to 33% of the area and post-treatment compaction was occurring

over 20% to 58% of the given stand. The 2006 draft report (USDA Forest Service 2006a) also found that following treatment there was a significant and consistent increase in detrimental compaction that exceeded regional standards.

In response, the Forest Service claims that the Regional SQS are not directly applicable to the Plumas Forest. However, as discussed in prior comments, the 2004 Framework Amendment directs Forests to follow the regional guidelines. Further, the regional guidelines are the only source that establishes the thresholds required under NFMA for determining whether forest service land is being impaired. The Forest Service does not disagree with the Regional SQS that a 10% or more reduction in soil porosity is detrimental soil compaction, but still chooses not to make the required assessment. Nothing in NFMA or the regional SQS allow the Forest Service to dispense with using the best available science to insure that applicable threshold standards are being met.

In sum, high levels of detrimental compaction and project related increases in detrimental compaction, as measured by a loss in porosity, are known to occur in project areas like the Empire Project. Absent an assessment that measures the loss of soil porosity pre-treatment and estimates the changes anticipated post-treatment, it can not possibly be known if the project complies with the Region 5 soil quality standards or if detrimental soil conditions exist. *See* Johansson 2006, 2007a, 2007b.

Even if "visible" skid trails and landings were an appropriate proxy for assessing the extent of detrimental soil compaction, the Legacy notes that the Forest Service is in fact underestimating the extent of existing skid trail and landing density in the planning area. As previously discussed in our DSEIS comments, skid trail and landing density was estimated by the use of points sampled along a transect. (CWE and Soils Assessment, pp. 16-17). To evaluate this, transects "were designed to run across the slope." (*Ibid*., p. 17). Soil expert Johannson identifies that this sampling approach is in adequate because it is not likely to include landings. He states:

> "My reading of the protocol was that since it was designed to travel between roads and on the contour, it would not be expected to encounter any landings. Yet there was no acknowledgement of this and corresponding adjustment to the data in Table 12 on page 48. There should have been an acreage added for the landings to the data to reflect this or state that it only included the observed skid trails."

(Johannson 2006, p. 2). Thus, the area estimated to be occupied by skid trails and landings is underestimated by some unknown amount. This has not been disclosed in the analysis.

Setting aside the likely underestimate of existing skid trail and landing density noted above, skid trail and landing density as estimated in the analysis currently exceeds the forest plan standard of 15% of the stand on 3 units. (CWE and Soils Assessment, pp. 48-49). Action alternatives that include these units each result in increased density. (*Ibid*.) Following project implementation (including the application of mitigation measures), the analysis identifies that "these additional subsoiling practices would leave planning areas 6G,

7 G and 9 G in an improved state, trending towards levels that comply with the PNF LRMP." (*Ibid*., p. 46). It is clear that these units will not comply with the forest plan following the project. Lack of compliance with the forest plan is a violation of NFMA.

Mitigation measures to address detrimental soil conditions include the subsoiling of "all landings and skid trail approaches to landings" and "new temporary road" (FEIS, p. F-4) to reduce the effects of compaction. Subsoiling only a portion of the skid trail and landing system leaves skid trails farther than 200 feet from the landing intact and does nothing to remediate legacy skid trails that may not be used in the project. Soil expert Johannson found in an assessment of skid trails and landings of projects located on the Plumas National Forest that the "first 200 feet from a landing represents on average less than 1-3% of the total skid trails in a unit." (Johannson 2006, p. 4). Thus, a significant portion of the skid trail system in the Empire Project will remain in place even after mitigation measures have been applied. Furthermore, detrimental compaction that may exist outside of these areas proposed for subsoiling (e.g. on legacy skid trails and landings not utilized by the project) will not be affected by the mitigation measure to subsoil certain areas.

Subsoiling as a mitigation measure is also further compromised by its likely effectiveness to reduce soil compaction. Recently, the Freeman DEIS (Plumas National Forest 2006a, p. 336) identified that "monitoring on the Plumas, Lassen and Tahoe has shown subsoiling to be only 66 percent effective." Thus, the presumption in the FSEIS that subsoiling will be effective in achieving the forest plan standards can not be supported by recent monitoring.

