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Environmental Assessment for the Callegat Ecological Restoration Project

Eldorado National Forest
Amador Ranger District

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Callecat Ecological Restoration Project
USDA Forest Service
Eldorado National Forest
Amador Ranger District
El Dorado County, California

Introduction

The Amador Ranger District of the Eldorado National Forest proposes to conduct an ecological restoration project on about 6,200 acres of National Forest System (NFS) lands. The main project objective is to reduce unnaturally high fuel loadings and improve forest health. The proposed project area is located between the areas of Big Mountain Ridge and Cat Creek Ridge (T9N, R15E, Sections 15, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 31, 32, and 33; T9N, R14E, Sections 25, 26, 35, and 36; T8N, R15E, Sections 6, 15 and 16; T8N, R14E, Sections 1, 2, 3, 4, 9, 11, and 12 MDB&M).

The Callecat Ecological Restoration Project (CERP) will implement management direction provided by the Eldorado National Forest Plan, as amended by the Sierra Nevada Forest Plan Amendment (SNFPA) (2004), along with recommendations and policy from our Pacific Southwest Region and Washington Office. Management objectives include the USFS Region 5 Ecological Restoration Leadership Intent. Additionally, the Pacific Southwest Research Station General Technical Report 220 “An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests” (PSW-GTR-220) will be consulted and interpreted as best available science to guide project analysis and implementation.

Many of the existing conditions create the need for restoration across the project area. As discussed in the USFS Region 5 Ecological Restoration Leadership Intent, three major drivers of change including, climate change and shifting hydrologic patterns, increasingly dense and unhealthy forests, and rapidly growing human populations are defining the need for ecological restoration. The one out of the three drivers of change that can be affected by the Callecat project is the increasingly dense and unhealthy forest. Activities include forest thinning and prescribed fire to decrease fuel loading and increase forest heterogeneity and invasive species management. As water continues to be one of the most critical resources provided from the National Forests, watershed improvement projects are needed to ensure resource is protected and maintained. The Callecat project proposes restoration in the Middle Fork Cosumnes River and Cat Creek Watersheds such as re-establishing vegetation in degraded dispersed camping areas, stabilizing eroding channels, and removing encroaching conifers around a meadow. By addressing the existing conditions listed in the following section, the landscape will become more resilient and capable of producing sustainable goods and services such as wood, fiber, water, carbon sequestration, scenic landscapes and wildlife habitat.

Purpose and Need

Many of the stands in the Callegat project area are currently overstocked with small to medium sized trees that are contributing to both a fuels and forest health concern. This condition is due in part to fire exclusion as well as a lack of other vegetation treatments that would remove suppressed or intermediate sized trees. Due to their density and location these trees are providing a ladder for fire to reach from the ground to the crowns of larger trees increasing the chance for larger scale mortality and difficulties for fire suppression. In addition the dense stands are at a higher risk from competition induced stress that can make trees more susceptible to insects and diseases.

Some stands in the Callegat Project area are currently experiencing mortality from insect and disease. The presence of the annosus root rot (“S” type, *Heterobasidion occidentale*) is causing mortality and weakening trees, making them more susceptible to insect attack and windthrow. Because the fungus may survive in infected roots or stumps for many years, it may infect regeneration of its hosts (true firs, Douglas fir, hemlocks and giant sequoia).

The Forest Service has identified 22 sugar pines on the Amador Ranger District, some of which are located outside the project area, that are resistant to white pine blister rust (RRSP). White pine blister rust is an introduced disease (caused by the fungus *Cronartium ribicola*) that attacks sugar pine throughout its range. Sugar pine is an integral part of the Sierra Nevada mixed conifer forest and protection of these trees for a seed source is important for future reforestation efforts. Surface and ladder fuels in and around the RRSP predispose these trees to risks of mortality from wildfire. The surrounding trees also increase the risk of seed predation by squirrels by providing access to the crown of the RRSP.

The project area also contains multiple pre-commercial size plantations. Many of them currently exhibit a buildup of woody brush species such as green leaf manzanita, deerbrush, whitethorn, and bitter cherry. On average the plantations have brush 4 to 8 feet in height with crown cover levels of 35 to 100 %. Currently, flame lengths from a wildfire burning under 90th percentile weather, could easily make the transition from a surface fire into the crowns of the trees, causing high mortality within the plantation and continue to spread into the surrounding forest stands. In addition the plantations are experiencing inter-tree competition that is reducing the rate trees in these plantations grow and develop old forest characteristics, while increasing the risk of plantation loss due to density-related attack by insects and diseases.

Within the project boundary, there exist areas which, until relatively recently had mature forest cover, but are now open canopy shrub patches. These openings consist of failed plantations from previous timber harvest activities. These areas generally range from 2 to 10 acres in size, and total approximately 20 acres. Existing vegetation ranges from little or no ground cover to >90% cover in early seral vegetation, with few if any trees. The current condition is not contributing to the acceleration of key old forest and suitable spotted owl habitat characteristics.

While much of the project area is relatively free of high priority noxious weed infestations, there

are three roadside infestations within the project area. These include tree of heaven along Cat Creek road (9N17), yellow starthistle by the Lumberyard fire station, and a small infestation of broom along road 8N58.

There are multiple dispersed camping areas adjacent to Cat Creek and the Middle Fork Cosumnes River that are contributing sediment into the stream at an accelerated rate. Vehicles are currently driving up to the edge of the stream at two locations which is eroding the stream banks and causing the channel to widen. Veined aquatic lichen, a Forest Service sensitive species that occurs in Cat Creek, may be impacted by motorized recreation activity near the creek. There are two additional areas that have been blocked to vehicle access that are in need of erosion control and revegetation. The non-system roads and associated dispersed camping has reduced ground cover, soils porosity, and soil productivity.

There is a cluster of 3 to 4 meadows approximately ¼ mile north of PiPi Campground that are experiencing conifer encroachment on the edges. Beyond the meadow edges, there are dense stands of conifers which may be contributing to decreased ground water. The high density stands and the associated ground fuels present a threat to soils in the event of a wildfire. The smaller understory trees pose a ladder fuel threat to larger ponderosa pine. In addition there are gullies in one meadow have not stabilized and are partially dewatering a portion of the meadow.

Another location where watershed quality is being degraded in the project area is below Forest Service Road 9N17 within Dark Canyon. Two gullies originating from two different culverts situated under 9N17 are down cut approximately 2-4 feet deep. The gullies are actively eroding and have migrated from the downslope portion of unit 130 towards 9N17 and, in the future, may impair the integrity of the road base. A separate culvert is plugged along 9N17 in the adjacent area, causing runoff to overtop the road potentially eroding the outboard side of the road.

There are multiple roads in the project area that have been identified as needing maintenance to prevent erosion and provide for public safety.

Forest Plan Direction

The project area falls into multiple land allocations as defined in the SNFPA Record of Decision (ROD). These include wildland urban intermix (WUI) including both defense and threat zones, old forest emphasis areas, general forest, riparian conservation areas (RCA), northern goshawk protected activity centers (PAC), California spotted owl (CSO) protected activity centers, and California spotted owl home range core areas (HRCA). The largest percentage of the project area falls into old forest emphasis area and California spotted owl home range core areas. The desired conditions for old forest emphasis area include stands that resemble pre-settlement conditions with high levels of vertical and horizontal diversity. In addition trees species composition would be related to the existing environmental factors such as elevation and site productivity. Home range core areas are desired to be large suitable habitat areas for California spotted owls dominated by trees at least 24 inches diameter at breast height (dbh) and containing trees >45 inches dbh. In order to protect, maintain and develop these desired conditions, the

SNFPA ROD gives direction to “strategically place area fuels treatments across the landscape to interrupt fire spread and achieve conditions that: (1) reduce the size and severity of wildfire and (2) result in stand densities necessary for healthy forests during drought conditions” across all land allocations (page 49). One exception is for PACs which are to be avoided for fuels and vegetation treatments to the greatest extent possible.

The Callegat project takes into consideration the use of the strategically placed area fuels treatments (SPLATS) in the design of treatment units. Areas have been designated that contain high tree densities as well as accumulations of ground fuels. In addition topographic features such as ridge tops have been identified for fuels treatments that could slow the rate of spread of a wildfire as well as provide a possible location for containment.

Forest-wide standard and guidelines direct fuels treatments in conifer stands to achieve an average of 4-foot flame lengths under the 90th percentile fire weather conditions. Fire modeling has shown that under current conditions over 60% of the project area would produce flame lengths of over 4 feet. Flame lengths over 4 feet are too intense to for direct attack with hand tools. In addition roughly half of the area has modeled flame lengths of over 8 feet which produce the need to use indirect attack suppression methods. This often results in larger fires that burn for multiple days.

Project Needs:

1. There is a need to reduce surface fuels and alter the vegetation structure in strategically placed areas to affect a reduction in fire severity and intensity.
2. There is a need to reduce stand densities and conduct forest health treatments to increase drought tolerance and reduce the risk of mortality from insect attack or disease.
3. There is a need to maintain and accelerate the development of key habitat and old forest characteristics.
4. There is a need to conduct vegetation treatments that are economically efficient.
5. There is a need to enhance hardwood resources, and associated wildlife habitat, by reducing conifer shading and improve the growth environment for oak.
6. There is a need to control existing infestations prior to project implementation to prevent the spread of noxious weeds during project implementation.
7. There is a need to provide effective soil cover adequate to prevent excessive erosion and sedimentation.
8. There is need to maintain and improve roads to minimize erosion and provide for safe public access
9. There is need to provide support to the local economy including infrastructure that gives value to forest products

Decision to be Made

The Forest Supervisor will decide whether to implement the proposed action, an alternative to the proposed action, or to take no action at all.

Public Involvement

A brief description of the location and type of project was listed in the Schedule of Proposed Actions for the Eldorado National Forest starting in October 2010. Approximately 63 scoping letters were mailed out to adjacent property owners, federal, state and local agencies and interested individuals in December 2011. In addition a public meeting was held on January 2012. Multiple written responses were received as well as 1 phoned in response. A summary of the scoping comments received is located in the Appendix B to this document. Based on the scoping comments received the following important issues were identified.

An Environmental Assessment (EA) was mailed to the public and a legal notice published in the Mountain Democrat newspaper on January 17, 2013. Letters were mailed to 25 adjacent property owners, federal, state and local agencies and interested individuals. Nine comment letters were received during the 30-day comment period to the EA. Forest Service responses to public comment are located in Appendix D to this document.

Issues

1. New Information on the California Spotted Owl is showing a declining population. This project proposes to modify spotted owl habitat in an area that was previously thought to have a stable population.

Indicator Measure-Acres of suitable habitat converted from nesting to foraging.

2 .There are multiple wildlife species that need all existing and future snags and for habitat. This project proposes to remove mature trees and reduce future mortality that could affect the number of snags into the future.

Indicator Measure-Projected increase in number of snags after implementation.

3. A reduction in high severity fires may have adverse effects to wildlife species that benefit from high severity patches.

Indicator Measure- Acres on which the potential high severity wildland fire behavior has been reduced.

4. Based on the low probability that the treated area will encounter a high severity wildfire it is questionable to whether or proposed treatments will be effective in modifying fire behavior.

Indicator Measure-Time in years for which the potential for extreme wildland fire behavior will be reduced.

5. A reduction of canopy cover below 70% would negatively affect CSO occupancy.

Indicator Measure-Average residual canopy cover.

6. Treatments such as herbicide application and mechanical thinning in Riparian Conservation Areas could have negative effects to aquatic habitats.

Indicator Measure-Acres of RCA treated by mechanical thinning and or herbicide

Eight other issues were identified as non-important and they are listed along with reasons for non-importance in Appendix B.

Description of Alternatives

Alternative 1: Proposed Action

Changes to the Proposed Action after Public Scoping

Due to further analysis and information acquired since the scoping document was sent out to the public, some changes to the proposed action have occurred. Total commercial harvest acres have been reduced for multiple reasons. One reason is the discovery of a new northern goshawk nesting location and subsequent creation of a new PAC. In addition the refinement of unit boundaries for areas proposed for skyline logging systems resulted in some areas being excluded from treatment and some areas to be switched to ground based logging. Also the silvicultural prescriptions for selected spotted owl HRCAs were modified. This resulted in the dropping of acres contained in the selected HRCAs that had mechanical thinning treatment in the recent past. Total reduction in mechanical thinning is approximately 284 acres.

Design criteria for Riparian Conservation Areas have been modified to allow for treatments with prescribed fire and glyphosate to occur closer to stream channels while still meeting forest plan direction. Further effects analysis that was completed since the scoping document and included as part of the project record show that the modified exclusion areas for ignition of prescribed fire and application of glyphosate will meet all Riparian Conservation Objectives and corresponding Standard and Guidelines as described in the SNFPA ROD.

There will be no public access granted for firewood cutting on roads closed under the 2008 Eldorado National Forest Public Wheeled Motorized Travel Management Environmental Impact Statement (Travel Management EIS) due to the estimate that there would be very few landings (1-3 total) created on these roads. This would only affect roads 9NY09 and 9NY08A. Most of roads in the project area are open to the public and will provide ample access for firewood cutting.

Changes to the Proposed Action after EA Public Comment Period

Based on the review and consideration of public comments received during the 30 day comment period the following additions, clarifications and changes have been made to the proposed action:

- The specific units have been listed where new temporary road construction will occur
- Additional description of herbicide application technique
- Appendix has been updated to show what units will have annosus treatment
- Clarification has been made on where reforestation will occur
- Clarification has been added for specify which areas that will have Limited Operating Periods for California spotted owls and goshawks
- Additional design criteria has been added for the implementation of commercial thinning and tractor piling in the Cat Creek Watershed
- Nonylphenol polyethoxylate based (NPE) surfactants are no longer proposed for use

The Amador Ranger District of the Eldorado National Forest specifically proposes the following:

Commercial Thinning: (See Appendix A for Table of Units)

- Mechanically thin approximately 2737 acres of natural stands and commercial sized plantations by cutting and removing trees between 10 inches and 30 inches dbh, using ground-based commercial logging methods including whole tree yarding(2551 acres);and skyline logging systems (186 acres)
- Remove small trees (4 inches to 10 inches dbh) to landings, or other designated disposal sites, on the mechanically thinned acres
- Tree tops and small trees (biomass) would be piled at landings and be made available for either biomass power generation or public fire wood cutting. Material remaining at landings (if not removed by previous methods) would be burned.
- Conduct post-harvest treatments, including grapple or tractor piling of existing and activity fuels, followed by prescribed fire where surface fuels remain above desired conditions

Silvicultural prescriptions will incorporate recommendations from PSW-GTR-220 and be designed to meet the following goals:

- Reduce shading around oaks to improve growing conditions
- Increase the percentage of shade intolerant pine and hardwoods
- Retain clumps of large trees
- Retain large trees with defects such as rot, cavities, and multiple tops
- Improve forest resiliency by reducing stand densities by thinning
- Manage the intermediate size class (20 to 30 inch DBH), thinning this class primarily by species (shade tolerant), growth form (those acting as ladder fuels), and topography (middle to upper slopes)
- Increase stand variability
- Increase understory light conditions for shrub establishment

Treatment of Annosus (See Appendix A for Table of Units)

- Create small openings (1 to 2 acres in size) by removing conifer species in and adjacent to areas with symptoms of annosus root rot infection. Areas would be located throughout the natural stands proposed for commercial thinning and designated during the timber

marking phase. Treat stumps of surrounding area with borax fungicide (Sporax or equivalent formulation). The total area treated in these openings would be approximately 60 acres.

- Reforest openings with a mix non-host species (ponderosa pine Jeffrey pine, sugar pine, and incense cedar).
- Conduct one to two release treatments to ensure seedling survival and growth, using a solution of three percent glyphosate herbicide (Rodeo or equivalent formulation), a surfactant (methylated seed oil (MSO) based surfactant, or a silicone/modified vegetable oil blend), and a colorant or dye.
- Evaluate seedling survival and interplant if necessary in order to achieve desired level of stocking.

Borax fungicide is also proposed for stumps created at PiPi campground.

Pre-commercial and Commercial size plantations (See Appendix A for Table of Units)

- Conduct timber stand improvement (non-commercial) treatment including precommercial thinning, pruning, and/or slash treatments on about 227 acres
- Treat understory vegetation using, manual, mechanical and chemical methods on about 751 acres. Chemical methods would utilize the same glyphosate herbicide mixture described above.

Reforestation of unsuccessful plantations from previous timber harvest (See Appendix A for Table of Units)

- Site preparation with mechanical, manual, and/or chemical methods.
- Hand planting of native conifer species.
- One or more release treatments for survival of planted conifers, using mechanical, manual and/or chemical methods.
- Evaluate seedling survival and interplant if necessary in order to achieve desired level of stocking.

Chemical methods would utilize the same glyphosate herbicide mixture described above.

Prescribed burn about 3125 acres outside of commercial thinning units (See Appendix A for Table of Units)

Noxious weeds

- Control populations of tree of heaven, starthistle and broom using previously mentioned glyphosate herbicide and hand pulling at three known locations
- If new populations of noxious weeds are discovered in areas where other project activities occur, they would also be treated with the same methods as above

Road Maintenance and Reconstruction

Roads and trails within the project area would be managed consistent with the 2008 Eldorado National Forest Public Wheeled Motorized Travel Management Environmental Impact

Statement (Travel Management EIS). Road reconstruction on roads not identified as open to public use, 9NY08A and 9NY09 would be blocked by gates, barricades, rocks, other barriers or by signing. In addition to the seasonal closure identified by the Travel Management EIS, roads identified as open for public use may be temporarily closed during inclement weather to protect reconstruction investments until those roads have been stabilized.

There are approximately 48 miles of road reconstruction, 27 miles of maintenance and 1.5 miles of new construction temporary road needed for the project. The units that have an anticipated need for new temporary road construction are, 153, 159 and 134, 143, and 139. Most of the proposed reconstruction on roads is associated with the need to remove brush from roads that have been over-grown since the previous entry. Some reconstruction, including road rocking, would repair road running surfaces reducing the loss of existing native surface material. Reconstruction activities would also involve the replacement of inadequate drainage crossings, cutting or trimming of trees and brush for sight distance improvement, elimination of ruts, gate installation to control seasonal use or replacement of existing, non-functional gates or barriers, ditch repair, and installation of water bars and dips on roads with inadequate runoff control. Drainage structures would be designed for 100-year storm events. Identified hazard trees will be cut along haul routes used for the project as needed to provide for safety and are subject to removal.

- Road reconstruction is planned on FS system roads 8N42, 8N42C, 9N17A, 9N17B, 9N17H, 9N17J, 9N17K, 9N17S, 9N22D, 9N23, 9N39, 9N40, 9N41, 9N41A, 9N42A, 9N51, 9N51B, 9N67, 9N76, 9N76B, 9N76C, 9N77, 9N78, 9N78A, 9N79, 9N79A, 9NY08, 9NY08A, 9NY08B, 9NY09 AND 9NY33
- Non-system road identified as 9N22A: Block access to this non-system road with rocks or dirt berm and decommission road with a combination of ripping and or covering with vegetative material

Rust Resistant Sugar Pine

Protect Amador Ranger District's 22 proven Rust Resistant Sugar Pine trees in a manner consistent with the Forest Rust Resistant Sugar Pine Action Plan and the Regional Policy for Sugar Pine Management. Proposed treatments include the removal of both merchantable (10-30" dbh) and sub-merchantable (<10" dbh) trees which may be used by squirrels to access resistant tree crowns or which strongly compete for soil, light, and nutrients. Slash and any woody vegetation within approximately 100' radius of the resistant trees may be cut and piled or scattered.

Restoration of Dispersed Camp Sites

At two dispersed campsites located along Cat Creek near intersection of Forest Service Roads 9N17 and 9N22 and a dispersed campsite south of Forest Service Road 8N42 and Unit 135 the following restoration activities would be used to rehabilitate the areas:

- Placement of large boulders next to the stream channels at two dispersed camping areas. The boulders would be placed approximately 20 feet from the edge of the channel so as to prevent vehicles from driving closer to the stream. Removal of campfire rings between the boulders and the stream.
- Adding to existing boulder blockade
- Contour till to decompact soils and road
- Reseeding with botanist recommended mix
- Apply weed free straw for short-term stabilization of ripped surfaces
- Plant riparian vegetation on banks with absent or suppressed vegetation
- Cover site with felled small (pre-commercial) trees to a surface cover of approximately 50%.
- Dispersed camping would continue to be allowed in these areas.

At one dispersed camp site located off of Forest Service Road 9N17F and associated Non-System Road:

- Along with rehabilitation activities listed above, obliterate and rehab the non system road including recontouring, reseeded, and placement of temporary erosion control devices.
- This area is currently closed to dispersed camping

In and around meadows north of PiPi Campground (Unit 112)

- Remove (by hand) conifers in wet meadows.
- Thin conifers up to the edge of wet meadows. This would be accomplished using feller bunchers, which would be allowed within 25 feet from the edge of the meadows and allowed to “reach-in” to remove conifers up to the edge of the meadows.
- Stabilize gullies using grade control methods and could include: reshaping the headwall of the gully, installing filter fabric, placement of rock as energy dissipaters, construction of grade-control structures such as weirs, log step falls or rock step falls using native material. Revegetate using sod plugs from the adjacent meadow would occur. All work would be done by hand.