The claims in the FSEIS that detrimental soil compaction will be mitigated by the project design are not supported by the record and appear to be incorrect.

b. The Forest Service is Not Insuring that Organic Soil Values are not being Detrimentally Impaired

The R5 Soil Quality Standards (FSH 2509.18,2[1]) require that "organic matter is maintained in amounts sufficient to prevent short or long-term nutrient cycle deficits, and to avoid detrimental physical and biological soil conditions." One element of the regional standards for organic matter is the retention of large woody material. Large logs are defined as those that are "at least 20 inches in diameter and 10 feet long." (Ibid.) The soils assessment does not directly survey the amount of down wood in the analysis. Instead, the analysis reports a percentage of points along transects for the various units that had down wood greater than 16" diameter. The soils analysis then speculates that based on a single assessment elsewhere in the Sierra Nevada[10] that this percentage of transect points with "large" wood satisfies the Regional 5 soil quality standards of five large (greater than 20" diameter) logs per acre. (CWE and Soils Assessment 2006, 34). .

[10] It also should be noted that the reference for "Stephens and Moghaddas in press c" is not listed in the references cited section of the soils report nor is it listed in the FSEIS.

As demonstrated by other projects, surveys for large down wood are routinely completed and discussed in project analyses. (See for example the Phoenix Project on the Sierraville District, Tahoe National Forest.). Estimates of large down wood per acre have also been reported. (*Ibid*.) The Region 5 soils quality standards require the survey of large wood during project planning. For reasons that have not been addressed in the analysis, the density (logs per acre) of large wood has not been determined in the Empire Project area. Such an assessment is necessary to determine if the Region 5 soils quality standards are being met and to further determine if the "changes in soil properties and soil conditions would result in significant change or impairment of the productivity potential, hydrologic function, or buffering capacity of the soil."

Even if one accepts the integrity of the analysis method used to estimate the amount of large wood in the project area, the soils analysis fails to identify that nearly half (16 out of 36) of the units to be treated currently do not have any large down wood. (*Ibid*., Tables 8 and 9, pp. 38-39). In fact, only 25% of the units have 2% or more of the transect points with large woody debris. The soils analysis makes an issue of comparing the survey data to a study describing the nature of down wood in circumstances where 2% of the area is covered (and by inference seems to suggest that sufficient large wood occurs in such units) (*Ibid*., p. 34); however, relatively few units in the Empire Project meet or exceed this infered level of large down wood. The lack of down wood in nearly half of the affected units must be discussed in relation to the failure to meet regional soil qualtiy standards and the effect this has on detrimetnal effects to soil condition.

The only mitigation measure addressing any potential deficit is to generally retain 10-15 tons per acre of large down woody material. Because this standard only requires retention of existing down wood, it does nothing to mitigate or redress any potential shortfall. The Region 5 soils quality standards identifies the following to alleviate deterimetnal effects: "Import organic material, incl. cull logs." (FSH 2509.18,2[1]). Once an approapriate analysis has been completed, the project or an alternative should be designed to include this mitigation measure.

VII. RELIEF REQUESTED:

The Empire Project fails to ensure viability of sensitive wildlife species in the Forest and fails to supply critical information, use the best available science, consider all reasonable alternatives and assess environmental impacts as required by law. The Legacy thus again requests the Appeal Deciding Officer to set aside the Empire Vegetation Management Project SFEIS and ROD and remand this project for further public review as required by law.

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Respectfully submitted,

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REFERENCES

Aubry, K.B., and Lewis, J.C. 2003. Extirpation and reintroduction of fishers (Martes pennanti) in Oregon: implications for their conservation in the Pacific states. Biological Conservation 114:79-90.

Barrett, R. H. 1999. Declaration for Herger-Feinstein Quincy Library Group Final Environmental Impact Statement.

Barrett, R.H. 2004. A critique of the Sierra Nevada Forest Plan Amendment final supplemental environmental impact statement and record of decision. April 25, 2004.

Bart, J. 1995. Amount of suitable habitat and viability of Northern Spotted Owls. Conservation Biology 9:943-946.

Bingham, B.B., and Noon, B.R. 1997. Mitigation of habitat "take": application to habitat conservation planning. Conservation Biology 11:127-139.

Blakesley, J.A. 2003. Ecology of the California Spotted Owl: breeding dispersal and associations with forest stand characteristics in northeastern California. Ph.D. dissertation, Colorado State University, summer 2003.

Blakesley, J.A. and Noon, B.R. 1999. Summary Report: Demographic Parameters of the California Spotted Owl on the Lassen National Forest; Preliminary Results (1990-1998). February 1999.

Blakesley, J. A. and Noon, B.R. 2003. Response to Demography synopsis for Cal Owl 12-month finding. Department of Fishery and Wildlife Biology. Colorado State University, Fort Collins, CO 80523.