Gullies and plugged culvert in the area of 9N17 and Dark Canyon (Unit 130)

- Stabilize the gullies by peeling back the headwall to a 1:1.5 slope, install filter fabric, and place cobble-sized rock on excavated face. Between culvert outlets and headcuts, excavate a two foot channel and line with cobble-sized material (3-10 inches).
- Unplug the plugged culvert and excavate inlet side of culvert.

Design Criteria

Design criteria are measures taken as part of the proposed action to ensure meeting purpose and need while minimizing environmental effects.

Fuels

Where fuels are heaviest, ground fuels and activity fuels would be grapple or dozer piled for burning. Commercial harvest units would be evaluated upon completion by Fuels Officer to determine whether there is a piling need. Ground or activity fuels would also be available to supply a biomass power generation plant. Where fuel loads are more variable, ground fuels and activity fuels would be grapple or dozer piled where needed to reduce fuel loads to less than 20 tons per acre while retaining 70% effective soil cover. For hand piles, or in areas with lighter fuel loads, concentrations of fuel would be burned, and fire would be allowed to creep between fuel concentrations or hand piles and back into RCAs. Fire line constructed by hand or with equipment maybe needed to complete burning operations, however roads would be used where feasible. During burning operations, fire would be allowed to creep between piles or fuel concentrations and back into RCAs.

Hand treatment of fuels would occur in specified units and within equipment exclusion zones along stream channels, wetlands, and meadows throughout the project where fuel loads exceed woody debris needed for ground cover and large woody debris recruitment for stream channels. Hand treatments, as defined in the SNFPA ROD, can include the use of chainsaws or other hand operated mechanical tools. The hand piles would be lit from the top, and prescribed fire would be allowed to creep between piles in order to dispose of the hand piles.

Conduct prescribed understory burning on approximately 3125 acres. Activities would include construction of firelines by hand or tractor, and hand cutting ladder fuels around large old growth conifers and oak trees. Consultation between District Silviculturist and Fuels Officer would occur prior to prescribed burning to determine methods to reduce risk of tree mortality in non-commercial sized plantations. Fire line construction would follow established guidelines for waterbar construction as outlined in the Best Management Practices. Upon completion of prescribed burning activities, the visible character of the firelines would be hidden by spreading woody debris where they intersect existing roads and trails to limit unauthorized vehicle use.

Air Quality- Pile burning and prescribed understory burning are implemented under a Smoke Management Plan, issued by the Amador/El Dorado County Air Pollution Control District, and a Burn Plan that adheres to Federal and Regional standards. To reduce air quality impacts, emission reduction strategies would be used. For prescribed burning, desirable meteorological and fuel moisture conditions would be required in the project's smoke management plan to facilitate venting and dispersion of smoke from the project area.

Pesticide Applications

Chemical application would be restricted to ground-based applications. The application rates for the herbicides, fungicides, and adjuvants proposed for use would be in accordance with each material's label instructions. Herbicide will be applied with backpack sprayers using a directed spray on target vegetation. In reforestation units target vegetation is all competing vegetation

and in the established plantations the target vegetation is woody brush. All appropriate laws and regulations governing the use of pesticides, as required by the U.S. Environmental Protection Agency, the California Department of Pesticide Regulation, and Forest Service policy pertaining to pesticide-use, would be followed. Coordination with the appropriate County Agricultural Commissioner would occur, and all required licenses and permits would be obtained prior to any pesticide application. In addition to existing laws and regulations, several additional practices would be employed to increase safety. These include restrictions location of equipment and additional personal protective equipment. A site-specific safety and spill plan would be developed to address site-specific attributes of proposed units.

Compliance with the Clean Water Act is demonstrated through the implementation of Best Management Practices (BMPs). BMPs that are pertinent to the use of pesticides are BMPs 5-7, 5-8, 5-9, 5-10, 5-11, 5-12, and 5-13 and their description can be found in the Silvicultural Report located in the project record.

Heritage

Sites within units or near road maintenance/reconstruction projects will be identified with flagging and avoided during project activities. All thinning of trees adjacent to site boundaries will be directionally felled away from the site. Non-merchantable trees and brush may be removed by hand, within site boundaries, at the direction of the District Archaeologist. Sites that are at risk from fire will be avoided during prescribed understory burning. Construction of fire lines will occur outside of the cultural resource site boundaries unless directed by the District Archaeologist. Gaps created for the treatment of Annosus infestations will avoid cultural resource site locations. All machine and hand piles will be placed away from site boundaries at a distance such that site features will not be affected by flames and heat. Hazard tree removal on or in the vicinity of cultural resource sites will be coordinated with the District Archaeologist and will follow the guidelines for hazard tree removal included in the Sierra Programmatic Agreement (Whiteman 2011).

If any previously undocumented cultural resources are encountered during project operations, all work would cease immediately in that area until the District Archaeologist can inspect the area, document the resource, and provide for appropriate protective measures.

Botany and Noxious Weeds

Aquatic veined lichen (*Peltigera hydrothyria*), occurs within the proposed project area. Project botanist will be consulted prior to initiation of road maintenance within 100 feet of drainages with aquatic veined lichen. Should any new TES species be located during the proposed project, available steps will be taken to evaluate and mitigate effects.

Four Pleasant Valley Mariposa lily (*Calochortus clavatus* var. *avius*) populations occur within the project area and will be flagged for avoidance. All ground disturbing activities, burn piles, and herbicide applications would be excluded from sensitive plant protection areas.

Hand thinning and prescribed fire within sensitive plant protection areas may occur at the direction of the project botanist.

Prescribed burn units: Due to the fact that prescribed burn implementation can occur several years after completion of thinning or other treatments, the project leader or burn boss would notify the forest botanist prior to burning in order to re-flag occurrences within burn units. This would clarify occurrence boundaries and ensure that fire lines are not cut through occurrences.

All off-road equipment will be cleaned to ensure it is free of soil, seeds, vegetative matter or other debris before entering the project area. Straw or mulch used for erosion control will be certified weed-free or, if certified straw is not available, rice straw will be used. A certificate from the county of origin stating the material was inspected is required.

Any seed used for restoration or erosion control will be from a locally collected source (ENF, Seed, Mulch and Fertilizer Prescription, 2000). Sand, gravel, fill material, and boulders used within the project area must come from weed free sources. Consult with Forest Botanist for sources of weed-free material.

Post-treatment monitoring of sensitive plants, noxious weed, and special habitat within the project area will be conducted following project implementation to ensure that the design criteria are effective.

ENF list-A noxious weed occurrences found along roadsides within the project area and within any proposed unit will be marked and mapped. Where feasible, all noxious weed occurrences would be excluded from direct ground disturbance or other project related activities in order to reduce the potential spread of noxious weeds within the project area. If an infestation cannot be avoided, equipment would be washed prior to leaving the infested area.

Transportation/Roads

Water would be used on native surface roads to maintain surface fines, minimize dust, and maintain surface compaction. Existing waterholes and other sites such as ponds, lakes, or streams, used for water drafting would be inspected for existing amphibians and flow levels prior to use. A Forest Service approved screen covered drafting box, or other device to create a low entry velocity (Riparian Conservation Objective (RCO) #4, SNFPA ROD p. A-56), would be used while drafting to minimize removal of aquatic species, including juvenile fish, amphibian egg masses and tadpoles, from aquatic habitats.

Terrestrial Wildlife

Mechanical and fuels prescriptions are designed to be consistent with Forest-wide management standards and guidelines (SNFPA ROD 2004, pages A-49 to A-59), as well as land allocation standards and guidelines for California spotted owl and Northern Goshawk Protected Activity

Centers (SNFPA ROD 2004, pages A-59 to A-61), and Riparian Conservation Areas and Critical Aquatic Refuges (SNFPA ROD 2004, pages A-62 to A-66).

As part of this process, HRCAs which had seen fuels reduction activity in the last 15 years were evaluated for potential cumulative effects, and those that HRCAs that had relatively high recent past treatments informed decisions on location and intensity of treatments. In general the western third of the project had experienced fuels treatments in the recent past, and concerns over cumulative effects resulted in removing potential commercial thinning units from the project, or changing the prescriptions to reduce or remove impacts to habitat capability for spotted owl. These changes are captured in the design criteria below for the remaining units.

Commercial Harvest/Plantation Treatments:

A limited operating period (LOP) for California spotted owls (March 1 through August 15) and for northern goshawks (February 15 through September 15) would restrict activities for units, or portions of units, that are located within ¼ mile of spotted owl or goshawk nests, unless surveys confirm that owls or goshawks are not nesting. In the absence of recent nest location data, units, or portions of units, or within ¼ mile from PAC boundaries have been covered by the LOPs. LOPs would be implemented to remove or reduce the potential for nesting disturbance to owl and goshawk PACs by activities in units adjacent to the PACs. The spotted owl LOP would be applied, as described above, to the following commercial thinning units: 33, 100, 101, 103, 112, 116, 117, 118, 119, 120, 121, 122, 123, 124, 127, 130, 133, 134, 135, 136, 137, 139, 141, 144, 146, 148, 151, 153, 155 and 157. The spotted owl LOP would be applied, as described above, to the following non-commercial sized plantation units: 108-12, 109-2, 111-1, 111-9, 112-1, 112-3, 112-7, 112-8, 112-9, 112-10, 112-12, 112-26, 112-103, 112-178, 112-204, 113-1, 113-3, 113-5, 113-100, 113-101, 114-10, 114-30, 114-32, 114-38, 114-62, 116-1, 116-31, and 116-33. The northern goshawks LOP would be applied, as described above, to the following commercial thinning units: 33, 100, 101, 112, 117, 119, 127, 130, 133, 135, 136, 142, 144, 146, 148, 151, 152, and 153. The northern goshawks LOP would be applied, as described above, to the following non-commercial sized plantation units: 112-1, 112-178, 112-179, 112-204, 113-1, 113-11, 113-100, 113-101, 113-3, 114-30, 114-32, 114-38, 114-5, 114-6, 116-1, 116-31, and 116-33.

Retention of dispersed pockets of small trees and understory brush would be retained during mechanical treatments to provide for wildlife habitat. Preference for location of these pockets will be given to California Wildlife Habitat Relations tree size class 5 stands (24" dbh and greater), and stands located in existing spotted owl Home Range Core Areas (HRCAs).

Mechanical thinning treatments in PACs will conform to the 2004 SNFPA, specifically focusing on treatment of surface and ladder fuels and removing only material necessary to meet project fuels objectives. Thinning within spotted owl or northern goshawk Protected Activity Centers (PACs) will be designed to facilitate prescribed burning, and reduced residual stand mortality effects from prescribed fire and wildfire. Thinning within spotted owl or goshawk PACs would be limited to small tree removal 15" dbh and smaller, and be dependent on stand characteristics

for the upper diameter limit (15" would be the maximum, smaller treed stands may have lower max diameters). Mechanical thinning in PACs would occur on 28 acres in Unit 113.

Prescriptions would be designed to maintain and/or enhance hardwoods where they presently exist; priority may be given to areas important to early seral species such as deer. Conifers encroaching on individual oak canopies would be targeted for removal, resulting in small ¼ acre or less openings in the canopy surrounding some oaks.

Snags (15" dbh and greater) would be retained, except where they pose a threat to human health and safety.

The western third of the project area has had prior fuels reduction treatments in the past 15 years, and concerns over cumulative effects to spotted owls (and other species associated with mature, high canopy forests) resulted in removing most of the potential commercial thinning units from this portion of the project. Where treatments were planned within spotted owl HRCAs, with moderate to high capability habitat, which had seen fuels reduction activity that exceeded 30 percent of the HRCA area in the last 10-15 years, the treatments were designed to maintain the existing overstory canopy cover and spotted owl habitat quality. Within these California spotted owl HRCAs mechanical treatments will be designed to reduce surface and ladder fuels in a manner that will result in a 5% or less reduction in canopy cover, averaged over the treatment unit. Treatments would emphasize retaining high capability spotted owl habitat first, and meeting other project needs second. This prescription would apply to the following units: 112, 113*, 114, 116, 118, 119, 122, 123, 124, 136, and 155. Unit 113 is within a spotted owl PAC and has more restrictive marking described in the design criteria above.

Prescribed Burning In California Spotted Owl and Northern Goshawk PACs :

Prescribed burning in PACs will be designed to result in a 5% reduction or less in canopy cover, averaged over the treatment unit. Snags (15" dbh and greater) would not be targeted for active lighting. Prior to ignition, current fuel conditions surrounding trees > 30" dbh would be assessed to determine need. If mortality of trees greater than 30" is expected to exceed 5% raking would occur. Where prescribed burning takes place within spotted owl and goshawk PAC boundaries, an attempt will be made to ascertain nesting status pre-lighting, if the burning is planned for the nesting season that year. Based on nesting status additional mitigation, such as exclusion of portions of the proposed burn/PAC, additional fire lines, and different lighting techniques may be implemented to reduce potential effects to nesting spotted owls and goshawks.

The district wildlife biologist would be notified prior to implementation of the prescribed burn in PACs and would be onsite to take part in, and/or monitor burning and associated effects.

Additional hand treatments, including handline construction, tree pruning, and cutting of small trees (less than 6 inches dbh), would be conducted within 1 to 2-acre area surrounding known nest trees, to the extent necessary, to protect nest trees and trees in their immediate vicinity.

Downed logs greater than 30” dbh at the large end, will not be actively lit during implementation of the burn. Snags will be retained during burn preparation, except where they pose a threat to human health and safety, or perimeter control risk for containment of the fire.

Soils

A minimum of 5 logs/acre greater than 16 inches in diameter and greater than 10 feet in length would be retained. Where possible, these large down logs would be protected during mechanical treatment activities and underburning. Retention strategies to increase coarse woody debris would be used on deficient units. Strategies may include retention of 5 logs per acre on site in cull logs or smaller whole trees (less than 16 inches DBH) and 10-15 feet long as replacement coarse-woody debris.

Effective soil cover is prescribed to follow BMPs 1-2, 1-3, 1-15; and Forest-Wide Forest Plan Standards and Guidelines (S&Gs). Seventy percent ground cover would be retained in all Riparian Conservation Areas, on erodible soils, units dominated by steeper slopes, soils dominated by granitic parent material and units within watersheds near their threshold. All other areas would be prescribed a minimum effective soil cover of 50 percent. Soil cover quantities are recommended as follows:

Units requiring 50% Soil Cover	Units requiring 70% Soil Cover	
109-110	109-112	113-007
109-111	109-113	113-101
109-115	109-114	113-136
109-117	109-116	113-138
109-118	111-119	113-139
111-120	111-151	113-140
112-103	111-152	114-084
112-122	112-121	114-102
112-123	112-124	114-143
112-125	112-126	114-145
112-133	112-127	114-146
112-141	112-128	114-148
113-137	112-129	
114-033	112-130	
114-142	112-132	
114-144	112-134	
114-150	112-135	

Average soil cover for each treated unit would be maintained at a minimum average of 70% one year following burning activities. BMP monitoring by fuels staff would ensure cover values are met.

Mechanical treatment activities would be restricted and/or controlled during high soil moisture conditions.

No ground-based equipment would be allowed on slopes greater than 35% without consultation by the soil scientist. (Forest-Wide Forest Plan Standards and Guidelines 86, 1989 Eldorado National Forest Plan). An exception for this would occur in skyline units 134, 159, 151 and 152. In these units feller bunchers would be allowed to operate on slopes up to 45%. This would be allowed for cutting and pre-bunching of logs that would be removed using a skyline logging system.

Shallow soils (such as lava caps/granitic outcrops) are sensitive areas for soil productivity and erosion. Equipment use in these areas would be avoided unless consultation with soil scientist or botanist occurs. (BMP 1-9).

For skid trails and fire lines upslope of and terminating at roads or OHV trails, a waterbar would be placed at a maximum 30 feet from the intersection on all slopes.

Avoid skid trails that traverse steeper areas. If excess soil displacement occurs, re-contour if possible and cover with slash or other organic material to a minimum of 70 percent cover at the conclusion of thinning activities.

New skid trails and landings would not occur on shallow soils without consultation with the Soil Scientist. (BMP 1-9)

Portions of units 117, 135, and 138 that have unacceptable soil conditions greater than 15% exceed Forest Plan Standards and Guidelines. To mitigate soil disturbance, landings on these units would be contour ripped to minimize erosion problems, restore infiltration, and discourage unauthorized motor vehicle use. Primary skid trails on these units would be ripped and then waterbarred. (BMP 1-17, Forest-Wide Forest Plan Standards and Guidelines #87). After ripping, landings would be re-seeded using a native seed mix approved by the project botanist. Seeding of ripped skid trails is required in unit 138 and could occur on the other two units. Weed-free waddles will be placed along road 8N42 after tilling of landings for unit 135. After temporary roads have served their use, they would be ripped and seeded to alleviate soil compaction, restore infiltration, and discourage unauthorized motor vehicle use. Water-barring would occur following ripping. (BMP 1-17). Rehabilitation activities on landings would occur after biomass has been removed.

Recommended areas for rehabilitation of primary skid trails.

- Unit 117: approximately $\frac{3}{4}$ of a mile in the northeast portion of this unit plus associated landings

- Unit 135: approximately 1 mile concentrated in the center and the west portion of the unit plus associated landings
- Unit 138: Approximately $\frac{3}{4}$ mile throughout the unit plus associated landings.

An existing skid road in northern portion of unit 119 is currently concentrating water and sediment into the ephemeral on the north portion of the unit. After completing work between the skid trail and the creek, recontour skid road and place slash bundles to stabilize the soil surface and discourage unauthorized use.

Riparian Conservation Areas

Entire RCA

- Ground cover will be maintained at 70 percent or greater.
- No mechanical activities on slopes greater than 35 percent.
- Approval by one of the following: Hydrologist, Soil Scientist, or Fisheries Biologist, is needed for: a) construction of new landings and/or modification and use of existing landings, b) construction of permanent and/or temporary roads c) use of ground-based equipment and/or removal of vegetation in inner gorges. Approval by a Hydrologist or Fisheries Biologist is needed for equipment crossings of perennial and intermittent streams or the placement of temporary stream crossing structures.
- Felling and removal of hazard trees next to haul routes is allowed, with the following restrictions: a) hazard trees with commercial value that can be reached with skidding equipment would be targeted for removal - there will be no endlining to remove trees, b) should a felled hazard tree enter a stream course, the Sale Administrator and Resource Specialist would determine the fate of the tree (e.g. repositioning of the tree, leaving a portion of the tree as felled, etc.), c.) hazard trees with no commercial value and those outside the reach of skidding equipment would be retained in place provided the felled trees would not interfere with the safe use of the road or adversely affect a stream course and associated culverts
- No fire ignition within or immediately adjacent to riparian vegetation, unless otherwise specified for a certain type of aquatic feature.
- Protection measures can be altered on-the-ground for a specific site by a Resource Specialist (Soil Scientist, Fisheries Biologist, Botanist, Hydrologist).
- Except where specifically prohibited, hand treatments are allowed

Equipment Exclusion Zones.

- Reach-in to remove non-riparian vegetation (typically 25 feet) is allowed from the edge of the equipment exclusion zone.
- No end-lining of trees out of equipment exclusion zones.
- Construction of handlines for fire is allowed. Rehabilitation of the handlines would include waterbars and maintain at least 70 percent ground cover.

Stream channels

- No removal of woody debris within stream channels or embedded in streambanks.
- No removal of vegetation (living or dead) within the stream channel or on streambanks.
- No hand treatments within 25 feet of the edge of perennial stream channels or within riparian vegetation, whichever is greater.
- No hand treatments within 10 feet of the edge of intermittent stream channels or within riparian vegetation, whichever is greater.
- Ignition of fire would not occur within 25 feet of the edge of the channel of perennial streams and special aquatic features or 25 feet from the edge of riparian vegetation, whichever is greater. Ignition would be limited to non-riparian vegetation.
- Ignition of fire would not occur within 10 feet of the edge of the channel of intermittent streams and ephemeral streams or within 10 feet of riparian vegetation, whichever is greater.
- No hand piles within 25 feet of any stream channel.
- Equipment crossings in streams channels with veined aquatic lichen (*Peltigera hydrothiria*) would be avoided.
- Glyphosate would not be sprayed within 25 feet of surface water (standing or flowing) or within 25 feet of riparian vegetation, whichever is greater.
- Glyphosate would not be sprayed within 5 feet of any dry stream channel (no surface water) or within 5 feet of riparian vegetation, whichever is greater.
- Glyphosate would not be sprayed within 25 feet of the edge of special aquatic features (springs, wetlands, meadows, etc.) or within 25 feet of riparian vegetation, whichever is greater.
- Overstory canopy within 50 feet of known populations of the veined aquatic lichen (*Peltigera hydrothiria*) will not be altered by project activities. Equipment crossings will be excluded where the aquatic lichen occurs. Project botanist will be consulted prior to initiation of road maintenance, within 50 feet of known occurrences of aquatic lichen.

Ephemeral streams and channels (unless stated otherwise for a specific Unit)

- No ground-based equipment within 25 feet of the edge of the channel.
- Removal of non-riparian vegetation by hand (living or dead) is allowed up to the edge of the channel so long as the vegetation is not embedded into the ground or substrate.
- Equipment crossings would be approved by the Timber Sale Administrator for ephemeral streams as well as draws and swales (topographic depressions having no defined channel), unless specified otherwise for an individual Unit.

Springs- all Units (unless stated otherwise for a specific Unit)

- No ground-based equipment within 50 feet of the edge of the wet area of the spring.
- Equipment is allowed to reach into the 50 ft. equipment exclusion zone (typically up to 25 feet) to remove non-riparian vegetation.