Blakesley, J.A. and Noon, B.R. 2004. Comments on Sierra Nevada Forest Plan Amendment - Final Supplemental Environmental Impact Statement. April 25, 2004.

Blakesley, J.A., B.R. Noon, and D.R. Anderson. 2005. Site Occupancy, Apparent Survival, and Reproduction of California Spotted Owls in Relation to Forest Stand Characteristics, Journal of Wildlife Management: Vol. 69, No. 4 pp. 1554–1564.

Blakesley, J.A., Anderson, D.R., and Noon, B.R. 2006a. Breeding dispersal in the California spotted owl. The Condor 108:71-81.

Blakesley, J.A., Seamans, M.E., Conner, M.M., Franklin, A.B., White, G.C., Gutierrez, R.J., Hines, J.E., Nichols, J.D., Munton, T.E., Shaw, D.W.H., Keane, J.J., Steger, G.N., Noon, B.R., McDonald, T.L., and Britting, S. 2006b. Demography of the California Spotted Owl

in the Sierra Nevada: Report to the U.S. Fish and Wildlife Service on the January 2006 meta-analysis. Draft report, February 21, 2006.

Bond, M. 2003. Comments on the Sierra Nevada Forest Plan Amendment Draft Supplemental Environmental Impact Statement. September 10, 2003.

Bond, M. 2004. Critique of North 49 Project, Lassen National Forest, Hat Creek Ranger District. October 1, 2004.

Bond, M. 2005. Critique of Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District.

Bond, M. 2006. Critique of Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, September 28, 2006.

Bond, M. 2007. Critique of Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, July 30, 2007

Britting, S. 2004. Analysis of vegetation and land allocations in the Empire Project area. October 1, 2004.

Britting, S., 2005. Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District. July 5, 2005

Britting, S., 2006. Analysis of Habitat in Owl Site PL133 and the Carnivore Network As Affected by the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District. October 1, 2006

Britting, S., 2007a, Analysis of Habitat in Owl Sites in the Vicinity of the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, April 14, 2007

Britting, S., 2007b, Projects on the Plumas National Forest and the Carnivore Network , July 30, 2007

Buskirk, S.W. 2003. Comments on the Sierra Nevada Forest Plan Amendment Draft Supplemental Environmental Impact Statement. September 7, 2003.

Center for Biological Diversity et al. 2004. An updated petition to list the California spotted owl (Strix occidentalis occidentalis) as a threatened or endangered species. September 2004.

Chapin, T.G., Harrison, D.J., and Katnik, D.D. 1998. Influence of landscape pattern on habitat use by American marten in an industrial forest. Conservation Biology 12(6):1327-1337.

Chatfield, Andrea H. 2005. Habitat selection by a California spotted owl population: A landscape scale analysis using resource selection functions. M.S. Thesis, Department of Fisheries, Wildlife, and Conservation Biology, University of Minnesota, December 2005.

Franklin, A.B., Anderson D.R., R. J. Gutierrez, Burnham, K.P. 2000. Climate, Habitat Quality, and Fitness in Northern Spotted Owl Populations in Northwestern California. In Press: Ecological Monographs 2000.

Franklin, A.B., Gould, G.I., Gutierrez, R.J., McKelvey, K., and Seamans, M. 2003. Letter to Jack Blackwell, Regional Forester. February 22, 2003.

Fule, P. Z., Waltz, A. E. M., Covington, W. W. and Heinlein, T. A. 2001. Measuring forest restoration effectiveness in reducing hazardous fuels. Journal of Forestry, November 2001.

Gladden, J.T. 2003. Memorandum from James T. Gladen, Director, Watershed, Fish, Wildlife, Air and Rare Plants, to Kathleen Morse, Interdisciplinary Team Leader, Subject: Watershed, Fish, Wildlife, Air and Rare Plants Staff comments on the Sierra Nevada Forest Plan Amendment draft supplemental environmental impact statement. September 12, 2003.

Hargis, C.D., and Bissonette, J.A. 1997. Effects of forest fragmentation on populations of American marten in the intermountain west. Pages 437-451 in Martes: taxonomy, ecology, techniques, and management. The Provincial Museum of Alberta, Canada.

Hargis, C.D., Bissonnette, J.A., and Turner, D.L. 1999. The influence of forest fragmentation and landscape pattern on American martens. Journal of Applied Ecology 36:157-172.

Johannson 2006 – Declaration of Wayne Johannson Regarding Empire Vegetation Management Project, September 30, 2006 (with attached Memo from Johannson dated June 13, 2001 re Sale Administration on the Beckwourth District and NEPA compliance)

Johannson 2007a – Declaration of Wayne Johannson Regarding Empire Vegetation Management Project, April 4, 2007

Johannson 2007b – Declaration of Wayne Johannson Regarding Empire Vegetation Management Project, July 30, 2007

Kucera, T.E. 2004a. Comments on the North 49 Project, USDA Forest Service, Lassen National Forest, Hat Creek Ranger District. October 2, 2004.

Kucera, T.E. 2004b. Comments on the Sierra Nevada Forest Plan Amendment final supplemental environmental impact statement. April 24, 2004.

Kucera, T.E. 2005a. Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District. June 30, 2005.

Kucera, T.E. 2005b. Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District. October 11, 2005.

Kucera, T.E. 2006. Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District. October 2, 2006.

Kucera, T.E., Zielinski, W.L., and Barrett, R.H. 1995. The current distribution of American martens (Martes Americana) in California. California Fish and Game 81:96-103.

Lassen National Forest 1992. Land and Resource Management Plan. USDA Forest Service, Pacific Southwest Region.

Lewis, J.C. 2003a. Comments on the Sierra Nevada Forest Plan Amendment draft supplemental environmental impact statement. September 12, 2003.

Lewis, J.C. 2003b. Comments on Fish and Wildlife Service 90-day finding for fisher. August 18, 2003.

Moen, C.A. and Gutierrez, R.J. 1997. California spotted owl habitat selection in the central Sierra Nevada. Journal of Wildlife Management 61:1281-1287.

Noon, B.R. 2004. Letter to Jack Blackwell. April 25, 2004.

Odion, D., 2005. Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District. July 5, 2005

Peery, Z. 2004. Declaration of Zach Peery, M.S. April 25, 2004.

Potvin, F., Belanger, L., and Lowell, K. 2000. Marten habitat selection in a clearcut boreal landscape. Conservation Biology 14:844-857.

Preston, M., 2005a. Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, July 5, 2005.

Preston, M., 2005b. Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, October 11, 2005.

Rice, Carol L. 2005 Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, October 11, 2005

Rice, Carol L. 2006a Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, April 5, 2006

Rice, Carol L. 2006b Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, October 2, 2006.

Rice, Carol L. 2007 Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, April 16, 2007

Rice, Carol L. 2007b Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, July 30, 2007

Rosenberg, D. K. and K. S. McKelvey. 1999. Estimation of habitat selection for central-place foraging animals. Journal of Wildlife Management 63:1028—1038.

Seamans, Mark B. 2005. Population biology of the California spotted owl in the central Sierra Nevada. Ph.D. dissertation, University of Minnesota, October 2005.

Scott, J. H. and Reinhardt, E. D. 2001. Assessing crown fire potential by linking models of surface and crown fire behavior. Rocky Mountain Research Station, Research Paper RMRS-RP-29. September 2001.

Sierra Nevada Forest Protection Campaign et al. 2004. Notice of Appeal of the Record of Decision and Final Supplemental Environmental Impact Statement for the Sierra Nevada Forest Plan Amendment. April 29, 2004.

Skinner, C. N., Ritchie, M. W., Hamilton, T., and Symons, J. 2004. Effects of thinning and prescribed fire on wildfire severity. 25th annual Forest Vegetation Management Conference. Redding, California.

Stephens, S. L. 1998. Evaluation of the effects of silvicultural and fuels treatments on potential fire behavior in Sierra Nevada mixed-conifer forests. Forest Ecology and Management 105(1998): 21-35.

Stephens, S. L. 2004. Testimony before the Resources Subcommittee on Forest and Forest Health. February 28, 2004.

Stephens, S. L. and Moghaddas, J. J. 2005. Silvicultural and reserve impacts on potential fire behavior: Twenty-five years of experience from Sierra Nevada mixed conifer forests. Biological Conservation (In press).

Stine, P. A. and Keane, J. 2003. Science Consistency Report. Draft supplemental environmental impact statement, Sierra Nevada Forest Plan Amendment. Content pertaining to California spotted owls as of October 20th, 2003. November 3, 2004.

Tempel, D., 2005a. Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, July 5, 2005.

Tempel, D., 2005b. Comments on the Empire Project, USDA Forest Service, Plumas National Forest, Mt. Hough Ranger District, October 11, 2005.