Cat Creek Watershed-Units (7, 33, 100, 113-101, 114-101, 102, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 148, 156, 157, 158, 159)

- Commercial timber harvest in units above would be implemented over a minimum of four years, and no more than 500 acres would be implemented in any single year.
- No more than 300 acres of tractor piling would occur in the commercial timber harvest units in a single year.

Unit specific design criteria for RCAs can be found in Appendix C.

Visuals

- Flush cut stumps within the first 75' of the visible foreground from the PiPi Campground road.
- Remove logging slash from view of PiPi Campground or Hand-pile slash for burning in the visible foreground of PiPi Campground or chip slash and disperse into the surrounding area.
- Within 2 years of burning, remove dead standing trees resulting from burning if in pockets of ¼ acre or more in the visible foreground of PiPi Campground.

Recreation

There are four commercial thinning units in the project that are adjacent to portions of designated off highway vehicle trails. They are units 111, 115, 101 and 136. Where practical, landings and skid trails would be located to minimize impacts to these trails. In areas that project activities modify the existing trail condition, restoration will occur to meet the desired width and tread surface relative to its designated use. Material such as slash, rocks, or large down logs, may be used to re-establish trail width as well as to create barriers at the entrance of skid trails and/or landings to discourage unauthorized OHV use.

Alternative 2: No Action

Only current management practices such as fire suppression and public firewood cutting would take place in the project area at this time. None of the fuels management, forest health, watershed improvement or road maintenance objectives would be accomplished with this alternative. The no action alternative would address important issues #1, #3, #4, and #5.

Alternative 3

This alternative was developed in response to public comments and an actual proposal made by one of the commenters. The Non-Commercial Alternative proposes to remove only those trees located in the commercial thinning units of the Proposed Action that are needed to meet to modify fire behavior on the landscape. In general the diameter limit for thinning would be 16 inches. However, in order to facilitate equipment access to treat the units effectively, there may

be circumstances where trees larger than 16 inch are removed. This would include removal of trees for landings, skid roads and in order to access some denser areas of stands with mechanical harvest equipment. In addition this alternative would identify trees over 16" to be girdled and left as snags that would have been removed under the proposed action to meet forest health and promote fire-resistant tree species. All other items in the proposed action would remain the same.

This alternative will meet the direction in the November 3, 2009 Order from the United States District Court, Eastern District of California from Case 2:05-cv-00205-MCE-GGH to include a non-commercial funding alternative at the Project Level for the Sierra Nevada Forests Fuel Reduction Projects. This alternative would address important issue #2.

Alternative 4

This alternative was proposed by a member of the public to address issues with effects to aquatic species. This alternative would be identical to the proposed action except that ground based mechanical equipment would be excluded from the RCA's of the main stem Middle Fork Cosumnes River and Cat Creek and herbicides would be excluded from all RCA's throughout the project area. Hand treatments would still be permitted in these areas. This alternative would address important issue #6.

Alternatives Considered but Eliminated from Detailed Study

An alternative was proposed by the public that would use only prescribed fire and no thinning, on the acres proposed for mechanical/commercial thinning. This alternative was dismissed due to the potential for unreasonable environmental harm. Due to the existing conditions of high surface fuel loading as well as overly dense stands with abundant ladder fuels, a prescribed fire would not be feasible to implement. The effects of introducing fire with no pre-treatment thinning would be similar to wildfire. Impacts to resources such as soils, water quality and spotted owl and goshawk habitat would not support a finding of no significant impact required in an environmental analysis.

An alternative was proposed by the public with a 12-inch diameter limit on the acres of forest proposed for mechanical/commercial thinning. This alternative is within the existing range of the non-commercial alternative (Alternative 3) already being analyzed in the EA. Alternative 3 proposes a 16" diameter limit for mechanical/commercial thinning and was analyzed in detail. Effects related to the difference in number of trees removed between 12 and 16" is expected to be negligible.

An alternative that would include not only all the design criteria and restoration efforts noted in the present Proposed Action, but also an assessment of aquatic habitat condition, and provide for identified site-specific in-channel aquatic habitat restoration activities (e.g. placement of large

woody debris, root wads, etc). The issue that is driving this alternative was determined to be non-important. The proposed action does take into consideration the condition of aquatic habitat and has proposed restoration activities accordingly. See description in project record for important and non-important issues.

Comparison of Alternatives by Significant Issues and Indicator Measures

Significant Issues

Alternatives to be Studied in Detail	1. Effect on Spotted owl with potentially declining population	2. Inadequate number of large snags available for wildlife	3. Damage to wildlife that depend on high severity fire patches	4. Effectiveness of treatment to change fire behavior based on probability of fire occurring	5. Effect on CSO from canopy reduction	6. Effects to Aquatic Species from Treatments in RCAs
1. Proposed Action	35 acres of nesting habitat converted to foraging habitat	No additional snags created	Potential for high severity fire reduced on 5862 acres	Flame lengths and crown fire potential reduced for 10 years	Average residual canopy closure 54%	177 Acres of glyphosate application across project in RCAs and 42 acres of mechanical treatments in Cat Ck and MF Cosumnes RCA
2. No Action	0 acres of nesting habitat converted to foraging habitat	No additional snags created	No reduction in potential for high severity fire	No reduction in flame lengths or crown fire potential	Average canopy closure remains 68%.	No application of glyphosate and no mechanical treatments
3. Non-commercial Funding with Snag Creation	35 acres of nesting habitat converted to foraging habitat	25 additional snags created per acre	Potential for high severity fire reduced on 5862 acres	Flame lengths and crown fire potential reduced for 10 years	Average residual canopy closure 54%.	177 Acres of glyphosate application across project in RCAs and 42 acres of mechanical treatments in Cat Ck and MF Cosumnes RCA
4. Limited Treatments in RCAs	35 acres of nesting habitat converted to foraging habitat	No additional snags created	Potential for high severity fire reduced on 5820 acres	Flame lengths and crown fire potential reduced for 10 years	Average residual canopy closure 54%	No Application of Glyphosate in RCAs and no mechanical treatments in Cat Ck and MF Cosumnes RCA

Comparison of Alternatives by Achievement of Purpose and Need

As stated in the introduction, the primary purpose and need for this project is focused on fuels reduction and forest/stand health. For that reason they will be used for a general comparison of alternatives. Other resource areas are discussed under the environmental consequences section as well as in specialist reports in the project record.

No Action-Alternative 2

Fuels Reduction- Under the current conditions of the project area, modeled fire behavior resulted in flame lengths greater than 4 feet on 64% of the area. Of the 64 % roughly 50% of the area would produce flame lengths greater than 8 feet. Flame lengths under 4' can usually be attacked successfully with hand tools. Hand line should hold the fire. Flame lengths 4 to 8 feet are too intense for direct attack on the head of the fire by persons using hand tools. Hand line cannot be relied on to hold a fire. Equipment such as dozers, engines and retardant aircraft can be effective. Flame lengths greater than 8 feet generate fire conditions where direct attack at the head of the fire is generally not successful and suppression tactics must rely on flanking and indirect attack methods. Generally indirect attack results in a fire burning through one or more burn periods.

Seventy percent of the Callegat project area is capable of producing passive crown fire activity demonstrating that most of the project area is vulnerable to high mortality wildland fire. Passive crowning can range from a few trees torching in some areas to torching of entire stands. This kind of fire behavior can result in nearly 100% mortality of dominate and co-dominate trees that are the critical components of old forest areas.

This alternative would not meet the purpose and need of the project to reduce surface fuels and alter the vegetation structure in strategically placed areas to affect a reduction in fire severity and intensity.

Forest Health- Average stand density would remain the same, with an average SDI of about 489, about 70 percent of maximum SDI, within the "zone of eminent mortality" (SDI's between 55 and 85 percent of maximum). These stands would be at a greater risk of density-related mortality than the other alternatives. The risk of density-related mortality would increase as stand densities increase with stand growth. Modeling estimates of mortality at twenty years are about 123 cubic feet per acre per year (about 46 % of growth). Density-related mortality, in the form of drought or insect attack, would have a high probability of occurring.

Noncommercial sized plantations would remain untreated. Competition for site resources, both intertree and with existing vegetation would slow individual tree growth, delaying accomplishment of the goal to accelerate the development of key habitat and old growth forest characteristics.

Proposed Action-Alternative 1

Fuels Reduction- The modeled fire behavior post-treatment for the proposed action is flame lengths less than 4 feet on 100% of the project area. The decrease in flame lengths along with

increased height to live crown in the post-treatment stands will decrease the chance for crown fire and increase effectiveness for fire suppression resources. This would successfully achieve the purpose and need as it relates to fuels reduction.

Forest Health-Reduced stand density would increase available water to individual trees resulting in the potential for these stands to withstand drought and insect outbreaks with lower probability of mortality than the other alternatives. Modeled estimates of mortality twenty years after harvest would be reduced to 40 cubic feet per acre per year (about 17% of growth). Resistance to drought and insect attack would remain into the future, although this resistance would dissipate as stand densities increase with stand growth.

In pre-commercial sized plantations, by controlling competing vegetation, trees would experience an increase in available moisture, as well as nutrients, resulting in improved vigor.

Alternative 3

Fuels Reduction-- The modeled fire behavior post-treatment for the proposed action is flame lengths less than 4 feet on 100% of the project area. However the creation of approximately 25 snags per acre could produce negative effects as it relates to longer term fuels reduction and fire management.

Snags present a hazard to fire line personnel. While an individual snag could be mitigated, a high volume of snags would require mitigation by removing fire line personnel from the hazard and relocating control lines for the safety of resources. This could present an issue since many of the treatments are located on ridge tops and within Strategically Placed Landscape Area Treatments (SPLAT's) where fire managers would naturally gravitate to if a fire started in adjacent drainages. In this situation, a large volume of snags would be felled within these areas in order to contain a wildland fire while providing for safety of fire resources.

In addition to posing concerns for fires suppression resources the additional snags could add to fuel loadings, decreasing the time the treatments will remain effective. These snags, plus the snags that would be generated with prescribed burning and mechanical activities could increase the dead aerial fuels by as much as 20 snags per acre one to two years after the trees die. Once the tree dies, there would be an increase in dead fuel loading remaining onsite from the snags shedding needles, bark and branches.

Although this alternative would meet fuels reduction objectives in the short term, the impact of the snag creation would compromise the objectives stated in the purpose and need of this project.

Forest Health- The proposal to treat the project area through creation of snags has a potential to create a landscape-wide increase in insect activity and subsequent tree mortality. Girdling and leaving large numbers of trees on this landscape has the potential to lead to an ideal brood source from which bark beetles could spread out into adjacent (retained) trees, increasing their risk of insect-related mortality. Effects from an increase in mortality to retained trees would result in:

- Canopy cover being reduced below the levels of the proposed action.

- Stand densities being reduced below that of the proposed action.
- Stand diameter being affected, depending on size of attacked trees.
- Black oak vigor improving as canopy cover is reduced. Bark beetles attacking conifers are host specific, and unlikely to attack oaks.

Reduced stand density would increase available water to individual trees resulting in the potential for these stands to withstand drought and insect outbreaks with lower probability of mortality, similar to the proposed action. In the event of increases in mortality to retained trees from bark beetle attack, stand densities would be reduced the most of any alternative. After the escalation of snags created from a bark beetle outbreak, mortality, and resultant snag creation, would fall to levels below the proposed action because density related mortality would be less likely in the lower density stands. Mortality would remain below levels of the proposed action into the future, dissipating as stand densities increase with stand growth. Estimates of mortality would be lower than the proposed action, and stand density would remain below current levels longer than the proposed action.

In the event of increases in mortality to retained trees from bark beetle attack, species composition could be effected positively (more pine in the area) or negatively (less pine in the area) depending on the species of insects, as these insects have preferred hosts.

Alternative 4

Fuels Reduction- The modeled fire behavior post-treatment for the proposed action is flame lengths less than 4 feet on 100% of the project area. However the primary difference in this alternative as it relates to meeting the purpose and need would be the cost of doing the treatment. By limiting fuels reduction treatments to only hand work in RCAs, the cost per acre would greatly increase. For the same fuels reduction achievement hand work is nearly double the cost of mechanical. An estimated cost for mechanical fuels treatment is \$500 per acre while hand work can cost up to \$1000 per acre. Over 42 acres this would mean a difference of \$21,000. This limits the amount of money available to do other fuels reduction and ecological restoration work throughout the project. This would not meet the need to conduct vegetation treatments that are economically efficient.

Forest Health- This alternative would result in a reduction of about 197 acres of understory vegetation treatment with glyphosate within plantations. 177 of these acres are within RCAs, while an additional 20 acres are outside RCAs. These 20 acres are small, isolated pieces of units surrounded by RCAs. Due to their size and location these areas would be operationally unfeasible to treat and there for the entire unit would be eliminated from treatment.

The 197 acres dropped from glyphosate application, could be treated by hand methods. In these 197 hand-treated acres, stand growth and vigor would improve slightly over the no action alternative because hand treatments have the potential to kill some non-sprouting species of brush. However, most brush species are sprouting shrubs. After hand treatment, these species would remain alive, and quickly re-sprout and recover to pretreatment levels, including their use

of site resources. Costs per acre to implement hand treatments would increase over the proposed action. Hand treated acres would experience a delay meeting goals to accelerate the development of key habitat and old growth forest characteristics in plantations.

The remaining 554 acres would be treated by the same methods as the proposed action. Effects on these 554 acres of treated acres would be the same as the proposed action. Costs per acre to implement treatments would increase due to increased administration costs (identifying and flagging exclusion areas).

Environmental Consequences

This section will cover the No Action alternative (Alternative #2) first because it provides a reference point for describing environmental effects of the action alternatives.

Effects Relative to Significant Issues

Issue #1- New Information on the California Spotted Owl is showing a declining population. This project proposes to modify spotted owl habitat in an area that was previously thought to have a stable population. **Indicator Measure-** Acres of suitable habitat converted from nesting to foraging.

No Action- There would be no conversion of the 35 acres of presently suitable nesting habitat to foraging habitat for spotted owl. The no action alternative would retain all of the large tree, closed canopy existing habitat, including the trees in the 16-30" dbh size class.

Proposed Action- There would be a conversion of 35 acres of suitable nesting habitat into foraging habitat. This conversion would not be expected to have long term affects to the local populations of spotted owls, due to the amount of habitat changed, and the fact that it would be retained as foraging habitat. Nesting habitat could return in the next 15-20 years as canopy closure increased. Occupancy rates would not be anticipated to change within the project area as a result of implementing this alternative.

Alternative 3- There would be a conversion of 35 acres of suitable nesting habitat into foraging habitat. Effects related to this indicator measure would be identical to the proposed action.

Alternative 4- There would be a conversion of 35 acres of suitable nesting habitat into foraging habitat. Effects related to this indicator measure would be identical to the proposed action.

Issue # 2- There are multiple wildlife species that need all existing and future snags and for habitat. This project proposes to remove mature trees and reduce future mortality that could affect the number of snags into the future. **Indicator Measure-** Projected increase in number of snags after implementation. **Indicator Measure-** Projected increase in number of snags after implementation.

No Action- There would be no project implementation therefore no additional snags would be created. Only the existing snags or those created by natural mortality would be present. The increased risk for higher intensity/severity fires could produce an abundance of snags in the future.

Proposed Action- There would be no additional snags created during implementation of the proposed action.

Alternative 3- An additional 25 snags per acre would be created. The created snags are estimated to remain in the stands for approximately 5-15 years. There would be more nesting/roosting/denning habitat, in the form of snags, than would be expected to occur naturally on the landscape during this time period. It is estimated that less than 1 snag per acre per year would be created naturally. Effects to individuals and reproduction are also expected to be the same as Alternative 1, from disturbance, and habitat alteration under this alternative. The project would be expected to provide protection of existing suitable habitat from stand replacing wildfires, which may be partially compromised by the proposed snag creation.

Alternative 4- There would be no additional snags created during implementation of this alternative.

Issue #3- A reduction in high severity fires may have adverse effects to wildlife species that benefit from high severity patches. **Indicator Measure-** Acres on which the potential high severity wildland fire behavior has been reduced.

The analysis for effects to wildlife species associated with high severity burned areas is contained in the project level Management Indicator Species Report. There are three species and habitat types included in the report that would be related to high severity burned areas: black-backed wood pecker and snags in burned forest, mountain quail and early seral coniferous forest, and fox sparrow and shrubland (west-slope chaparral types). It was determined that since no recently burned snag habitat is proposed for treatment in this project, that there would be no affect to that specific habitat or the use of that habitat by the black-backed wood pecker.

No Action- Zero acres in the project area would have the potential for high severity wildland fire reduced.

Shrubland (West-Slope Chaparral) Habitat (Fox Sparrow)

There are approximately 310 acres of montane chaparral, mixed chaparral habitat found within the proposed units. These areas have not recently seen large scale disturbance from wildfire, or other events and are mixed within treed stands, ranging from plantations, to more natural stands. Under Alternative 2, the No Action alternative, the risk of a large wildfire in the project area would be greater than under Alternative 1, 3 and 4. As a general rule these habitat types respond favorably to wildfire, with a short 1-2 year reduction in structure utilized for nesting structure immediately following the fire. The potential effects of a large wildfire could include a short-

term (generally <10 years) increase in shrub vigor and overall decrease in age of plants occupying the habitat in the project area. The severity and extent of such affects from large wildfires is highly variable and depends on many factors. There could be an increase in the amount of this habitat type as a result of high severity wildfire, and a corresponding decrease in other MIS species habitat types.

The cumulative effects for Alternative 2 are expected to be the similar to Alternative 1, outside of the loss of habitat associated with the plantation treatment. The beneficial effects of the canopy closure reductions and burning would not occur unless wildfire occurred in this area in the same time frame. No net increase or decline in habitat acres would be anticipated in the short term, but may occur with wildfire.

As this alternative may create more habitat, and would not be expected to remove any of the habitat for fox sparrow; no adverse cumulative effect should result from implementation of the no action alternative.

Early and Mid Seral Coniferous Forest Habitat (Mountain quail)

There presently are approximately 1,320 acres of early seral (size class 1-3) coniferous habitat, with, and approximately 4,415 acres of mid seral (size class 4) coniferous habitat within proposed units for this project. Under Alternative 2, the No Action Alternative, the risk of a large wildfire in the project area would be greater than under Alternative 1. Depending on the severity of the fire a shift to more early seral habitat, and less mid seral habitat would be expected with wildfire. As a general rule these habitat types respond favorably to wildfire, with a short 1-2 year reduction in structure utilized for nesting and hiding cover immediately following the fire. The potential effects of a large wildfire could include a short-term (generally <10 years) increase in shrub vigor and overall decrease in age of plants occupying the habitat in the project area. The severity and extent of such affects from large wildfires is highly variable and depends on many factors.

The unpredictable nature of wildfire makes the cumulative effects for Alternative 2 difficult to assess for these habitat types. Without a wildfire in the same project time frame (next 1-10 years) there would be no net increase, and the current slow decline in habitat acres would occur.

As this alternatives would continue the trend toward later seral habitats, the no action alternative, barring a stand replacing wildfire, would have continue the trend of adverse cumulative effects for this species. These effects are being offset to one degree or another by wildfire elsewhere in the Sierra Nevada.

Proposed Action- The potential for high severity fire would be reduced on approximately 5862 acres.

Shrubland (West-Slope Chaparral) Habitat (Fox Sparrow)

There would be a net loss of 92 acres of habitat as a result of the mechanical and chemical treatment of shrub species in the commercial and non-commercial plantations that comprise this habitat type. Most of the remaining acres would likely be avoided during harvest, hazard tree removal, and thinning treatments, and would remain fairly unchanged by the other proposed treatments with the exception of prescribed fire. Most, if not all of the 218 acres, outside of the plantations, would be burned through as part of the prescribed burning, both within commercial thinning units and outside of them.

Prescribed burning is not expected to either remove or create any habitat for this species. As a general rule these habitat types respond favorably to prescribed fire, and wildfire, with a short 1-2 year reduction in structure utilized for nesting structure immediately following the fire. The piling and prescribed burning of these acres should help regenerate these areas, and increase new growth and shrub vigor over most of the 218 acres of existing habitat where prescribed burning coincides with these habitat types.

The project area is used for the cumulative affects area. Past management, and naturally occurring events within the project area include, grazing, wildfire, prescribed fire, timber harvest, road use and maintenance, roads created for timber harvest, dispersed camping, fire suppression, and off-highway vehicle use. A summary of past, present, and future projects are summarized in the project record. As a general rule, these past and present activities have had and will have short term effects on these habitat types, usually resulting in short term increases in younger age classes, but with little change in the total acreage in these habitat types.

As this alternative will remove 92 acres of habitat for fox sparrow; a small scale adverse cumulative effect should result from implementation of the proposed action.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Fox Sparrow Trend. The small area or habitat potentially affected, 310 acres, 82-92 acres of which may potentially be removed, by the action alternatives of the Callegat Ecological Restoration Project would not alter the existing trend in the habitat, nor will it lead to a change in the distribution of fox sparrows across the Sierra Nevada bioregion.

Early and Mid Seral Coniferous Forest Habitat (Mountain quail)

There would be an approximately 107 acre conversion of present fox sparrow (92 acres), and sooty grouse (15 acres) habitat to early seral quail habitat from the plantation treatments, and understocked stand treatments, as they would move habitat to an early seral conifer plantation phase, post project. This would result in a total of approximately 1,428 acres of early seral mountain quail habitat, and the same pre-project acreage of mid seral habitat of 4,415 acres. Elsewhere in the project, where early and mid seral habitat exists now, it would be expected to persist after project implementation, and progress toward later seral stages through a slow more or less natural process.

The project would not change size class, or development of early to mid seral habitat classes, but would initially reduce shrub and canopy closure, in the thin and burn units. The shrub canopy closure in these areas would be reduced to a much larger extent, than the projected 10-15%

overstory canopy closure reduction. Without further treatment these areas would be expected to regain shrub canopy in a relatively short period (1-5 years). Longer term (+5 years) effects should be favorable from implementation, as increased vigor would occur within treated acres.

The reduction in tree densities associated with the thinning and burning should speed the growth of remaining trees. This would be a change in the speed with which these habitat types mature from early to mid, and mid to late seral habitats associated with the thinning, and to a lesser extent the burning proposed. The extents to which this effect will be realized, and the timing of these transitions, are difficult to assess.

The project area is used for the cumulative effects area. Past management, and naturally occurring events within the project area include, grazing, wildfire, prescribed fire, timber harvest, road use and maintenance, roads created for timber harvest, dispersed camping, fire suppression, and off-highway vehicle use. A summary of past, present and future projects is summarized in the project record. As a general rule, these past and present activities have had and will have short term effects on these habitat types, usually resulting in short term increases in younger age classes, but with little change in the total acreage in these habitat types.

As this a alternatives would retain mid seral habitat, and increase early seral mountain quail habitat (an additional 107 acres), no short term beneficial cumulative effects would result from the proposed action. The extent to which this action moves these habitat types out of the early and moderate seral stages over time would contribute to longer term adverse cumulative effect to quantities of early/mid seral habitat types. These effects are being offset to one degree or another by wildfire elsewhere in the Sierra Nevada.

Relationship of Project-Level Habitat Impacts to Bioregional-Scale Mountain Quail Trend. The action alternatives would retain existing mid seral habitat, create an additional of 107 acres of early seral habitat, and there will be a short term effects in understory shrub canopy closure of the across the thinned and burned of early to mid seral coniferous forest habitat with implementation of any of the action alternatives for the Callegat Ecological Restoration Project. Action alternatives will not alter the existing trend in the habitat, nor will it lead to a change in the distribution of mountain quail across the Sierra Nevada bioregion.

Alternative 3- The potential for high severity fire would be reduced on approximately 5820 acres.

Shrubland (West-Slope Chaparral) Habitat (Fox Sparrow)

All three action alternatives would result in similar the effects to habitat for fox sparrow. The treatment and loss of approximately 92 acres of habitat within plantations would occur under all three action alternatives.

Alternative 3 would include the girdling and retention of trees as snags within the thinning units proposed for commercial thinning in Alternative 1 (Proposed Action), this would have no effect on habitat quality or quantity for this species, as defined for this analysis.

As these alternatives will remove 82-92 acres of habitat for fox sparrow; a small scale adverse cumulative effect should result from implementation of Alternatives 3 or 4.

Early and Mid Seral Coniferous Forest Habitat (Mountain quail)

Alternatives 3 and 4

The effects of Alternatives 3 and 4 are the same as those discussed for Alternative 1. The retention of commercial size trees as snags (Alternative 3), and the reduced mechanical and herbicide treatment in RCAs (Alternative 4) would not be anticipated to impact existing habitat to for this species.

As the direct and indirect effects for these alternatives are the same as described for Alternative 1, the cumulative effects are also anticipated to be the same as Alternative 1.

As these action alternatives would retain mid seral habitat, and increase early seral mountain quail habitat (an additional 107 acres), no short term adverse cumulative effects would result from the action alternatives. The extent to which this action moves these habitat types out of the early and moderate seral stages over time would contribute to longer term adverse cumulative effect to quantities of early/mid seral habitat types. These effects are being offset to one degree or another by wildfire elsewhere in the Sierra Nevada.

Alternative 4- The potential for high severity fire would be reduced on approximately 5820 acres.

Shrubland (West-Slope Chaparral) Habitat (Fox Sparrow)

Alternative 4 would exclude mechanized equipment and the exclusion of herbicide use from the RCAs may retain a few more acres of habitat, but these areas would be in strips and may or may not be contiguous with other habitat. Alternative 4 would be expected to retain only a portion, 10 acres, of the 92 acres that Alternative 1 and 3 would remove.

Early and Mid Seral Coniferous Forest Habitat (Mountain quail)

See description for Alternative 3.

Issue #4.- Based on the low probability that the treated area will encounter a high severity wildfire it is questionable to whether or proposed treatments will be effective in modifying fire behavior. **Indicator Measure-**Time in years for which the potential for extreme wildland fire behavior will be reduced.

Although we cannot say with certainty that a given acre will be burned with in a given time period, we can look at fire history in the project area and see that between 1970 and 2010 there

have been 145 small fires with in a 1 mile radius of the project (See Fuels Report in project record). Sixty four of these fires were lightning caused supporting the theory that the project area falls within a historically frequent/low intensity fire regime. The lack of large wildland fire and prescribed fire use surrounding the project area indicates a loss of 3 to 10 fire cycles and has significantly altered the fire regime condition class of the landscape. In its current condition, the watersheds can be classified as a Condition Class 2/3 where the watershed is vulnerable to fire behavior, effects, and the risk of losing key ecosystem components are high. Given the fact there is some probability of a fire starting in the project area, it is stated in the purpose and need for this project to implement the SPLATs strategy to reduce fire severity when and if it occurs.

No Action- Fire modeling shows that the existing condition in the project area could produce both the flame lengths and passive crown fire that would make fire suppression difficult and lead to more severe fire effects. These conditions would remain in place and no reduction would occur.

Proposed Action- Based on fire behavior modeling and vegetation growth models, it is anticipated that the fire behavior, as measured in both flame lengths and acres capable of producing crown fire, will be reduced for approximately 10 years. It is estimated that after ten years, some form of maintenance for surface fuels would be needed, but at this time there is no specific plan to re-treat this area.

Alternative 3- This alternative would produce the same modeled fire behavior as the proposed action and be effective for approximately 10 years. However, at the end of the ten year period fuels loadings will most likely be much higher than if the proposed action were to be implemented.

Alternative 4- This alternative would produce the same modeled fire behavior as the proposed action and be effective for approximately 10 years.

Issue #5- Based on a study by Blakesley et al. (2005) a reduction of canopy cover below 70% would negatively affect CSO occupancy. **Indicator Measure-** Average residual canopy cover.

No Action- Average canopy closure 68%.

Proposed Action- Average residual canopy closure would be 54%. All of the existing acres of proposed commercial thinning units would retain 50 canopy closure or higher, where it presently exist before thinning. Suitable nesting habitat, WHR size and density class 5D would see an estimated 35 acre reduction, as canopy closure would be reduced below 60%, but would remain above 50% and would be retained as foraging habitat for spotted owls. The reduced canopy closure effects are occurring over 9 units, and would therefore be less likely to affect any one owl territory to any large extent. This canopy closure reduction would be expected to be of relatively short duration as canopy closure would rise in the next 10-15 years, and these acres would be expected to again be at or above 60% canopy closure.

Alternative 3- Average residual canopy closure would be 54%. Effects related to this indicator measure would be identical to the proposed action.

Alternative 4- Average residual canopy closure would be 54%. Effects related to this indicator measure would be identical to the proposed action.

Issue # 6- Treatments such as herbicide application and mechanical thinning in Riparian Conservation Areas could have negative effects to aquatic habitats. **Indicator Measure-** Acres of RCA treated by mechanical thinning and or herbicide.

No Action- No application of glyphosate herbicide in RCAs and no mechanical treatments in the RCAs of Cat Ck. and Middle Fork Cosumnes River.

Proposed Action- 177 acres of glyphosate herbicide treatment in RCAs throughout the project area and 42 acres of ground based mechanical treatments in the RCAs of Cat Ck. and Middle Fork Cosumnes River. Although effects are possible to aquatic wildlife resulting from mechanical treatments and herbicide application within RCAs, they are expected to be minimal. This is due to the fact that many aquatic species are associated with the actual water in the stream course and design criteria listed in the proposed action define treatment limitations on aquatic features. Although treatments are allowed to occur within the defined 300 ft. or 150 ft. area surrounding an aquatic feature, most times there will be little or no treatment within 25 ft. of water itself.

Alternative 3- 177 acres of glyphosate herbicide treatment in RCAs throughout the project area and 42 acres of ground based mechanical treatments in the RCAs of Cat Ck. and Middle Fork Cosumnes River. Effects related to this indicator measure would be identical to the proposed action.

Alternative 4- Zero acres of glyphosate herbicide treatment in RCAs and no mechanical treatments in the RCAs of Cat Ck. and Middle Fork Cosumnes River. Sediment risk as it relates to project-level ground disturbing activities within RCAs and its potential effects to aquatic habitat would be reduced since these activities would not be occurring within the RCAs of Cat Creek and Middle Fork Cosumnes River. There would be no increased risk from glyphosate or glyphosate formulations (adjuvants and colorants) to affect water quality or other aquatic organisms since it would not be used within the RCAs of the CERP.

In addition, as summarized from the Hydrology Report (Markman 2013) future recruitment of large woody debris (LWD) to Cat Creek may be slightly greater than under Alternatives 1 and 3 for two related reasons: a.) the 300 ft exclusion buffer of Cat Creek RCAs under Alternative 4 would result in few or no large trees would be removed within one site potential tree height of the channel of that stream, and b.) thinning units, as they exist, border approximately 50 percent of the entire length of Cat Creek - this means that the width of the equipment exclusion next to Cat Creek may affect the amount of LWD in the entire stream.

Effects Relative to Finding of No Significance (FONSI) Elements

In 1978, the Council on Environmental Quality published regulations for implementing the National Environmental Policy Act (NEPA). These regulations (40 CFR Parts 1500-1508) include a definition of “significant” as used in NEPA. The ten elements of this definition are critical to reducing paperwork through use of a finding of no significant impact (FONSI) when an action would not have a significant effect on the human environment, and is therefore exempt from requirements to prepare an environmental impact statement (EIS). Significance as used in NEPA requires consideration of the following ten intensity factors in the appropriate context for that factor.

(1) Beneficial and adverse impacts.

Terrestrial Wildlife

A Biological Assessment/Evaluation for Terrestrial Threatened, Endangered, and Sensitive Wildlife Species has been prepared and is available for review in the project record. The project will not affect any threatened or endangered wildlife species. It has been determined that implementation of any of the 4 alternatives would not likely result in a trend toward Federal listing or loss of species viability for any sensitive wildlife species. Although there may be minor short term effects to habitat quality for CSO, northern goshawk, American marten, Pacific Fisher, and Sierra Nevada Red Fox, populations are not anticipated to be negatively impacted. Habitat modifications would occur primarily through canopy closure reduction and the loss of future snag recruitment.

Some beneficial impact may occur for pallid bat by increasing the openness of the understory that would likely favor foraging by this species. This would occur under all action alternatives. Alternative 3 may provide beneficial habitat impacts for CSO, northern goshawk, American marten, Pacific Fisher, and Sierra Nevada Red Fox by providing additional snags that would serve as nesting/roosting/denning habitat.

Botany

A Biological Assessment/Evaluation for Botanical Resources has been prepared and is available for review in the project record. Negative, effects of the proposed project are not expected since design criteria have been included to prevent direct and indirect effects to known Sensitive plant species.

The proposed herbicide application presents different risk scenarios for known terrestrial and

aquatic sensitive species within the Callecatt project area. For terrestrial sensitive plants, the primary risk is the potential for off-target movement of glyphosate through drift as well as direct application of herbicides to sensitive plant occurrences. The risk of drift is low due to the distance of nearest sensitive plant to herbicide application being 175 ft. Risk from direct application is minimal since terrestrial sensitive plant occurrence will be flagged and avoided prior to herbicide application.

The project includes the application of Sporax as a fungicide for stumps in the vicinity of PiPi campground and in identified pockets of Annosus (approximately 60 acres). Based on Syracuse Environmental Research Associates (SERA) risk assessments for Sporax, non-target aquatic plants and algae do not appear to be at risk from acute, chronic, or accidental exposure scenarios. There also appears to be little risk to terrestrial plants exposed to boron through runoff of sporax applied to tree stumps. Therefore, effects to Sensitive plant species, including veined aquatic lichen, from the proposed annosus treatments are not expected for the Callecatt project.

Soil disturbances can provide opportunities for the introduction and proliferation of invasive species. These species have the potential to quickly outcompete native plants including Sensitive plants for sunlight, water, and nutrients. Seeds of these species can be carried into Sensitive plant areas on prescribed burning equipment, vehicles, and on workers boots and clothing. The magnitude of this impact is difficult to predict since it is contingent on the introduction of a noxious weed species into an area, an event which may or may not occur.

The proposed prescribed burning in the Callecatt project could indirectly benefit known occurrences of Pleasant Valley Mariposa lily (*Calochortus clavatus* var. *avius*) within the project area and any undiscovered individuals by reducing duff and cover of competing vegetation and opening up the overstory. The project is also expected to directly benefit two known aquatic lichen occurrences by limiting impacts to streamside habitat from ongoing dispersed recreation. These two occurrences are on the Middle Fork of the Cosumnes and Cat Creek in the project area off of FS roads 9N17F and 9N22 respectively.

The Callecatt Ecological Restoration project is also expected to directly benefit two known aquatic lichen occurrences (FS occ # 5 and FS occ # 3) by limiting impacts to streamside habitat from ongoing dispersed recreation. The proposed restoration of the gullies and plugged culvert in the area of 9N17 and Dark Canyon (unit 130) will benefit veined aquatic lichen (*Peltigera hydrothyria*) in Dark Canyon Creek. Proposed invasive plant treatments in the project area would benefit overall native vegetation diversity and sensitive plant occurrences by preventing the future spread on invasive species.

Under alternative 4 there is a lower risk of effects from herbicides to sensitive plants since herbicide application will not occur within RCA. There is also a slightly lower risk of invasive species introduction into RCAs along Cat Creek and the Middle Fork of the Cosumnes since mechanical equipment will be excluded from RCA on the above drainages.

Aquatics

A Biological Assessment/Evaluation for Aquatic Species has been prepared and can be found in

the project record. Effects from timber harvest, road related activities, fuels reduction, prescribed burning, herbicide/fungicide application, blocking dispersed camping vehicle access in RCAs, and removal of encroaching conifers in a meadow near Pi Pi Creek under alternative 1 are possible since treatments will be occurring within RCAs where aquatic species (foothill yellow-legged frog, Sierra Nevada yellow-legged frog and western pond turtle) are most likely to occur. Direct and indirect effects to aquatic species or aquatic habitat are expected to be minimal because of design features and because these species are highly associated with water in the stream channels and not likely to be found outside of RCAs with the exception of western pond turtle.

Hydrology

In the short-term (less than five years), adverse effects to aquatic resources (water quality and quantity, stream condition, and aquatic habitat) in the project area and downstream of the project area are expected to be minor or negligible. This is largely the result of the design criteria listed under the proposed action. In the long-term (greater than five years), there may be an improvement in the condition and aquatic habitat of a number of streams in the project area. This is largely the result of the maintenance/repair of roads and restoration of other areas that are contributing sediment to streams.

A minor, short-term (less than five years) increase in the suspended sediment concentrations and turbidity levels of the streams that flow through or adjacent to thinning units may occur during and immediately after large rainfall events. This increase - should it occur - should not exceed state water quality standards for turbidity or sediment. Further information on effects to hydrology can be found in the Hydrology Report in the project record.

(2) The degree to which the proposed action affects public health or safety.

A comprehensive analysis of human health risks was conducted to analyze the potential for adverse health effects to workers and members of the public from the proposed use of pesticides. This analysis examines a range of potential exposures to pesticides, from routine operations involving workers, to accidents involving workers and the public. Assumptions regarding rates of use range from average (or typical) rates of use to very high rates of use, representing worst-case scenarios. The complete risk assessment is located in the project record. The following summary of pesticide effects is taken from that risk assessment.

No Action-Alternative 2

There are no effects from pesticides as this alternative does not propose to use pesticides.

Proposed Action and Alternative 3

Glyphosate

Workers - Given the low hazard quotients for both general occupational exposures as well as accidental exposures, the risk characterization for workers is unambiguous. None of the exposure scenarios exceed a level of concern. The simple verbal interpretation of this quantitative characterization of risk is that even under the most conservative set of exposure

assumptions, workers would not be exposed to levels of glyphosate that are regarded as unacceptable. Under typical backpack application conditions, levels of exposure will be at least 100 times below the level of concern.

While the accidental exposure scenarios are not the most severe one might imagine, they are representative of reasonable accidental exposures. Given that the highest hazard quotient for any of the accidental exposures is a factor of about 1,000 below the level of concern, more severe and less plausible scenarios would be required to suggest a potential for systemic toxic effects. Glyphosate and glyphosate formulations are skin and eye irritants. Quantitative risk assessments for irritation are not normally derived, and, for glyphosate specifically, there is no indication that such a derivation is warranted.

General Public – None of the longer-term exposure scenarios approach a level of concern. Although there are several uncertainties in the longer-term exposure assessments for the general public, the upper limits for hazard quotients are sufficiently far below a level of concern that the risk characterization is relatively unambiguous: based on the available information and under the foreseeable conditions of application, there is no route of exposure or scenario suggesting that the general public will be at any substantial risk from longer-term exposure to glyphosate.

Borax

Workers - Given the low hazard quotients for accidental exposures, the risk characterization for workers is unambiguous. None of the exposure scenarios exceed a level of concern. Thus, based on the available information and under the foreseeable conditions of application, there is no route of exposure or scenario suggesting that workers will be at any substantial risk from acute exposures to Borax.

Borax can cause eye irritation. Quantitative risk assessments for irritation are not normally derived, However, from a practical perspective eye irritation is likely to be the only overt effect as a consequence of mishandling Borax. This effect can be minimized or avoided by prudent industrial hygiene practices during the handling of the compound. The Sporax label requires eye protection during application.

General Public – For the general public, hazard quotients for consumption of Sporax from a tree stump by a child range from 2 to 16 for ingestion of 50 to 400 mg of Sporax). These estimated levels of exposure are below levels of exposure associated with nonlethal effects such as diarrhea and vomiting by factors of about 4 to 32. Documented lethal doses are in the range 505 mg B/kg/day and 765 mg B/kg/day, factors of about 11 to 135 below the estimated levels of exposure. Thus, while this exposure scenario raises concern in that the RfD could be substantially exceeded in a child directly consuming Sporax from a treated stump, the most likely adverse effects would probably be vomiting and diarrhea.

This scenario most likely would apply to Borax treatments near campgrounds, where children may be present. In the Callegat Project activities in the Pipi campground would be scheduled

when it is closed to public use. Elsewhere on the Callegat Project the application of Borax would occur to freshly cut stumps during timber sale operations not in proximity of campgrounds. Due to the nature of an active logging operation it is not likely that a child would be in this area of the forest while active logging is taking place.

Impurities and Metabolites

Virtually no chemical synthesis yields a totally pure product. Technical grade pesticides, as with other technical grade products, contain some impurities. To some extent, concern for impurities in technical grade herbicides is reduced by the fact that existing toxicity studies were conducted using technical grade products. Thus, if toxic impurities are present in a technical grade product, their effects are reflected in the toxicity measurements. An exception to this general rule involves carcinogens, most of which are presumed to pose risks in any concentrations. In the case of the pesticides under consideration, carcinogen impurities are:

- Ethylene oxide potentially in surfactant
- 1,4 dioxane potentially in surfactant

Risk of cancer from exposure to ethylene oxide is considered negligible for occupationally exposed individuals, based on a standard of acceptable risk of 1 in 1 million. Risks from exposure to ethylene oxide are considered acceptable, given the conservative assumptions about exposure. Risks of cancer from the exposure to 1,4-dioxane are considered negligible for occupationally exposed individuals, based on a standard of acceptable risk of 1 in 1 million. Accordingly, risks from 1,4-dioxane exposure are considered acceptable. As with impurities, the potential effects of metabolites is encompassed by the available in vivo toxicity studies, under the assumption that toxicological consequences of metabolism in the species tested would be similar to those of humans. Uncertainties in this assumption are countered by using an uncertainty factor in deriving the RfD and relying upon conservative studies in determining the appropriate RfD.

Other Additives

Surfactants

- Methylated Seed Oil and Silicone/ Methylated Seed Oil blend surfactants both have a potential to cause slight skin and eye irritation.

Colorants

- Colorfast® Purple contains a dye, Basic Violet 3 or Gentian Violet, which is considered a potential carcinogen. Based on SERA, 1997b, risk characterization leads to typical cancer risks for workers of 4.7×10^{-7} or 1 in 2.1 million. For the public, the consumption of sprayed berries yielded an estimated single exposure risk of 1 in 37 million to 1 in 294 million. For public exposures, it is expected that the dye would reduce exposures both to itself and to the other chemicals it might be mixed with (herbicide and other adjuvants) as

the public would be alerted to the presence of treated vegetation.

- Hi-Light® Blue is considered virtually non-toxic to humans. It is mildly irritating to the skin and eyes.

Synergistic Effects

Synergistic effects (multiplicative) are those effects resulting from exposure to a combination of two or more chemicals that are greater than the sum of the effects of each chemical alone (additive). Based on the limited data available on pesticide combinations involving these herbicides, it is possible, but unlikely, that synergistic effects could occur as a result of exposure to the pesticides proposed for use.

It is not anticipated that synergistic effects would be seen with the herbicides and the adjuvants that might be added to them.