Truex, R.L., Zielinski, W.J., Golightly, R.T., Barrett, R.H., and Wisely, S.M. 1998. A meta-analysis of regional variation in fisher morphology, demography, and habitat ecology in California. Final report submitted to California Department of Fish and Game. April 7, 1998.

U.S. General Accounting Office 1999. Western national forests: A cohesive strategy is needed to address catastrophic wildfire threats. GAO/RCED-99-65. Report to the Subcommittee on Forests and Forest Health, Committee on Resources, House of Representatives, April 1999.

USDA Forest Service 1993. California spotted owl Sierran province interim guidelines environmental assessment. Pacific Southwest Region. January 1993.

USDA Forest Service 1998. Sierra Nevada science review. Report of the Science Review Team. Pacific Southwest Research Station. July 24, 1998.

USDA Forest Service 1999a. Biological assessment and evaluation of Herger-Feinstein Quincy Library Group Forest Recovery Act. Prepared by Gary W. Rotta, Wildlife Biologist, Plumas National Forest. August 14, 1999.

USDA Forest Service 1999b. Herger-Feinstein Quincy Library Group Forest Recovery Act, Final Environmental Impact Statement. Pacific Southwest Region. August 1999.

USDA Forest Service 1999c. Record of Decision. Herger-Feinstein Quincy Library Group Forest Recovery Act Final Environmental Impact Statement. Pacific Southwest Region. August 1999.

USDA Forest Service 2000. Sierra Nevada Forest Plan Amendment, Draft Environmental Impact Statement. Pacific Southwest Region. April 2000.

USDA Forest Service 2001a. Sierra Nevada Forest Plan Amendment, Final Environmental Impact Statement. Pacific Southwest Region. January 2001.

USDA Forest Service 2001b. Sierra Nevada Forest Plan Amendment, Final Environmental Impact Statement, Record of Decision. Pacific Southwest Region. January 2001.

USDA Forest Service 2003. Draft Supplemental Environmental Impact Statement, Sierra Nevada Forest Plan Amendment. June 2003.

USDA Forest Service 2004a. Record of Decision, Sierra Nevada Forest Plan Amendment, Final Supplemental Environmental Impact Statement. January 2004.

USDA Forest Service 2004b. Final Supplemental Environmental Impact Statement, Sierra Nevada Forest Plan Amendment. January 2004.

USDA Forest Service 2006. Plumas-Lassen 2006 Annual Report. Pacific Southwest Research Station, Sierra Nevada Research Center. March 2007.

USDI Fish and Wildlife Service 1999. Comments, review and informal consultation on the draft environmental impact statement for the Herger-Feinstein Quincy Library Group Forest Recovery Act Pilot Project. August 17, 1999.

USDI Fish and Wildlife Service 2001. Formal endangered species consultation and conference on the biological assessment for the Sierra Nevada Forest Plan Amendment final environmental impact statement. January 11, 2001.

USDI Fish Wildlife Service 2003. Comments on the Sierra Nevada Forest Plan Amendment, Draft Supplemental Environmental Impact Statement. Sacramento Fish and Wildlife Office. September 12, 2003.

U.S. Environmental Protection Agency 2004. Comments on Clarified Proposed Action for Empire Project, Shasta County, California. June 24, 2004.

Verner, J. 2003. Letter to Regional Forester Jack Blackwell. August 31, 2003.

Verner, J., McKelvey, K.S., Noon, B.R., Gutierrez, R.J., Gould, G.I., and Beck, T.W. 1992. The California spotted owl: A technical assessment of its current status. USDA Forest Service, Pacific Southwest Research Station, General Technical Report PSW-GTR-133, July 1992.

Zielinski, W.L. 2002. Mesocarnivores: status and conservation issues. Presentation at the Sierra Nevada Science Symposium, Kings Beach, CA. October 10, 2002.

Zielinski 2004, "The status and conservation of mesocarnivores in the Sierra Nevada," in Proceedings of the Sierra Nevada Science Symposium (USDA Forest Service, General Technical Report PSW-GTR-193, December 2004).

Zielinski et al. 2005, "Historical and contemporary distributions of carnivores in forests of the Sierra Nevada, California, USA," Journal of Biogeography 32:1385-1407

EXHIBIT 1

Must the Forest Service Sustain Communities?

By Richard W. Haynes

Sustainable communities as an ideal or goal for public land management has generated a great deal of recent interest. It is a concept that has been evolving along with our notions of conservation and stewardship. While an exact definition is difficult, I assume that the word *sustainable* used with the word *community* denotes a group of people living in a place and gaining a livelihood in harmony with the surroundings.