Sensitive Individuals

The uncertainty factors used in the development of the RfD takes into account much of the variation in human response. The uncertainty factor of 10 for sensitive subgroups is sufficient to ensure that most people will experience no toxic effects. "Sensitive" individuals are those that might respond to a lower dose than average, which includes women and children. The National Academy of Sciences (NAS 1993) found that quantitative differences in toxicity between children and adults are usually less than a factor of approximately 10-fold. An uncertainty factor of 10 may not cover individuals that may be sensitive to pesticides because human susceptibility to toxic substances can vary by two to three orders of magnitude. Factors affecting individual susceptibility include diet, age, heredity, preexisting diseases, and life style. Individual susceptibility to the pesticides proposed in this project cannot be specifically predicted. Unusually sensitive individuals may experience effects even when the HQ is equal or less than 1.

No reports were encountered in the glyphosate literature leading to the identification of sensitive subgroups. There is no indication that glyphosate causes sensitization or allergic responses, which does not eliminate the possibility that some individuals might be sensitive to glyphosate as well as many other chemicals. The primary targets for boron toxicity are the developing fetus and the testes. Thus, exposure of pregnant women to borate compounds places the developing fetus at risk. Since the oral (chronic) RfD for boron and borates is based on the effects in the developing fetus, risk to this subgroup is assessed throughout the SERA risk assessment. Regarding other sensitive subgroups, males with underlying testicular dysfunction could be at increased risk for boron-induced testicular toxicity; however, no data are available to quantify this risk.

Cumulative Effects

The proposed use of herbicides could result in cumulative doses of herbicides to workers or the general public. Where individuals could be exposed by more than one route, the risk of such cases can be quantitatively characterized by adding the hazard quotients for each exposure

scenario. For example, using glyphosate as an example, the typical levels of exposure for a woman being directly sprayed on the lower legs, staying in contact with contaminated vegetation, eating contaminated fruit, and consuming contaminated fish leads to a combined hazard quotient of 0.32. Similarly, for all of the chronic glyphosate exposure scenarios, the addition of all possible pathways lead to hazard quotients that are substantially less than one. Similar scenarios can be developed with the other herbicides. The risk assessment specifically considered the effect of repeated exposure in that the chronic RfD is used as an index of acceptable exposure. Consequently, using the typical rates of application, repeated exposure to levels below the toxic threshold should not be associated with cumulative toxic effects.

Cumulative effects can also be caused by different chemicals having a common metabolite or a common toxic action. Neither glyphosate or borax has been demonstrated to share a common metabolite with other pesticides.

Alternative 4

The effects of Alternative 4 are the same as Alternative 1 and Alternative 3, except that Alternative 4 would reduce the use of glyphosate and additives by about 25% (197 acres), reducing potential exposure to workers and the general public by the same amount.

(3) Unique characteristics of the geographic area.

A known wetland/meadow feature exists near PiPi Campground that is part of the proposed action to receive restoration treatment by removing encroaching conifers. Although project activities include hand removal of conifer encroachment within Riparian Conservation Area and within the wetland/meadow itself, no ground-based activity will be occurring in these areas. Specific design features were developed to reduce changes in meadow hydrology and sediment disturbance. The removal of encroaching conifers should increase water yield and the coarse woody debris that will be left should promote habitat suitability.

There are multiple known historic and pre-historic cultural sites within the project area. Design criteria have been developed to protect the known sites from potential adverse impacts of implementing the action Alternatives.

(4) The degree to which the effects on the quality of the human environment are likely to be highly controversial.

Although issues were raised over certain aspects of the project during public involvement, there is no known scientific controversy over the anticipated effects of the proposed activities. One issue raised was the related to the ongoing California spotted owl demographic study. In 2011, a new analysis was conducted by the Sierra Nevada Adaptive Management Project (SNAMP) on the Eldorado demographic study and preliminary results were discussed at their fall annual meeting. SNAMP is a joint effort by the University of California, University of Minnesota, University of Wisconsin, the Forest Service, other state and federal agencies, and the public. The SNAMP science team is working with the agencies to develop an adaptive management and

research program consistent with the Sierra Nevada Forest Plan Amendment. Specifically, SNAMP is assessing how forest vegetation treatments to prevent wildfire affect fire risk, wildlife, forest health and water. The SNAMP study related to the California spotted owl is designed to address the question: do forest fuel treatments have an effect on spotted owl territory occupancy and reproductive success?

While SNAMP's efforts in the Sierra Nevada began in 2007, four demographic studies of California spotted owl (CSO) have been ongoing for a number of years within the Sierra Nevada: (1) Eldorado National Forest (since 1986); (2) Lassen National Forest (since 1990); (3) Sierra National Forest (since 1990); and (4) Sequoia-Kings Canyon National Park (since 1990). In 2007, SNAMP initiated an additional California spotted owl study on the Tahoe National Forest. The initial study area for this SNAMP study had so few California spotted owls that it was expanded to incorporate the long-term Eldorado National Forest demographic study area. The 2010 meta-analysis concluded that, with the exception of the Lassen study area, owl populations were stable, with adult survival rate highest at the Sequoia-Kings Canyon study site. The recent preliminary analysis conducted by SNAMP in 2011 shows different results for the Eldorado owl populations. This new analysis of the Eldorado study site included 5 additional years of data as well as data from 8 owls that were originally discounted in the Blakesley et al. (2010) meta-analysis. This analysis appears to indicate that the population in this study area may be declining as well.

The presentation by SNAMP did not suggest that Forest Service actions have caused this decline or could create a decline in the California spotted owl population. The Eldorado study area includes 37% private lands, including industrial timber lands and a growing residential component. Vegetation management projects on private lands do not include the same protections for wildlife that exist on public lands. It should also be noted that none of these demographic studies are designed to identify causal factors of the observed population changes.

As noted above, the information from the Eldorado study is preliminary and the peer review process may result in corrections to that information. In addition, even assuming the peer review process validates the data suggesting a population decline on the Eldorado, the study does not identify the cause of this decline. Nevertheless, the Forest Service recognizes the concern the potential results from this study may cause, and has considered the preliminary information from the Eldorado study in its review and analysis of the project.

The Callegat Ecological Restoration project analysis and design were informed by the best and most current information we have about California spotted owl habitat requirements, the effects of vegetation management activities on spotted owl, and the risks and effects of fire on the owl and its habitat. Specifically, commercial thinning treatments in high capability nesting habitat within HRCAs with recent past history of treatment were modified to reduce these impacts. In these HRCAs, commercial thinning was focused on lower quality habitat (habitat with less than 60 percent canopy cover). Treatments within dense canopied stands large treed stands (5D) would generally not reduce canopy cover more than 5 percent. This approach minimizes the likelihood that these activities will reduce spotted owl survival and territory occupancy, while

allowing for necessary fuels reduction to occur. This treatment is described in the design criteria, and would affect these units 112, 113, 114, 116, 118, 119, 122, 123, 124, 136, and 155. Unit 113 is within a spotted owl PAC and has more restrictive marking described in the design criteria above.

These design features result in lower impacts, especially to those HRCAs identified during early project development as having considerable past treatment. Reduction in habitat capability, nesting habitat (CWHR 5D) would be limited to approximately 10 acres within each of three HRCAs (ED008, ED093, and ED137). The relatively small change in the amount of dense canopied nesting/roosting habitat across all of the HRCAs, would not be expected to affect occupancy rates for these PACs/HRCAs.

Another issue raised during public scoping dealt with the use of herbicides. Syracuse Environmental Research Associates (SERA) have conducted exhaustive review and analysis of existing scientific literature to determine the potential effects of the herbicides analyzed for use in the EA. Current peer-reviewed articles from the open scientific literature, as well as recent U.S. EPA documents, were used to update the information contained in these documents. These documents were used as the basis for analysis of effects to human health, wildlife and aquatic species. The analysis of human health risks of herbicide use (project file) is based on scientifically accepted methodologies, and risk levels compared against generally accepted levels of risk used by the toxicology profession and the state and federal government. The assessment of current scientific information as applied to this situation leads to the conclusion that no significant impacts would occur as a result of using herbicides as proposed in Alternatives 1, 3 or 4.

(5) Degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

The proposed project follows the management direction in the Eldorado National Forest Land and Resource Management Plan (USDA Forest Service 1989) as amended by the 2004 Sierra Nevada Forest Plan Amendment (USDA Forest Service 2004). Local expertise in implementation of these types of projects minimizes the chance of highly uncertain effects, which involve unique or unknown risks. Proposed activities are routine in nature, employing standard practices and design criteria, and their effects are generally well known.

The use of herbicides to manage vegetation in forest settings has been extensively researched; the possible effects and level of risk are well known. The Eldorado National Forest has had extensive prior experience with projects involving the application of herbicides. In addition, monitoring of other herbicide projects on National Forest System lands in California including the Eldorado National Forest have shown impacts to water quality, wildlife, soil, and vegetation to be consistent with the findings disclosed in this analysis.

(6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

Although it is acknowledged that the project area will not remain static, and may need future maintenance in the form of prescribed burning, this decision will not set a precedent for future actions. Any future decisions will require a site-specific analysis to consider all relevant scientific and site-specific information available at that time.

(7) Whether this action is related to other actions with individually insignificant but cumulatively significant impacts

Terrestrial Wildlife

The project would add an additional 4,405 acres of low (prescribed burning) to moderate (thinning, RRSP, anorus treatments) alteration of suitable habitat for CSO and northern goshawk. The past and foreseeable future alterations have/would generally reduce nesting habitat capability, but retain foraging habitat suitability. The proposed action as discussed in the indirect effects, would add an additional 4,405 acres of habitat alteration to the existing analysis area, with only the estimated 1.5 mile of new road construction removing habitat for this species. The remaining area is expected to remain suitable for goshawks and CSO over time, and nesting habitat would be expected to recover, where it is initially reduced with these treatments. As time passes, early treatments in the analysis area tend to have less of an effect, depending on the type of treatment. The proposed action contributes to these cumulative effects, mainly through a short term reductions of habitat capability by adding approximately a 19% increase in treated area, about half of which is commercial thinning, and most of the rest is prescribed burning. Because these thinning treatments are focused outside of previously treated HRCAs and treatments within HRCAs are limited to less than 5% reduction in canopy cover, cumulative effects associated with this project are not expected to reduce the number of spotted owls that can be supported in the analysis area.

Botany

Historic logging, grazing, and OHV travel have already introduced noxious weeds, primarily nonnative annual grasses, into portions of the project area. These annual grasses likely became established early in the analysis area during the Euro American settlement of the Sierras, probably as a result of grazing, logging, and mining activities. The grasses are common in both natural and developed openings such as lava caps, landings, and roadways throughout the Eldorado NF. The proposed project is not expected to result in a detectable increase in the spread or proliferation of these non-native species above existing levels. Proposed design criteria for the project, including eradication of known priority infestations is expected to reduce the risk of introducing and spreading high priority noxious weeds in the project area (see Noxious Weed Risk Assessment in Project Record).

The threat of noxious weeds (current and future) introduction cannot be completely eliminated for the proposed project or other expected activities in the area.

Aquatics

When considered with past, present, and reasonably foreseeable future activities, any cumulative impacts to aquatic species or their preferred habitat as a result of implementing the Callegat ERP

are expected to be 'low' for the following reasons: they have not been detected within project area boundary, project activities will be spanned over multiple years to reduce cumulative watershed effects, short (1-2 yr) duration of project activities, established stream buffer exclusion zones, overall reduction in wildfire risk, restoration of riparian habitat through prescribed fire and sediment reduction. The response of aquatic species within the identified watersheds of the Callegat ERP will depend on the type and magnitude of disturbance, the amount, condition, and configuration of remaining habitat, as well as life-history characteristics that correspond with the timing of project activities. The connected actions of the Callegat ERP is not expected to result in a significant trend from current baseline conditions for any aquatic species in the project area.

Hydrology

The risk of cumulative watershed effects (CWE) is currently either *low* or *moderate* in the four watersheds that contain the CERP. Alternatives 1, 3, and 4 of the CERP would increase the risk of CWE in each watershed for at least a few years - the risk would be *high* in three of the watersheds and *moderate* in one watershed. For the Cat Creek watershed, design criteria would spread the implementation of the CERP over a period of time so as to prevent that watershed from exceeding the *Threshold of Concern* for CWE. As a result of the above, the risk of CWE is not significant.

(8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.

The direct, indirect and cumulative effects to cultural resources are summarized from the Heritage Resource Report, #R2011050310004 (Whiteman 2012).

No Action- Alternative 2

There will be no impacts to cultural resources from the No Action Alternative. However, the risk of catastrophic wildland fire within the project area will not be reduced.

Alternative 1 (Proposed Action), Alternative 3 (Mechanical harvest with 16 inch DBH limit and snag recruitment), and Alternative 4 (Limited operations within RCAs)

Alternatives 1, 3, and 4 have the potential to affect (23) historic and prehistoric sites. Six (6) are not Resources At Risk (RARs) from project activities. Six (6) sites are RARs during the mechanical phase of the project and eleven (11) are RARs during the prescribed burning phase.

Design criteria have been developed to protect the known sites from potential adverse impacts of implementing the action Alternatives. If previously unknown sites are encountered during project activities contract provisions will protect them. By following standard procedures for protecting heritage resources there will be no effect to cultural resources from implementing the proposed action. By following standard protection measures as described in Heritage Resource Report, (Whiteman 2012) there would be no direct, indirect, or cumulative effects to Resources at Risk from implementing any of the action alternatives; the Proposed Action, Alternative 3 or

Alternative 4.

(9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

A Biological Assessment/Evaluation for Terrestrial Threatened, Endangered, and Sensitive Wildlife Species has been prepared and is available for review in the project record. The proposed action will have no effect/impact on Valley elderberry longhorn.

A Biological Assessment/Evaluation for Botanical Resources has been prepared and is available for review in the project record. Currently the only TEP plant species expected to occur on the Eldorado NF is *Packera layneae*. Potential habitat for *Packera layneae* is not found within the proposed project area. It is therefore concluded that the proposed action (Alternative 1, 3 and 4) would not affect this species.

A Biological Assessment/Evaluation for Aquatic Species has been prepared and can be found in the project record. It is concluded that for all alternatives, there would be no effect to the following species: California red-legged frog (*Rana draytonii*), Central Valley steelhead (*Oncorhynchus mykiss*), Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*), delta smelt (*Hypomesus transpacificus*), Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*), winter-run chinook salmon (*Oncorhynchus tshawytscha*).

(10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

Alternatives 1, 3, and 4 were developed in accordance with and, therefore, do not threaten to violate any Federal, State or local laws or requirements for the protection of the environmental (i.e. Endangered Species Act, National Historic Preservation Act, Clean Water Act, Clean Air Act, and the National Forest Management Act(NFMA)). The actions proposed under any of the alternatives are consistent with the Eldorado National Forest Land and Resources Management Plan (1989) as amended by the Sierra Nevada Forest Plan Amendment (2004).

As part of compliance with NFMA a project level Management Indicator Species (MIS) Report has been prepared. This involves examining the impacts of the proposed project alternatives on MIS habitat by discussing how direct, indirect, and cumulative effects will change the habitat in the analysis area. This document is available for review as part of the project record.

The proposed action and all alternatives will have no effect/impact on the following species: Peregrine falcon, Bald eagle, Western red-bat, Great gray owl, Willow flycatcher, California wolverine, Townsend's big-eared bat, California red-legged frog, Yosemite toad, hardhead, northern leopard frog.

The proposed action and all alternatives may affect/impact individuals but is not likely to result in a trend toward Federal listing or loss of viability for the following species: California spotted owl, Northern goshawk, American marten, Pacific Fisher, Sierra Nevada red fox, Pallid bat,

Sierra Nevada yellow-legged frog, foothill yellow-legged frog, western pond turtle.

The proposed action and all alternatives will have no effect/impact on the following botanical species: *Arctostaphylos nissenana*, *Balsamorhiza macrolepis* var. *macrolepis*, *Bruchia bolanderi*, *Clarkia biloba* ssp. *brandegeae*, *Draba asterophora* var. *asterophora*, *Draba asterophora* var. *macrocarpa*, *Eriogonum tripodum*, *Epilobium howellii*, *Helodium blandowii*, *Horkelia parryi*, *Lewisia longipetala*, *Lewisia serrata*, *Navarretia prolifera* ssp. *lutea*, *Phacelia stebbinsii*, and *Pinus albicaulis*

The proposed action and all alternatives may affect/impact undiscovered individuals but is not likely to result in a trend toward Federal listing or loss of viability for the following botanical species: *Calochortus clavatus* var. *avius* or *Lewisia kelloggii* var. *hutichisonii*, *Peltigeria hydrotheria*, *Allium tribracteatum*, *Botrychium ascendens*, *Botrychium crenulatum*, *Botrychium lunaria*, *Botrychium minganense*, *Botrychium montanum*, *Cypripedium montanum*, *Lewisia kelloggii* ssp. *kelloggii*, *Meesia triquetra*, *Meesia uliginosa*.

Appendix A

Callecat Ecological Restoration Project Vegetation Treatment Units			
Unit #	Acres	Vegetation Treatment	Piling Treatment
113-7	20	Commercial Thin/Small Tree Removal/Glyphosate Herbicide	NO PILE
114-33		Commercial Thin/Small Tree Removal	NO PILE
114-34	4	Commercial Thin/Small Tree Removal	NO PILE
114-84	4	Commercial Thin/Small Tree Removal/Glyphosate Herbicide	NO PILE
113-100	10	Commercial Thin/Small Tree Removal/Glyphosate Herbicide	NO PILE
113-101	34	Commercial Thin/Small Tree Removal/Glyphosate Herbicide	NO PILE
114-101	16	Commercial Thin, Annosus Treatment /Small Tree Removal/Glyphosate Herbicide	NO PILE
114-102	9	Commercial Thin/Small Tree Removal/Glyphosate Herbicide	NO PILE
112-103	5	Commercial Thin/Small Tree Removal/Glyphosate Herbicide	NO PILE
109-110	20	Commercial Thin/Small Tree Removal/Glyphosate Herbicide	NO PILE
109-111	9	Commercial Thin/Small Tree Removal/Glyphosate Herbicide	NO PILE
112	50	Commercial Thin & Small Tree Removal	Dozer/Grapple
113	28	Commercial Thin & Small Tree Removal	Dozer/Grapple
114	35	Commercial Thin & Small Tree Removal	Dozer/Grapple
115	25	Commercial Thin & Small Tree Removal	Dozer/Grapple
116	39	Commercial Thin & Small Tree Removal	Dozer/Grapple

Unit #	Acres	Vegetation Treatment	Piling Treatment
117	61	Commercial Thin & Small Tree Removal	Dozer/Grapple
118	31	Commercial Thin & Small Tree Removal	Dozer/Grapple
119	163	Commercial Thin & Small Tree Removal	Dozer/Grapple
120	88	Commercial Thin & Small Tree Removal	Dozer/Grapple
121	45	Commercial Thin & Small Tree Removal	Dozer/Grapple
122	69	Commercial Thin & Small Tree Removal	Dozer/Grapple
123	78	Commercial Thin & Small Tree Removal	Dozer/Grapple
124	37	Commercial Thin & Small Tree Removal	Dozer/Grapple
125	16	Commercial Thin & Small Tree Removal	Dozer/Grapple
126	53	Commercial Thin & Small Tree Removal	Dozer/Grapple
127	38	Commercial Thin & Small Tree Removal	Dozer/Grapple
128	46	Commercial Thin & Small Tree Removal	Dozer/Grapple
129	16	Commercial Thin & Small Tree Removal	Dozer/Grapple
130	14	Commercial Thin & Small Tree Removal	Dozer/Grapple
131	30	Commercial Thin & Small Tree Removal	Dozer/Grapple
132	12	Commercial Thin & Small Tree Removal	Dozer/Grapple
133	21	Commercial Thin & Small Tree Removal	Dozer/Grapple
134	83	Skyline-Commercial Thin	NO PILE
135	93	Commercial Thin & Small Tree Removal	NO PILE

Unit #	Acres	Vegetation Treatment	Piling Treatment
136	297	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
137	100	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
138	62	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
139	85	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
140	82	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
141	98	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
142	49	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
143	118	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
144	47	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
145	15	Commercial Thin & Small Tree Removal	Dozer/Grapple
146	93	Commercial Thin, Annosus Treatment & Small Tree Removal	NO PILE
148	92	Commercial Thin & Small Tree Removal	Dozer/Grapple
149	26	Commercial Thin, Annosus Treatment & Small Tree Removal	Dozer/Grapple
150	56	Commercial Thin & Small Tree Removal	Dozer/Grapple
151	33	Skyline Commercial Thin	NO PILE
152	53	Skyline Commercial Thin	NO PILE
153	21	Commercial Thin & Small Tree Removal	Dozer/Grapple
155	5	Commercial Thin & Small Tree Removal	Dozer/Grapple
156	12	Commercial Thin & Small Tree Removal	Dozer/Grapple

Unit #	Acres	Vegetation Treatment	Piling Treatment
157	29	Commercial Thin & Small Tree Removal	Dozer/Grapple
158	15	Commercial Thin & Small Tree Removal	Dozer/Grapple
159	17	Skyline Commercial Thin	No Pile
	2737	Total Commercial Thinning Acres	
108-12	3	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
109-10	3	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
109-14	2	Glyphosate Herbicide	No Pile
109-16	4	Glyphosate Herbicide	No Pile
109-2	12	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
110-13	1	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
110-8	25	Glyphosate Herbicide	No Pile
111-1	3	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
111-9	9	Glyphosate Herbicide	No Pile
112-1	3	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
112-10	2	Glyphosate Herbicide	No Pile
112-12	2	Glyphosate Herbicide	No Pile
112-13	3	Glyphosate Herbicide	No Pile
112-104	1	Commercial Thin/Glyphosate Herbicide	No Pile
112-178	7	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
112-178	5	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
112-179	13	Glyphosate Herbicide	No Pile
112-204	2	Pre-Commercial Thin/Glyphosate Herbicide	No Pile

Unit #	Acres	Vegetation Treatment	Piling Treatment
112-24	6	Pre-Commercial Thin	No Pile
112-25	5	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
112-26	2	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
112-3	1	Glyphosate Herbicide	No Pile
112-4	2	Glyphosate Herbicide	No Pile
112-6	6	Glyphosate Herbicide	No Pile
112-7	2	Pre-Commercial Thin	No Pile
112-8	20	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
112-9	2	Glyphosate Herbicide	No Pile
113-1	35	Glyphosate Herbicide	No Pile
113-10	16	Glyphosate Herbicide	No Pile
113-11	3	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
113-13	2	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
113-14	3	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
113-15	11	Glyphosate Herbicide	No Pile
113-2	20	Glyphosate Herbicide	No Pile
113-3	29	Glyphosate Herbicide	No Pile
113-4	26	Glyphosate Herbicide	No Pile
113-5	20	Glyphosate Herbicide	No Pile
113-6	46	Glyphosate Herbicide	No Pile
113-9	3	Glyphosate Herbicide	No Pile
114-10	17	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
114-107	2	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
114-2	4	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
114-30	9	Plant/Pre-Commercial Thin/Glyphosate Herbicide	No Pile
114-32	3	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
114-38	7	Glyphosate Herbicide	No Pile

Unit #	Acres	Vegetation Treatment	Piling Treatment
114-5	3	Glyphosate Herbicide	No Pile
114-53	3	Plant/Glyphosate Herbicide	No Pile
114-55	3	Plant/Glyphosate Herbicide	No Pile
114-6	2	Glyphosate Herbicide	No Pile
114-61	11	Plant/Pre-Commercial Thin/Glyphosate Herbicide	No Pile
114-62	30	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
114-7	9	Glyphosate Herbicide	No Pile
114-79	2	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
114-8	13	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
115-17	14	Glyphosate Herbicide	No Pile
115-27	20	Glyphosate Herbicide	No Pile
115-52	23	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
115-60	15	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
115-63	16	Glyphosate Herbicide	No Pile
115-73	15	Glyphosate Herbicide	No Pile
115-74	7	Glyphosate Herbicide	No Pile
115-75	1	Glyphosate Herbicide	No Pile
115-75	1	Glyphosate Herbicide	No Pile
115-75	1	Glyphosate Herbicide	No Pile
115-75	1	Glyphosate Herbicide	No Pile
116-1	11	Glyphosate Herbicide	No Pile
116-31	9	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
116-33	3	Pre-Commercial Thin/Glyphosate Herbicide	No Pile
119-31	4	Plant/Pre-Commercial Thin/Glyphosate Herbicide	No Pile
119-32	2	Plant/Glyphosate Herbicide	No Pile
127-13	5	Glyphosate Herbicide	No Pile
127-20	5	Glyphosate Herbicide	No Pile

Prescribed Burn Areas			
Unit Identifier	Acres		Treatment
A	95		Prescribed Burn
B	489		Prescribed Burn
C	2868		Prescribed Burn
D	159		Prescribed Burn
E	124		Prescribed Burn
F	246		Prescribed Burn
G	355		Prescribed Burn
H	59		Prescribed Burn
I	101		Prescribed Burn
J	59		Prescribed Burn
K	98		Prescribed Burn
Dark Canyon	1208		Prescribed Burn
	5862	Total Burning Acres	

Appendix B

Callegat Ecological Restoration Project-Scoping Comment Summary

Preliminary Issues

Comment #1

An EIS must be prepared for this project to analyze the alarming new information showing that California Spotted Owl (CSO) populations in the central Sierra Nevada study area (including Eldorado N.F.) has been declining precipitously over the past decade and more—contrary to the previous representations from the Forest Service that no such decline was occurring (apparently some errors were caught, and corrected, recently, resulting in the new data showing declines). Please see SNAMP (2011) attached hereto (see pp. 33-34 of that document). (Hanson #1)

Comment #2

There is no ecologically defensible evidence to indicate that the forests have too many large snags for the many wildlife species that need high levels of large snag density. Nor is there any ecologically credible reason as to why the forest ecosystem, and the native wildlife species, would be better off if these mature trees are cut and placed on the bed of a log truck, as opposed to remaining in the forest ecosystem to provide habitat as mature live trees, large snags, and/or large downed logs. Further, the Forest Service's own data, in the studies conducted and articles written by Forest Service fire scientist, Dr. Jack Cohen, make clear that the only effective way to protect structures, including homes, administrative facilities, and powerlines, is to thin combustible material within at most 100-200 feet of such structures (see studies and articles at www.firelab.org). (Hanson #3)

Comment #3

Misrepresentation of “Forest Health”: The SN states that the project will promote “forest health”, but does not explain that this term refers fundamentally to management and extraction of timber commodities, and is oriented towards maximizing timber growth and yield, NOT the ecological health of the forest and native biodiversity. This must be made clear. Ecologically, montane chaparral, snags, downed logs, and patches of high-intensity fire are some of the most important habitat features for wildlife and native biodiversity generally, as discussed below; yet the project would work to minimize and reduce such habitat features. (Hanson #4)

Comment #4

Misrepresentation of Data on Historic Fire Intensity: The SN asserts that patches of high-intensity fire (generally termed “high-severity fire” by the Forest Service), wherein most or all trees are killed within a mosaic of low- and moderate-intensity fire effects, is damaging and

implies that such fire is unnatural in the Sierra Nevada management region. This is flatly inaccurate. The scientific evidence is clear that, historically, prior to fire suppression and logging, Californian mixed-conifer and ponderosa/Jeffrey-pine forests experienced a mix of low, moderate, and high-intensity fire effects (Leiberg 1902, Minnich et al. 2000, Beaty and Taylor 2001, Bekker and Taylor 2001, Nagel and Taylor 2005, Bekker and Taylor 2010, Collins and Stephens 2010), and high-intensity fire was always a natural part of historic fire regimes. With regard to high-intensity fire proportion (the average percentage of high-intensity effects, relative to low- and moderate-intensity), Collins and Stephens (2010) found that reference mixed-conifer and white fir forests in Yosemite National Park (forests that had never been logged, and had continued to experience frequent fire—i.e., had not missed fire return intervals) had an average of 15% high-intensity fire effects, and most of the high-intensity fire area was comprised of patches hundreds of acres in size. Collins and Stephens (2010) concluded that “stand-replacing patches should be considered an important component shaping these forests”. In mixed-conifer and ponderosa/Jeffrey-pine forests of Baja California that had never been subjected to logging or fire suppression, Minnich et al. (2000) found that the average high-intensity fire proportion was about 17% (52-year overall fire rotation interval and 300-year high-intensity fire rotation interval). Beaty and Taylor (2001 [Table 8]) found historic high-intensity fire proportions of 18-70%, depending on slope aspect, in mixed-conifer and fir forests of an unmanaged area of the Lassen National Forest. Bekker and Taylor (2001 [Fig. 2f]), in a different unmanaged mixed-conifer and fir forest on the Lassen National Forest, found historic high-intensity fire proportions of about 50-65%. Bekker and Taylor (2010) found that, in an unmanaged area of the Lassen National Forest within mixed-conifer forests, the fires burned mostly at high-intensity historically, with some high-intensity fire patches being thousands of acres in size. Bekker and Taylor (2010) concluded that “high-severity fire was important in shaping stand structure” historically. Leiberg (1902) mapped large expanses of high-intensity fire prior to fire suppression in the Sierra Nevada, with some individual patches exceeded 10,000 acres in size in areas mapped as unlogged by Leiberg. Moreover, these data indicate that, historically, the rotation intervals for high-intensity fire in mixed-conifer and ponderosa/Jeffrey-pine forests were about 150-350 years in length, if the proportion of high-intensity fire effects and the overall fire rotation, or the proportion of the area affected by high-intensity fire over time, are used to calculate high-intensity fire rotations (Minnich et al. 2000, Beaty and Taylor 2001, Bekker and Taylor 2001, Bekker and Taylor 2010, Collins and Stephens 2010). Even under the broadest possible definitions of “high-severity” or “high-intensity” fire, the current high-intensity fire rotation intervals in the Sierra Nevada are at least 500-1000 years long (annual average of 15,000 to 20,000 acres of high-intensity fire in the 12 million acres of Sierran forests). (Hanson#7)

Comment #5

Misrepresentation of Stand Density Index (SDI) Data: The SN cryptically claims that, due to insects and competition between trees, stand density must be substantially reduced supposedly in order to improve the ecological health of the forest. No citation to any scientific document is provided by the SN to support this statement, nor are maximum SDI values that were used provided. Moreover, the SN fails to describe the levels of basal area mortality that would likely occur, and how or why additional medium and large snags would be undesirable ecologically.

The SN grossly misrepresents the data and presents it in a seriously misleading fashion, implying that high, and ecologically undesirable, levels of tree mortality will occur if intensive commercial thinning, as proposed, does not occur. This is flatly erroneous.

Oliver (1995) found that, as relatively young ponderosa pine stands reached SDI levels from 300 to 365, beetle mortality reduced stand density by only about 13-20%. Mortality was near zero when SDI values were below 230 (Fig. 2 of Oliver 1995). Further, despite modest mortality as stands neared SDI of 365, the stands ultimately continued to grow more mature and more dense, reaching an SDI of 571 finally (Fig. 1 A-C of Oliver 1995).

Oliver (2005) found that the very densest pine plots increased to a basal area of 175 square feet per acre, and an SDI of around 350, and then experienced beetle mortality of only 17% of the basal area (down to about 145 square feet per acre). In the ponderosa pine plots in California, the densest plots increased to a basal area of about 220 with very low beetle mortality (5-20% periodically, followed each time by a gentle increase in basal area) (Oliver 2005, Fig. 1). Oliver (2005) noted that mortality levels have “declined over the years” in the eastside ponderosa pine forests as these forests have grown older and denser.

Further, the Cochran and Barrett (1995) study investigated pine stands and found that, even at higher SDI levels, “there was no apparent correlation between stand density and mortality” (see p. 9 of Cochran and Barrett 1995). In that study, the highest annual growth rates were at SDI values over 200 (Figs. 14, and 18-20 of Cochran and Barrett 1995). The maximum basal area mortality of any plot (i.e., not the average) was only 29%, and most plots had far, far less mortality than this. The “high” mortality rates in Cochran and Barrett (1995) were only about 5-10% of the basal area and less than 5% of the SDI for the very densest plots (Figs. 1 and 2 of Cochran and Barrett 1995).

Similarly, Cochran and Barrett (1999) found essentially the same thing as Oliver (2005), discussed above. The study found that, as ponderosa pine stands became older, mortality from beetles dropped to nearly zero even at SDI values of 250-300 (see Fig. 3 and Table 3 of Cochran and Barrett 1999). Even when the stands in this study area were younger, as they were when studied by Larsson et al. (1983), the mortality levels from beetles were still relatively modest for stands with basal areas over 150 square feet per acre (i.e., a minority of the total stand basal area).

For fir-dominated stands, maximum stand density index is even higher than it is for ponderosa pine, and is generally around 800 (Oliver and Uzoh 1997). (Hanson#8)

Comment #6

Cumulative Impacts on Cavity-nesting Wildlife Species (from potential snag and downed log reductions): Given that the SN’s proposal to severely reduce stand densities would greatly reduce or essentially halt future recruitment of large snags (reducing future tree mortality to very low levels), or substantially reduce future large snag recruitment levels relative to no action, as discussed in the section immediately above, densities of large snags (generally, snags over 15 inches dbh, and preferably over 20 inches dbh) in future decades will necessarily be reduced relative to current levels, as attrition of currently-standing snags occurs. The SN does not mention the impacts that this would have on cavity-nesting wildlife species, including Sensitive Species and Management Indicator Species.

The SN does not establish that the basal area mortality of conifers that would result from the combined thinning (killing of trees via chainsaws) and fire/insect mortality would be less than the basal area mortality that would result from fire or insect mortality alone; nor does the SN establish that, after implementation of the proposed action, the project area would have adequate and ecologically-healthy levels of large snags and large downed logs for wildlife, as discussed below.

The SN does not discuss the potential adverse impacts of the Project on the Black-backed Woodpecker, which is the only MIS bellwether species for all wildlife species associated with snags in heavily burned forest. This habitat type is very ecologically important, and supports high levels of native biodiversity (Swanson et al. 2010). The Project would affect Black-backed Woodpeckers for two reasons. First, recent science shows that pre-fire logging, consistent with the type of mechanical (commercial) thinning proposed in this Project, substantially reduces habitat suitability for Black-backed even if the affected area later burns in a wildland fire, likely due to reduced potential densities of large snags upon which the birds forage (Hutto 2008, Hutto and Hanson 2009). Second, the Project SN indicates that the Proposed Action would significantly reduce the potential for moderate or high severity fire (passive or active crown fire) in the thinned areas, and in the prescribed fire areas. Black-backed depend upon areas burned at higher fire severities (Hutto 2008). Unless steps are taken to ensure that significant habitat is created and allowed for this species in the project area, the Project could threaten the viability of the Black-backed Woodpecker by further reducing potential habitat across the landscape, thus violating the forest plan's requirement to ensure viability. The Forest Service has not provided information showing the quantity and quality of habitat necessary to ensure viable populations of Black-backed Woodpeckers within the Sierra Nevada planning area, including the minimum viable population threshold and the minimum threshold amount of suitable habitat necessary to support minimum viable populations in the Sierra Nevada. Without this information, the Forest Service cannot ensure the viability of this species, in violation of the forest plan and NFMA. In particular, though the SN does state that fire-killed trees in prescribed fire units would generally be left for wildlife, and not removed, the SN does **not** indicate that some significant patches of high-intensity fire are a desired condition on the several thousand acres of proposed prescribed fire, leading the reader to assume that the intention is to essentially preclude the future creation of high quality Black-backed Woodpecker habitat in the project area within thinning and prescribed fire units.

The scoping notice (SN) suggests that a key objective of the proposal is to prevent patches of high severity fire from occurring ostensibly to prevent damage of some type. However, the SN does not adequately explain the ecological damage sought to be avoided, nor does it explain or divulge the damage to wildlife species that would occur from preventing high severity fire patches from occurring, or divulge the fact that many forest species benefit from and depend upon such high severity fire patches.

The SN states that a key objective is to reduce future mortality of trees ostensibly in order to benefit the forest. However, the SN does not explain the ecological damage that large snags supposedly cause in the forest, and fails to divulge the damage that would be caused to numerous forest species if large snag levels are reduced further from current levels due to stand density reduction, reduction in competition between trees, and resulting lower levels of large snag

recruitment in the future. Nor does the SN divulge the current density of snags in each size class (this should be presented for each proposed mechanical thin unit). (Hanson #10 and #14)

Comment #7

Effects to California Spotted Owl from reducing the amount high severity fire patches:

The SN does not divulge the fact that recent research reveals that California spotted owls preferentially select unlogged high-intensity fire patches for foraging, while selecting unburned or low-severity areas for roosting (Bond et al. 2009). High-intensity fire patches enhance habitat (e.g., montane chaparral, large downed logs, snags) for the Spotted Owl's small mammal prey species (Bond et al. 2009). The most recent scientific evidence makes clear that Spotted Owls benefit from natural heterogeneity created by patches of high-severity fire—habitat that is not mimicked by logging. Bond et al. (2009) indicates that unlogged patches of high-intensity fire comprise a newly discovered category of suitable habitat for California spotted owls. It is no longer scientifically defensible to simply cite to previous studies, such as Verner et al. (1992), which did NOT investigate whether burned forest was suitable for Spotted owls, in order to arbitrarily define suitable Owl habitat in a way that includes only unburned forest, and ignores important new scientific findings.

Scientific evidence regarding spotted owls in northwestern California and in Oregon found that positive trends in survival and reproduction depended upon significant patches of habitat consistent with high-severity post-fire effects (e.g., montane chaparral patches, snags, and large downed logs) in their territories because this habitat is suitable for small mammal prey species of the owl, including the Dusky-footed Woodrat (Franklin et al. 2000, Olson et al. 2004). This habitat is not mimicked by logging as proposed by this project, which does not create an abundance of snags and large downed logs, and which seeks to reduce shrub cover. If your stated project objectives are achieved, you could not only render thousands of acres of spotted owl habitat unsuitable or marginally suitable in the present and near-term, but could also reduce survival and reproduction by preventing occurrence of natural post-fire habitat heterogeneity in the spotted owl territories. (Hanson #10)

Comment # 8

The federal courts have ruled that the 2004 Framework forest plan is illegal under NEPA. You are using the wrong forest plan. This project must be governed by the 2001 Framework FEIS and ROD. (Hanson #11)

Comment # 9

Cumulative Impacts and Thinning “Effectiveness” for fuels/fire: Recent research provides evidence that seriously questions the very basis for thinning and its assumed effectiveness. Rhodes and Baker (2008) found that, based upon the fire rotation interval for high severity fire, and assuming an effectiveness period of 20 years for a mechanically-thinned area (i.e., before it would need to be treated again to maintain effectiveness from a fire/fuels perspective), the probability of a thinned area encountering a high severity fire patch during the 20-year

effectiveness period (assuming for the sake of argument that the thinning actually does reduce fire severity during this period) is only about 3.3% in California's forests. It would be less than 2% if an 11-year thinning effectiveness period is assumed (Rhodes and Baker 2008). This means that, in order to have a 50% chance of having the thinned area reduce the severity of a fire patch that would have otherwise been high severity, the thinned area would have to be re-thinned every 20 years for about 300 years (see Rhodes and Baker 2008). Please fully analyze the implications of this new data, and please also fully divulge whether you intend to re-thin this area over and over again every couple of decades or so for the next three centuries or so in order to have a reasonable probability of having the thinning area ACTUALLY prevent high severity fire from occurring in the thinned area. If so, please fully analyze the cumulative environmental impacts on wildlife, soils, and watersheds from such repeated mechanical activities on this site. If not, please divulge the fact that the probability that the thinned area will NOT encounter a high severity fire area is about 97% or greater, and that your thinning activities are extremely unlikely to be effective in any tangible or meaningful way for fuels/fire management. (Hanson #12)

Comment # 10

Blakesley et al. (2005) found that California spotted owl occupancy was positively correlated with core areas (2,010-acre circular area around the nest site) dominated by stands of trees >24" dbh (i.e., the equivalent of CWHR size class 5) with canopy cover >70%. Core areas which, due to logging activities (not fire), were dominated by smaller trees and canopy cover <70% were negatively correlated with occupancy. Please evaluate the spotted owl territories in the project area in light of this for the current condition, and for the post-thinning condition, in terms of the percent of the 2,010-acre circular area around the nest site with >70% canopy cover pre- and post-thinning. (Hanson # 17)

Comment # 11

Further, the notion that spotted owl habitat must be degraded in order to prevent high-intensity fire patches from occurring is completely misplaced, as recent radiotelemetry data found that California spotted owls preferentially select high-intensity fire areas for foraging, likely due to the high abundance of small mammal prey in such areas (due to montane chaparral patches, snags and large downed logs) (Bond et al. 2009). (Hanson # 19)

Comment # 12

Impacts to Pacific Fishers: Purcell et al. (2009) found that medium/large snag basal area was found to be one of the top two variables (along with canopy cover) in predicting fisher use of rest sites. Purcell et al. (2009) found that fishers selected sites with medium/large snag basal area over 31 square feet per acre, about two and a half times greater than that at random sites. Zielinski et al. (2006 [Table 2]) found that fishers selected sites with 15.4 large snags (over 38.1 cm in diameter, or over 15 inches in diameter) on average per 0.5 hectares, or about 12.5 large snags per acre. Zielinski et al. (2006) found that fishers selected sites with 65 large downed logs (over 25.4 cm in diameter) per hectare, or about 26 logs over 10 inches in diameter per acre—

substantially higher than large downed log density in the general landscape. In light of the Pacific fisher's need for high densities of large snags and large downed logs, why is the Forest Service proposing to remove mature trees instead of simply turning them into snags or large downed logs? (Hanson #20)

Comment # 13

Ecological Importance of Mixed-intensity Fire, Including High-intensity Patches: The SN implies, incorrectly, that high-intensity fire is unnatural and wholly harmful in mixed conifer forests of the Sierra Nevada. The U.S. Forest Service recently began a study of avian diversity and abundance in unburned areas and in three large recent fires, including the Moonlight and Storrie fires that some have inappropriately described as “catastrophic”. This study, conducted by PRBO Conservation Science, found that nest density increased with increasing proportions of high-intensity fire (with the highest nest densities occurring in 100% mortality areas), and that total bird abundance was the highest in the high-intensity areas of the Storrie fire of 2000 (where shrubs had fully matured, and some snag attrition had occurred, creating important downed log structure)—higher than the unburned mature forest in the same area (USDA 2010). The report concluded:

“It is clear from our first year of monitoring three burned areas that post-fire habitat, especially high severity areas, are an important component of the Sierra Nevada ecosystem...post-fire areas are not catastrophic wastelands; they are a unique component of the ecosystem that supports a diverse and abundant avian community...”