The underlying thought about sustainable communities is the notion that their economic base lies in the nearby resource endowments. Proponents, in an almost Jeffersonian fashion, speak of sustaining communities and their associated economies based on timber, minerals, fish, and ranching and farming activities.

As part of their conservation-stewardship ethic, the federal land management agencies (the Forest Service and the Bureau of Land Management) have long been concerned about the stability of communities that are dependent on resources from public lands. While these concerns have motivated legislation (i.e., the Sustained Yield Act of 1944 and the National Forest Management Act of 1976), the agencies do not have legal mandates to provide economic stability to rural communities. Nevertheless, many agency policies have attempted to consider economic stability when undertaking management actions.

I think it is relevant to discuss recent research relative to the land management agencies' dilemma of managing the land while attempting to promote economic growth and community stability. But first I want to describe some problems in defining the term *sustainable community*.

The word *sustainability* is one of the more value-laden terms in contemporary use. In the context of forest practices, it is often used as a proxy for the question, Do we practice politically correct forestry? It also has the connotation of status quo. In this sense, the implication for communities is that without economic growth or change, people living in communities would have falling real incomes. Others use the term in a socio-economic sense to mean managing change and economic growth so that they can be sustained. The word *community* is often used ambiguously. For example, we use it to refer to a place, such as Long Creek, Ore., and at the same time use it to refer to a group of people, such as loggers.

A study that is part of the forthcoming Interior Columbia Basin Ecosystem Management Project has found little evidence that the contemporary economies in the Columbia Basin depend on extractive resource industries. Currently, only 4 percent of the jobs are linked to those sectors, while 15 percent of the jobs are attributable to recreation. (Recreation is the highest valued output from federal lands.) Results from the study suggest that communities are more complex than labels such as timber-dependent imply. Most communities have mixed economies, and their vitality is linked to other factors beyond commodity production. Resource-dependent communities that have been confronted with significant challenges — such as mill closures — are among the most resilient because they have learned how to deal with change successfully.

The word sustainability *is one of the more value-laden terms in contemporary use.*

In general, both communities and economies traditionally associated with agricultural or ranching operations are less resilient. Isolation from broad, regional economies may be a greater issue in defining timber-dependent communities than the proportion of employment in forest industries.

Another result of the Columbia Basin study raises the question of how to sustain these isolated communities in forested regions. But an often overlooked question is, Why would we want to maintain them? In spite of what some think, this is not a question of ethics, but one of societal values. Why should we elect to save some communities and let others decline?

Another argument against artificially aiding resource-dependent communities is the rapid growth in transfer payments. Transfer payments (usually some form of retirement income) now make up 22 percent of the total income in northeastern Oregon. Transfer payments grew 10 percent per year over the past two decades. This implies that in these areas, a significant amount of income does not depend on wages and that our focus on job numbers is misplaced.

A less understood factor is that most resource-dependent communities rely on both forestry and agriculture. This makes the question of whether to sustain them more difficult. But most are established communities capable of handling volatility in end markets, dealing with changes in processing structures, and providing services to a wide geographic area. Thus, public land management may not be the key to the resiliency of these communities.

These data suggest that in many areas where there are significant public lands, economies are changing fast enough that the notion of sustainable communities is not even relevant. In the Columbia Basin, economic and social change is driven by population growth — immigration and its rate of increase are both higher than the U.S. average. Economic development is encouraged by quality of life issues, a well-trained and motivated workforce, and state and local efforts.

Some of the federal predilections toward community stability seem to be based on a version of sylvan socialism rather than on the facts. In essence, the federal government has taken ownership of a problem that it can do little about. Admittedly, this is a complex issue with many facets. Consider, for example, the debate over the efficiency of forestry as a driver of economic development. Recent work on economic well-being and experiences by financial institutions like the World Bank suggest that forestry is not the driver of economic development as claimed by proponents from the forest industry.

Focusing on sustaining communities both in the sense of place and in their economic base is a misguided paradigm for federal land management agencies. We need, rather, to be sensitive to what the public expects from public lands. In addition to the mixes of commodities, goods, and services, we need to consider the role of these lands in maintaining community and economic resiliency. We must recognize that land management agencies can exercise little control over economic growth and the changes in demands for goods and services produced from public lands. Federal land management agencies can, however, adopt flexible management strategies more in tune with changing societal values.

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