USDA (2010 [pp. 9-41]).

Other recent data reveals that high-intensity fire patches can result in highly beneficial ecological effects to riparian zones and watersheds by causing an increase in invertebrate prey and dissemination of such riparian invertebrates to the terrestrial landscape (Malison and Baxter 2010).

Wildland fire remains heavily suppressed currently relative to pre-suppression annual extent (area) of burning in forests of California and the western U.S. in general, with current levels being about one-tenth of pre-suppression levels of annual burning (Medler 2006, Stephens et al. 2007). Fire at ALL levels of severity, including high severity fire, are in deficit currently relative to pre-suppression times (Hanson 2007). Numerous high severity patches prior to fire suppression were hundreds or thousands of acres in size (Hanson 2007, Fig. 3.1). In the Lake Tahoe Basin, for example, montane chaparral has declined by 62% since the 19th century due to the reduction in high severity fire occurrence, creating a significant concern about the plant and animal communities that depend upon post-fire montane chaparral (Nagel and Taylor 2005). The project documents fail to acknowledge that patches of high severity fire are natural in these ecosystems, and that many plant and animal species depend upon such habitat (Hanson 2007, Hutto 1995, Hutto 2006, Noss et al. 2006). In fact, peak levels of native diversity in higher plants and wildlife species is found in patches of conifer forest burned at high severity which have not been managed (logged) (Noss et al. 2006). Please explain your suggestion that wildland fire is an ecological threat in light of this information. (Hanson #21)

Comment # 14

Declining CSO population from Sierra Nevada Adaptive Management Project (SNAMP):

Results from the Eldorado Study show long term declining population trends. We learned at the SNAMP annual meeting that the numbers of territories in the study are declining each year. This downward trend in realized population change is illustrated in the graph below that was presented at the meeting. (Located in actual letter in project record)

This sharp decline is in contrast to previous reports of population stability in the Eldorado Study.

The declines noted above have occurred during the time that the 2004 ROD has been implemented. Treatments on national forest lands have been completed within these study areas during the period of decline. Due to the failure to fund an examination of the chronic effects of treatments on owl fitness, there is little information available to evaluate how various treatments contribute to this decline. Nonetheless, the conclusions in the US Fisher and Wildlife Service's decision not to list the California spotted owl are no longer accurate. For instance, they found that "the best available data indicate that survival of spotted owl populations in the balance of the State of California (the Sierras) has been improving at the population level... We expect this trend to continue as the Forest Service in the Sierras implements its fuels reduction strategy that includes protections for the spotted owl and its habitat" (Federal Register, Vol. 71, No. 100, p. 29901). Contrary to this finding, populations have declined in two study areas (Lassen and Eldorado) within the Sierra Nevada during the time that the Forest Service has been implementing its fuels reduction strategy.

Given the lack of information in the scoping notice regarding amounts of suitable habitat (and projected impacts) and recent impacts to adjacent CSO sites and the uncertainties in the spotted owl population on the Eldorado NF and elsewhere we can not support this part of the project. A complete and detailed habitat accounting and effects analysis should be presented accompanied with a CSO PAC site visit. Also, the fuels analysis of <6" thinning and burning to improve fire behavior should be included.

PSW-GTR-220 is not just about vegetation and fire. It is also about restoring sensitive wildlife and it states that, "a cautious strategy would be emulating patterns created by natural disturbance to provide heterogeneous mix of forest habitat across a managed landscape" (GTR-220, p-11). (Thomas, Alford, SFL, #5)

Comment #15

Lack of Restoration for Aquatic Species: The "Background" information regarding the Callegat Project area notes that there are "dispersed camping areas adjacent to Cat Creek and the Middle Fork Cosumnes River that are contributing sediment into the stream at an accelerated rate;" however, little consideration is given to aquatic habitat condition as it relates to fisheries in this discussion. Such discussion is also lacking in the "Ecological Restoration" section. Throughout the document, the thrust of the aquatic rehabilitation effort focuses on rehabilitation of dispersed camping areas and stabilization of gullies, essentially ignoring issues related to fisheries and

quality of existing aquatic habitats. Although these rehabilitation efforts are commendable, they ignore such issues as effects of road construction/location, historic timber harvest, and past channel relocation on in-stream conditions (e.g. lack of large woody debris, pool depth, etc.) (Holst, #1)

Comment #16

General Forest Plan Consistency for RCA Treatments: With the exception of the planting of riparian vegetation as part of the rehabilitation of the dispersed camping areas, the rehabilitation efforts appear to rely mainly on the mechanical thinning of conifers within the RCAs. Additionally, as noted in the “Unit Specific Criteria” equipment is sometimes allowed within 25 feet of aquatic features that have a 300 foot RCA. With a reach-in of 25 feet permitted under the Proposed Action, this would mean that trees could be harvested right up to the edge of the aquatic feature. This does not appear to be consistent with the various provisions of the Sierra Nevada Forest Plan Amendment. (Holst #3)

Comment #17

Approval of Activities in RCAs: Furthermore within the RCA, approval for construction of new landings, construction of new permanent roads, and equipment crossings of perennial streams only requires the approval of one resource specialist – defined as a Soil Scientist, Fisheries Biologist, Botanist, or Hydrologist. And although the Proposed Action states the primary contact would be the Hydrologist of Fisheries Biologist for changes in the Protection Measures, as written, a Soil Scientist or Botanist could approve a new landing within an RCA. Again, this does not appear to be consistent with the various provisions of the Sierra Nevada Forest Plan Amendment. Furthermore within the RCA, approval for construction of new landings, construction of new permanent roads, and equipment crossings of perennial streams only requires the approval of one resource specialist – defined as a Soil Scientist, Fisheries Biologist, Botanist, or Hydrologist. And although the Proposed Action states the primary contact would be the Hydrologist of Fisheries Biologist for changes in the Protection Measures, as written, a Soil Scientist or Botanist could approve a new landing within an RCA. Again, this does not appear to be consistent with the various provisions of the Sierra Nevada Forest Plan Amendment. With these issues in mind and given the fact that Callegat is an “ecological restoration project,” please fully consider: Modifying the Proposed Action under “Design Criteria” – “Riparian Conservation Area” – “Entire RCA” – bullet 3 – to read “Approval by the Hydrologist and Fisheries Biologist is needed for: a) construction of new landings and/or modification and use of existing landings, b) construction of permanent and/or temporary roads, c) equipment crossings of perennial and intermittent streams, d) use of ground-based equipment and/or removal of vegetation in inner gorges.” (Holst # 5)

Comment #18

Harm to non-vegetative natural resources: The scoping package indicates that 3,021 acres will be logged. Based on my research it appears timber harvest harms the non-vegetative natural

resources in the forest. I am very interested in reading how this harm will be eliminated. (Artley #1)

Comment #19

Lumber market: At a time when the lumber market is saturated and given that logging is harmful it seems clear to me that the Responsible Official should reconsider this timber sale. (Artley #2)

Comment # 20

Dispersed Camping

We discussed briefly in the public meeting the closure to dispersed camping off Forest Service Road 9N17F. In restoring and protecting this area, I would hope the Forest Service would evaluate the opportunity for future dispersed camping and restore accordingly. Obviously, this area appealed to some of the public for camping in the past. Its close proximity to the Consumes River Campground make it an ideal overflow if camping can be accommodated ecologically. Perhaps a trail up the Consumes River or other locations would enhance camping. The need for camping, developed and dispersed, is great and will only increase in the future. Many studies have linked camping to local economies. I would encourage you to consider expanding and restoring camping opportunities where ever possible. (Hoffman #6)

Non-Issue Comments and Responses

1) Cutting large trees not needed to reduce fire behavior: We either actively support, or do not oppose, some aspects of this proposed project, including the prescribed burning, and active snag creation. However, we do oppose the proposed removal of mature/old trees up to 30 inches in diameter on about 3,000 acres of forest. Also, as we discuss below, given that removal of trees over about 10 inches in diameter is unnecessary in order to effectively reduce the potential for high-intensity fire (if and where that may be a scientifically defensible goal) the scoping notice does not provide a clear explanation as to why larger, older trees (e.g., those 16-20" dbh, and those 20-30" dbh) must be removed. (Hanson #2)

Forest Service Response: Non-Issue: No disagreement with the proposed action. The scoping document does specifically state reasons for removing larger trees other than for reduction in fire severity. These would include removal of shade tolerant species such as incense cedar and white fir to favor pine and oak as well as creating a variable spaced stand structure that would better represent a fire adapted ecosystem.

2) Please send me the stand exam data, showing the current density (per acre) of live **and dead** trees in each size class within each unit, as well as the Forest Vegetation Simulator (FVS) outputs—including the fire/fuels outputs—for the no action alternative and the action alternatives. In the EIS, please report the current and post-project density of snags over 15 inches in diameter, as well as the current and post-project basal area and SDI values for each unit

proposed for commercial thinning or area thinning. Please also report the current and post-project canopy cover and density of live trees in each size class for each timber sale unit. (Hanson #5)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. This is a request for information. The stand exam data was sent to Mr. Hanson.

3)The SN misuses and misrepresents the term “resilience”. Under the international Convention on Biological Diversity, the United Nations Environment Programme (UNEP) describes a distinct difference between “engineering resilience” and “ecological resilience”. The former is based upon the goal of maintaining a given system in an exact, unchanged, permanent state for purposes having nothing to do with biodiversity or ecosystems, while the latter embraces the dynamic nature of ecosystems and the natural disturbance processes and successional stages that provide the range of natural habitats needed to maintain the complete range of native biodiversity (Thompson et al. 2009). Under the ecological definition of “resilience”, natural disturbance processes like tree mortality from competition and native bark beetles, and wildland fire, are essential occurrences that create and maintain the various habitat types needed to maintain viable populations of the plant and wildlife species native to fire-adapted conifer forest ecosystems. Ecological resilience, in fact, is defined by the maintenance of the full complement of biodiversity native to the ecosystem, and the ecosystem is not defined by only one vegetation type (Thompson et al. 2009). For example, in fire-adapted conifer forest ecosystems, mixed-intensity wildland fire is a natural part of fire regimes (see below), and many plant and animal species depend upon the unique montane chaparral and snag forest habitats created by patches of high-intensity fire (where most or all trees are killed), and pockets of tree mortality from beetles or other natural factors. Thus, the natural early-successional habitat created by high-intensity fire patches (e.g., snag stands and montane chaparral) or insects is as much a part of the forest *ecosystem* as the unburned stands of live green trees (Thompson et al. 2009, Swanson et al. 2010). If it is the Forest Service’s intention to promote engineering resilience, to the detriment of native biodiversity and natural ecological disturbance processes, rather than ecological resilience, which would benefit native biodiversity, the Forest Service must be clear about this and the adverse impacts of it. (Hanson #6)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The objectives of the project are not to maintaining a given system in an exact, unchanged, permanent state excluding natural disturbance processes like tree mortality from competition and native bark beetles, and wildland fire. Ecological resilience is defined by FSM 2020-2008-1 and the Region 5 Ecological Restoration Leadership Intent as the capacity of a system to absorb disturbance and reorganize while undergoing change so as to still retain essentially the same function, structure, identity, and feedbacks. Ecological restoration as proposed is the process of assisting the recovery of resilience and adaptive capacity of ecosystems that have been degraded, damaged, or destroyed. Restoration focuses on establishing the composition, structure, pattern, and ecological processes necessary to make terrestrial and aquatic ecosystems sustainable, resilient, and healthy under current and future conditions.

4) Further, some ranger districts in the Sierra Nevada delete low-density plots (e.g., those with less than 60 square feet of basal area per acre) from stand examination data before reporting stand density values for a given project area, causing a skewed, misleading, and overestimated description of stand density. Please clearly state whether all stand examination data plots were used to calculate stand density values reported in the SN. (Hanson #8)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. No low density plots from the stand exam data were deleted for this project analysis.

5) An EIS must be prepared, given the scope of this project and potential cumulative impacts with other recent and planned projects on the District and nearby on other Districts on the forest. In the DEIS, please describe in detail each of the following for all of the final alternatives (including figures) IN EACH PROPOSED TIMBER SALE UNIT: a) the existing density of trees, both live and dead, in each size class (in two-inch dbh increments); b) the existing species composition of trees in each size class; c) the existing range of variability in density and species composition across the project area; d) your expected post-logging density of trees (trees per acre and basal area) in each size class; e) your expected post-logging composition of trees in each size class; your post-logging expected range of variability in density and composition; and f) the current and expected post-logging canopy cover in each unit. Without this information, it is impossible to evaluate the scientific accuracy and integrity of the analysis, or to understand the extent and intensity of canopy reduction and the resulting impacts to the habitat of spotted owls and MIS species. (Hanson # 14)

Forest Service Response: Non-Issue: No dispute with the specific effects of this proposed action. Much of information requested can be found in the project record as it was used for the Silvicultural Report. Local expertise in implementation of these types of projects minimizes the chance of highly uncertain effects, which involve unique or unknown risks. Proposed activities are routine in nature, employing standard practices and protection measures, and their effects are generally well known, and well documented in research studies.

An Environmental Impact Statement (EIS) is required for “major Federal actions significantly affecting the quality of the human environment...”⁴² U.S.C. §4332(2)C. Due to the lack of expected significant or uncertain effects resulting from the implementation of this project, an Environmental Assessment (EA) will be prepared to determine whether an action will have a significant impact, thus requiring preparation of an EIS 40 C.F.R. §1508.9. If the agency concludes that there is no significant effect associated with the proposed project, it may issue a Finding Of No Significant Impact (FONSI) in lieu of preparing an EIS. 40 C.F.R. §1508.9(a)(1).

6) In the DEIS, please fully analyze the cumulative effects of past mechanical thinning projects on the Ranger District on California Spotted Owls (CSOs) and their occupancy. Please provide specific data on pre-thinning and post-thinning CSO occupancy for all CSO territories in which thinning has occurred (i.e., within the biological home ranges, not just PACs and HRCAs) from the 1993 CASPO Interim Guidelines to present. Please also present occupancy data for CSO

territories on the District in which no thinning has occurred within the greater biological home ranges during this time period. (Hanson #15)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The Sierra Nevada Forest Plan Amendment Final Supplemental Environmental Impact Statement Record of Decision provides direction for California spotted owl territories (SNFPA SEIS ROD Appendix A-37). "California spotted owl protected activity centers (PACs) are delineated surrounding each territorial owl activity center detected on National Forest System lands since 1986. Owl activity centers are designated for all territorial owls based on: (1) the most recent documented nest site, (2) the most recent known roost site when a nest location remains unknown, and (3) a central point based on repeated daytime detections when neither nest or roost locations are known (SNFP SEIS ROD Appendix A-37)".) Indirect, direct and cumulative effects to spotted owl territories are disclosed and analyzed in the Wildlife BE/BA available in the project file.

7) The 2001 Framework FEIS (Vol. 3, ch. 3, part 4.4, pp. 72-77) states that, within a 1,062-acre area around a spotted owl nest site, maintaining about 60% of the area in at least 50% canopy cover is crucial to spotted owl survival and reproduction. This is a critical threshold. The DEIS must discuss and analyze: a) the current proportion of mature forest (CWHR 4, 5, and 6) with greater than 50% canopy cover in a 1,062-acre circle around each spotted owl site in the project area; and b) the post-project proportion of mature forest (CWHR 4, 5, and 6) with greater than 50% canopy cover in a 1,062-acre circle around each spotted owl site in the project area.

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. All units will have a residual canopy closure of 50% or greater.

8) The SN does not state what the current density of snags, particularly large snags, is within the project area pre- and post-thinning. This data must be included for each timber sale unit in the project area. Verner et al. (1992) recommended at least 20 square feet per acre of basal area of large snags (over 15 inches dbh), or about 8 large snags per acre on average, for suitable spotted owl habitat. Abundant large snags are essential for spotted owls because owl prey species depend upon them (Verner et al. 1992). The documents do not state which proposed timber sale units have large snag densities far in excess of 20 square feet of basal area per acre. The DEIS must contain this information for each proposed mechanical thin unit, particularly given that a stated goal of the project is to reduce basal area, thus reducing competition and future large snag recruitment. The DEIS must also analyze the likely effect of mechanical thinning on future large snag densities, and the resulting effects on wildlife. (Hanson # 18)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. This is a request for information. The stand exam data was sent to Mr. Hanson. Verner et al. (1992) is only of many recommendations that have been made regarding "adequate" levels of snags for suitable spotted owl habitat. The SNFPA requires a minimum of 4-6 snags per acre depending upon the vegetation type, and considered the information from Verner et al. (1992) (USDA Forest Service 2004). Research on spotted owl habitat preferences on the Eldorado

National Forest has shown an average of 4.3 snags per acre within suitable habitat and 10 snags per acre on average at nest and roost sites (Bias and Guitierrez 1992). Recent literature has shown that despite the wide variety on snag recommendations for mature forest habitat, snag densities within nest and roost areas tends to be higher than the spotted owl territory on average (Bias and Guitierrez 1992, Irwin et al 2006, Cynthia et al. 2003).

9) The SN suggests that stands were much less dense historically in the Project area. Please explain your scientific basis for assuming that **basal area density** was higher historically in the Project area than it is now, in light of Bouldin (1999). (Hanson #21)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The scoping notice does not mention anything about historical basal area density.

10) Removal of Mature Trees is Unnecessary for Fire/Fuels Management: The SN asserts that intensive mechanical thinning up to 30" dbh is necessary to reduce potential for severe fire. However, recent scientific studies have found that precommercial thinning of sapling and pole-sized trees only (up to 8-10 inches in diameter) effectively reduces fire severity. See, for example:

- a) Omi, P.N., and E.J. Martinson. 2002. Effects of fuels treatment on wildfire severity. Final report. Joint Fire Science Program Governing Board, Western Forest Fire Research Center, Colorado State University, Fort Collins, CO. Available from <http://www.cnr.colostate.edu/frws/research/westfire/finalreport.pdf> (found that precommercial thinning of trees under 8 to 10 inches in diameter reduced potential for severe fire (email communication with the authors confirmed that trees removed were of this small size class)). More specifically, the Omi and Martinson (2002) study, found that precommercial thinning reduced stand damage (a measure of fire severity generally related to stand mortality) in both of the two thinned study sites, Cerro Grande and Hi Meadow (the authors reported that the Hi Meadow site was marginally significant, $p < .1$, perhaps due to small sample size), each with several plots.
- b) Martinson, E.J., and P.N. Omi. 2003. Performance of fuel treatments subjected to wildfires. USDA Forest Service Proceedings RMRS-P-29 (found that non-commercial thinning of submerchantable-sized trees, generally followed by slash burning or removal, in several areas across the western U.S. greatly reduced fire severity, and that this result held true regardless of post-thinning basal area density).
- c) Strom, B.A., and P.Z. Fule. 2007. Pre-wildfire fuel treatments affect long-term ponderosa pine forest dynamics. International Journal of Wildland Fire **16**: 128-138 (non-commercial thinning of very small trees under 20 cm dbh (8 inches dbh) in seven different sites dramatically reduced fire severity, resulting in post-fire basal area mortality of only about 28% (low severity) in non-commercially thinned areas versus post-fire basal area mortality of about 86% in untreated areas).(Hanson #22)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The scoping notice did not assert that thinning trees up to 30" dbh was necessary to reduce potential for severe fire. It is accepted that the primary reduction in fire behavior is achieved through the removal of smaller diameter ladder fuels. The scoping notice does describe the need to remove larger trees for reasons such as reducing stand densities to achieve desired stand structures and promoting fire adapted species such as pine and oak.

11) Thinning Costs: Please include a cost estimate for a 30"-limit mechanical thin, including, at a minimum, the following with respect to the Forest Service's net expenses (i.e., not the timber contractor): a) administrative costs to the USFS pertaining to analysis and appeals; b) costs to the USFS of sale preparation and administration; c) PER ACRE costs to the USFS of slash piling and burning; d) PER ACRE costs to the USFS of brush maintenance following the mechanical thinning as a result of canopy reduction (this cost must be included, regardless of whether brush maintenance is required only 3-5 years after mechanical thinning or 10-15 years after mechanical thinning; and no similar cost would be applied to non-commercial thinning since essentially no measurable canopy reduction would occur); e) the administrative costs to the USFS pertaining to analysis and planning for the slash clean-up and brush maintenance projects following the mechanical thinning; f) the projected timber sales receipts to the USFS from the timber sale; and g) the total timber volume of the timber sale (in board feet of sawtimber, as well as tons of biomass). Please include citations to actual projects for all estimates.

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. This is a request for information.

12) Metrics for treatment intensity and effects analysis: We are familiar with the area and attended the July 26, 2011 field trip to view the various treatment areas in the initial phase of project development. We appreciate your intent to not only following existing management direction but to also include the "management objectives" of the Ecological Restoration Initiative (ERI) to "consult and interpret" PSW-GTR-220.

The Region 5 ERI is a vision document that has good intentions but currently lacks an implementation plan or instructions about how to interpret the vision. For example, the ERI mentions actions grounded in a concern for biodiversity. Such a concern could lead in many directions long and short term. The Forest Service could, for example, accept longer term impacts to suitable wildlife habitat for at-risk species in trade for increased forest resilience to fire effects and increase volume outputs. We ask that you be very clear on the metrics and models used to support your determinations regarding treatment intensity and effects analysis. (Thomas, Alford, Sierra Forest Legacy (SFL), #1)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. This is request for clarity in the Environmental Assessment.

13) The use of GTR-220 is obviously something we support to increase post-treatment stand heterogeneity. SFL is a co-author on the new Implementation version of GTR-220 due out in shortly. That said, there is little direction in GTR-220 regarding the amount or spatial arrangement of the design criteria in the GTR. SFL has suggested the following recommendations:

- A key point is to replicate the variable vegetation structure that would follow a natural fire regime. Avoid even spacing of trees and marking that targets any average per/acre metrics on a per/ac basis. Clump the snags, logs etc.
- Retain and encourage a clumped tree distribution (see below).
- While per/ac basal area metrics from Dunning and Reineke's 1933 work are interesting they generally were derived from younger, fast growing stands and from tree growth and wood production metrics v. the ecological objects of the Forest Service in 2012.

On a micro-site level Dunning and Reineke basal area metrics have a hard time explaining the stand structure and density of large trees in the photo below (located in actual letter in project record) near upper Camp Creek on the Placerville Ranger District.

- Openings should be focused with a restoration purpose by creating or expanding existing openings that target smaller WF or IC or to increase shrubs or pine regeneration in the vegetation mix. The gap sizes and clump sizes should reference recent research in the Sierra Nevada.

Gap and Tree Aggregation Sizes in Mixed Conifer Forests of the Sierra Nevada Mixed Conifer Forest

- a. Stanislaus-Tuolumne Experimental Forest (1929 pre-logging data by Duncan Dunning; Knapp 2011) – mean canopy gap size of slightly less than 0.25 acre (range: 0.08 – 0.51 acre); historical shrub cover of 30% (2% under current conditions)
- b. Blacks Mountain Experimental Forest (Youngblood et al. 2004) – tree group size averaging 0.11 acre
- c. Teakettle Experimental Forest (North et al. 2007) – tree clustering of 0.69 acres but vegetation patch sizes of 0.02 to 0.3 acre (shrub patch, open gap, tree group); proportional areas of 70% in tree groups, 16% in canopy gaps, and 14% in shrub patches

Giant sequoia/mixed-conifer forest

- d. Sequoia & Kings Canyon National Parks in prescribed burned sequoia groves (Demetry 1995 and Stephenson 1999) – mean of 0.25 acre (range: 0.16 to 2.89 acres)
- e. Kings Canyon National Park (Bonnicksen and Stone 1981) – tree aggregations of 0.07 to 0.40 acres
- f. Black Mountain Grove (Giant Sequoia National Monument) and Case Mountain Grove (BLM) in low and moderate severity burn (post-wildfire) stands (Meyer and Safford 2011) – 67% of gaps are <1 acre in size (range 0.04 to 3.96 acres); mean of 0.47 acres in low-severity post-wildfire stands

Red fir forest

- g. Yosemite NP – 56% of fires are <0.25 acre (82% are <10 acres) (van Wagtendonk 1993 in Potter 1998)
- h. Sequoia & Kings Canyon NP – 80% of fires are <0.25 acre (87% are <10 acres) (USDA 1975 in Potter 1998)
- i. Patch size of stand-replacing fires are typically 0.5 to 12 acres in size for red fir/white fir forests in a wilderness area with an active fire regime for the past 30 yrs (Illiloutte Basin of Yosemite NP; Collins and Stephens 2010)

- Wildlife marking guidelines—marking crews and crew leaders should be provided training in advanced wildlife structure marking (and landforms, cold pool pockets, and unique or rare plant/shrub/hardwood recognition).

The Callegat project should start with the guidelines for the Big Grizzly project and make them better.

Also offer advanced training in generating variability using topography features and position and legacy structure recognition. Anchor dense cover areas on these features and large tree clumps. Do not thin understory trees through all of these clumps.

Consider (test) having wildlife crews mark some of the dense cover areas (DCAs) and Early Seral Openings (ESOs) ahead of the regular marking crew then review that outcome.

The question of how much diversity should be created or retained often comes up in field discussions. The SFL answer is: as much as the project can bear without crashing the project. There can't be too much diversity, particularly given the past tendencies to simplify and homogenize natural stands and limit the ecological role of fire. (Thomas, Alford, SFL, #2)
Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. This is primarily suggestions on how to implement the concepts of Pacific Southwest Research Station General Technical Report 220 "An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests" (PSW-GTR-220). Many of these suggestions are being carried out during the tree marking phase of the project.

14) Effects of thinning in PACs: The Callegat project proposes to mechanically treat 33 acres of Spotted owl PACs presumably outside the WUI since much of the project is in OFEA. CSO PACs outside the WUI are governed by 2004 Framework Standard and Guideline #74 which limits treatments to surface and ladder fuels via Rx fire and thinning of trees <6" prior to burning. I think part of the proposal is getting a little ahead of ourselves. (Thomas, Alford, SFL, #3)

Forest Service Response: Non-Issue: After further analysis of the unit that was included in the PAC outside of WUI, it was determined that the PAC boundary could be adjusted to exclude this area. The unit is a 40 year old pine plantation, approximately 5 acres in size, located on the edge of the PAC boundary. The PAC would still contain the required 300 acres of best available

habitat. The remaining 28 acres of proposed mechanical thinning in PAC is located in the WUI threat zone. Treatments would comply with the SNFPA Standard and Guidelines # 72 and #73 and be designed to meet fire and fuels objectives.

15) Effects to Home Range Core Area Habitat: Given the recent news of the declining owl trend on the Eldorado NF study area we think the Callegat project should first disclose the amounts and quality of suitable habitat in the PACs, HRCAs and home range of all CSOs within and adjacent to the project. Also please disclose the amount of recent habitat reduction, changes in occupancy and reproductive success in and near the project area. How much suitable habitat has been effected in HRCA in the recent past?

A similar concern excerpted from the 2004 Science Consistency Review team, convened by the Forest Service to review the plan and draft 2004 Framework SEIS, explained:

“Short term effects of management activities are probably more relevant to owl persistence than long-term projections in habitat change. The latter are more uncertain and will undoubtedly be subject to subsequent changes in management direction as well as unforeseen ecological circumstances.” (Thomas, Alford, SFL, #4)

Forest Service Response: Non-Issue: Although this comment references effects to CSO it is primarily a request for information. This information is available the terrestrial wildlife biological evaluation and assessment.

16) Skyline logging impacts: We have concerns over the 457 acres of skyline logging. What are the specifics of the log suspension system? What is the erosion potential on these acres? What is the slope conditions in this area?

What sort of opening is needed to allow for the cable and side hauls? Specifically, what are the differences in costs for a cable operation and how are the costs offset compared to tractor or feller-buncher mechanical systems?

We look forward to the soil and water quality reports to better understand the impacts of the skyline operation. (Thomas, Alford, SFL, #6)

Forest Service Response: Non-Issue: This comment is asking for specific information but it is unclear if a dispute would exist if the information was provided. The specific machine that will be used for the skyline logging would not be determined until the stewardship contract is awarded. However there are certain specifications required in the contract including the ability to provide one end log suspension and lateral yarding with the carriage being held stationary. The indicator for erosion potential resulting from any management activity is measured using the Erosion Hazard Rating (EHR) as required in the Water Quality Management for Forest System Lands in California (USDA 2011). The EHR is highly dependent on slope and ground cover. Calculations for EHR can be found in the Soils report in the project record. The slopes in the skyline units are steep exceeding 35% with much of the area over 50%. Ground cover is variable based on slope aspect. On north aspects, there is generally 100% ground cover and enough that EHR values should stay well in the moderate range. On the south aspects, however, ground cover is not consistently at 100 percent. There are patchy areas where erosion in the existing condition is evident. This is likely a natural condition due to the thin granitic soils and a south aspect that tends to make soils drier. One large patch of about 4 acres in the south west portion

of unit 152 has been recognized as a very sensitive soil with thin canopy cover, very low ground cover, and evident erosional features. If a partially suspended log load is dragged across this area, there will be long-term accelerated erosion with little ability to mitigate. No skyline activities would occur over this patch if there is a risk of partial suspension.

Beyond the patch in unit 152, the activities associated with the skyline units would not affect ground cover and may add to it by crown breakage. No change in erosion potential would be expected from the existing condition beyond the skyline corridor.

Within the skyline corridor, BMP 1.11 would be adhered to. This BMP states “Erosion control measures are applied as necessary in cable corridors to control erosion and runoff.” Design criteria would include hand dug water bars and placement of ground cover where necessary to maintain an EHR of moderate.

Skyline corridors are kept to a minimum size needed to facilitate yarding of logs. This can at times be less than the width of a standard skid trail (approximately 8 ft). On average, the cost of a skyline logging system would be approximately \$25 to \$50 more per hundred cubic feet of timber volume removed than mechanized or ground based systems. The use of a skyline system may produce less residual value to use for fuels treatments but when accompanied with the amount of acres that will be treated using mechanized ground based systems the overall project remains economically viable. The use of the skyline system allows for areas to be treated that are too steep for ground based logging and would have otherwise been excluded from the project.

16) Support for Prescribed Burning and Restoration of dispersed campsites, roads and meadows: SFL strongly supports the 1883 acres of prescribed burning (as long as it gets done and doesn’t simple add to the current 12,000 + acres on the books yet to be completed in past projects. We are also supportive of all the restoration of resource damage from dispersed campsites, and meadow and road restoration described in the project. (Thomas, Alford, SFL, #7)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action.

17) Chemical Herbicides: We do not support the use of chemical herbicides on public land. We do support the use of mechanical means such as mastication or hand treatments on the 627 acres of plantation. The trees will eventually overtop and out-compete the shrubs and we don’t need to kill them all to begin with. (Thomas, Alford, SFL, #8)

Forest Service Response: Non-Issue: There does appear to be a dispute with the proposal to use chemical herbicides however there is no description of the negative effect that is associated with the proposal.

18) Hazard Trees for stream restoration and coarse woody debris: We do support the use of justified hazard trees for stream restoration purposes. All hazard trees in the project should first

be considered kept on site for resource benefit such as wildlife logs, down wood to meet soil and nutrient needs and large wood for streams across the project. (Thomas, Alford, SFL, #9)

Forest Service Response: Non-Issue: Although there appears to be a dispute with the removal of hazard trees there is no negative effect identified that would result from their removal.

19) Peer Review for RCA Treatments: The Proposed Action allows for mechanical treatments within the Sierra Nevada Forest Plan Amendment (2004) designated Riparian Conservation Areas (RCAs) , often times allowing equipment operation that will result in ground disturbance in over half of the of the RCA. Standard 94 of the Riparian Conservation Objectives for Sierra Nevada Forest Plan Amendment requires peer reviews as part of project level analysis for projects that propose ground disturbing activities in over 25 percent of an RCA. The Proposed Action does not indicate a peer review has taken place – has it been done? (Holst, #2)

Forest Service Response: Non-Issue: The 2004 SNFPA defines ground disturbing activities as those that result in detrimental soil compaction or a loss of organic matter beyond the thresholds identified by soil quality standards. The activities that this project proposes that would meet that definition are skid trails, temporary road construction, and landings. This project does not propose ground disturbing activities in more than 25 percent of any RCA.

19) Application of herbicides near meadows: It should also be noted that the Proposed Action for the ecological restoration of the project area includes the use of glyphosate within 50 feet of a perennial stream or within 50 feet of riparian vegetation, whichever is greater; for springs, wetlands, meadows, etc, the distance would be reduced to 25 feet. I would submit that the use of herbicides to “Conduct one or two release treatments to ensure seedling survival and growth...” within 25 feet of special aquatic features such as meadows seems counterproductive when the Proposed Action allows for equipment within 25 feet of meadows to remove conifers that are encroaching on meadows and “...contributing to decreased ground water...” (Holst, #4)

Forest Service Response: Non-Issue: The proposed action does not include the use of herbicides within 25 ft. of meadows where encroaching conifers are being removed.

20) Impacts to OHV routes: Mike Fallon is concerned primarily with the effects that the project may have on the OHV trail system as identified in Travel Management. He is concerned that OHV trails will be used for skidding and or hauling and then loose the value they have as a trail. For example single track motorcycle trails would be cleared of brush and graded to a much wider width which would take years to recover. He proposes that if such work has to occur on trails that purchaser/contractor be responsible for restoring back previous condition. (Fallon, from phone conversation)

Forest Service Response: Non-Issue: The concern that is brought forward was dealt with by adding design criteria to the proposed action. Post project restoration of trails will occur as needed.

21) Project Title: A general comment Mike Fallon has is that he feels the title of the project should not be “Ecological Restoration”. He feels that the primary focus of the project is fuels reduction and any ecological benefits are secondary. He feels this may mislead interested publics who review the schedule of proposed actions for the forest. Some may or may not comment or choose to request information based on the title, associating restoration as being the primary focus.

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action.

22) Description of Existing Condition: I believe it would be useful to the reader if you added a paragraph or two about the historic condition of much of the project area prior to railroad logging. Observation on-the-ground in railroad-logged areas are pretty clear that in the Pine vegetative type, the landscape was dominated by large diameter pine on 40-50 foot spacing. The desired condition should be to move back toward the pre-railroad logged condition. Since railroad logging, white fir has encroached and, in large part, has led to the overly dense stocking and unhealthy stand conditions. Part of the Purpose of the project should be to get the Pine Type back to a condition that is dominated by Pine with an oak component. (Brink #1)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. Removing white fir as well as other shade tolerant species and promoting pine is an integral part of the strategy documented in GTR-220 which is referenced as guidance for the proposed action.

23) Description of Purpose and Need: I believe there is another Purpose that should be added to the project and that is to “Provide for sustainability of healthy Sugar Pine”.

Additions to Project Needs:

For the added “purpose” above for Sugar Pine, the added Need would be to:

Provide significant spacing around existing Sugar Pine to promote healthy individuals and groups.

In order to more fully meet Purpose #2 – to promote healthy forest stands that are resistant to drought, insects, and disease, I believe there is a second additional project need:

In the Pine vegetative type, work toward removing white fir to encourage retention and growth of healthy ponderosa and sugar pine.

In the Pine vegetative type, provide sunlight by removing encroaching trees on any healthy oak. These additions to the Purpose and Need sections would then compliment the Design Criteria that is already under the Silviculture subheading. (Brink #2)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action.

24) Design Criteria for Riparian Conservation Areas: Entire RCA – adjust “No mechanical activities on slopes greater than 35%” to say “No ground-based equipment will be allowed on

slopes greater than 35% without consultation with the soil scientist” to be consistent with the statement in the Soils Design Criteria section. (Brink #3)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. This language was intended to be different for areas outside of RCA’s.

25) Unit Specific Criteria: Unit 134 – much of this unit can be tractor logged. The layout and maps should split the Unit into appropriate tractor and skyline units (134a, 134b, . . .). A short temporary spur (about 400’) is needed that follows an old skid trail.

Unit 151 – as I recall, the bottom of this unit is non-commercial so your actual unit boundary is significantly upslope from the Consumnes River. The map should be adjusted to reflect this. A temporary road is needed off of Road 9N40. This will provide an opportunity to also have a small amount of tractor ground adjacent to the temporary road within this unit. The unit should be laid out to reflect the different logging systems (151a, 151b, . . .)

Much if not all of the skyline ground in Units 134, 151, and 152 are short yarding distances (less than 500’) and should be designed for a Yoder rather than a skyline yarder. A Yoder does not require a guyline and thus can be easily and quickly set up and moved from setting to setting whereas a skyline yarder is much more time consuming and expensive due to the guylines that are needed at each setting. This may require some additional short temporary spurs in order to get the Yoder properly positioned within the Units. This level of detailed layout needs to be incorporated as part of final project design. (Brink # 4)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. These suggestions are being considered as part of final project design.

26) Hand Treatment of Conifers around meadows:

In describing the Proposed Action for “in and around meadows north of PiPi Campground” (near unit #112), the document states conifers from within the wet meadow are to be removed by hand. This practice does not seem efficient or economical. How many conifers are proposed for removal by hand? What size are these conifers? How far will the conifers be transported? (Waverly-SPI #1)

Forest Service Response: Non-Issue: The project has identified the need to remove conifers in the meadow to reduce encroachment on meadow habitat. To stay within SNFPA Standards and Guidelines and Riparian Conservation Objectives the proposal prohibits the use of equipment in the wet meadows. There is no other option at this time then to use hand methods (Chainsaws or other cutting tools) to cut the trees in the meadow. The total number of trees to be removed is unknown at this time. The intention would be to mostly cut trees below 10” DBH and lop and scatter the material. The trees would not be transported from the meadow.

27) Commercial thinning around meadows:

In the same portion of the document it describes thinning conifers up to the edge of the wet meadow. The map titled “South West Project Area” does not show commercial thinning taking place below the road or around the meadow. Is there any proposed commercial thinning around the meadow? Also, in regards to thinning around the meadow, why not allow the feller buncher within 25’ of the meadow? (Waverly-SPI #2)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. To clarify there will not be commercial thinning around the larger meadow south of FS Road 10N83N (PiPi campground loop road). However there will be commercial thinning south of the 10N83L road. There would be 25’ equipment exclusion for the feller buncher in order to reduce the potential for ground disturbance next to the meadow.

28) Unacceptable Soil Conditions:

Under the “Soils” portion of the scoping document, there are units described as having “unacceptable soil conditions”. Please describe some on the ground indicators of unacceptable soil conditions. Also in this section, there is statement that “Water barring would occur following ripping”. This practice should be qualified to when necessary. (Waverly-SPI #3)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. Forest Wide Standard and Guidelines for soil resources supporting ground-based systems states:

“A minimum of 85% of an activity area suited to tree growth shall be left in acceptable soils conditions. Areas of disturbance shall include temporary haul roads, skid roads and trails, landings, and routes of travel in operation of equipment used in the harvest systems.”

Therefore, 15% of a unit shall not be left in an unacceptable condition. The units in the Callegat area are, for the most part, in acceptable condition, however, field observations indicated that units 109-117, 112-135, 112-138 exceeded the 15% extent of unacceptable soil conditions.

Indicators to determine unacceptable conditions generally include:

- Soil displacement: When topsoil is moved from one place to another, it reduces the soil productivity and soil hydrologic function. Indicators generally include berms and soil piles. They can result from site prep, road and trail use, and machine-piling.
- Soil compaction: Compaction occurs when a load is placed on the soil that exceeds its load-bearing capacity. It is not really clear what degree of compaction would result in reduced soil productivity but it is safe to assume that the conversion of granular or blocky soil structure to platy soil structure affects both the ability to support a vigorous rooting mass and impair the soils ability to infiltrate water. During soil surveys, a shovel is used to examine the soil structure and rooting vigor. If rooting growth is altered from vertical growth to horizontal growth and soil structure is observed to be platy, the soil is considered to be in unacceptable conditions. From observations made by the forest soil scientist, the statement in the Forest Plan of “temporary haul roads, skid roads and trails, landings, and routes of travel in operation of equipment used in the harvest systems” tends to be where unacceptable soil conditions occur.

27) Landings in RCAs:

Under the “Riparian Conservation Areas” portion of the scoping document, there is a statement that “Where roads are less than 100 feet from a perennial or intermittent stream, there would be no ground based equipment on the uphill side of the road for at least 25 feet.” Would this restriction include landings?(Waverly-SPI #4)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. This restriction was not written with the intent to exclude all landings from the area 25 above a road within 100’ of a perennial or intermittent stream. However all landings located within the RCA require approval of a Resource Specialist as defined.

28) Flush Cut Stumps in PiPi Campground:

Under the “Visuals” portion of the scoping document, there are proposed mitigations around the PiPi Campground in Unit #112. It is proposed that stumps are flush cut and covered with soil within 75’ of the visible foreground of the campground. Would this be required in a timber sale contract? If so, wouldn’t flush cut stumps be enough for this area. Please note that there are existing stumps scattered throughout the visible foreground of the campground.(Waverly-SPI #5)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. Yes, this would be a part of the timber sale contract. Covering the top of the stumps with soil and needles will reduce the visual contrast of the newly cut stumps. PiPi is a developed campground. In a developed site, the scale is pedestrian oriented. The scale that will seem normal to people walking or sitting at a site all day compared to passing by in a car. While stumps do exist on the site, it is at a small scale of a few hazard trees a year compared with the amount cut in a timber sale. Covering the tree stumps will reduce the contrast and scale of change in the visible foreground and insure that the views from the site meet partial retention.

29) Removal of snags after burning in PiPi campground:

Also under “Visuals”, there is a discussion about removing pockets of dead trees subsequent to burning. Would this be a requirement under a timber sale contract? (Waverly-SPI # 6)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. No, this will not be a part of the timber sale contract.

30) Timing of Burning Piles:

The Sheriff’s office requests that any burn or slash piles including piles of brush which are placed adjacent to any roads or wild land urban interface areas be properly burned in a timely manner to dispose of the temporary increased fuel loading. The Sheriff’s office has the responsibility for the evacuation of citizens during wild land fires and has experienced a significant challenge during a wild fire that moved from the forest into an urban area. The

challenge of evacuation was exacerbated by the burn piles that had been left in place for multiple seasons which accelerated the spread of fire.(J. D'Agostini-Eldorado County Sheriff #1)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. This comment deals with the timing of implementing the project. The time lag in treating the post activity fuels by dozer/grapple piling could be as short as several weeks (if units are treated in a single entry) or as long as one year after harvest (if the units are treated in a separate contract). This increase in surface fuel loading could increase fire spread and intensity for the short duration (one year). The application of prescribed fire is largely dependent on the presence of an acceptable "burn window" where fuel moistures, relative humidity, winds, smoke production and other environmental factors are combined in a burn prescription that will produce desirable results. Currently the Amador ranger district treats about 800 acres a year of "jackpot" burning and it is estimated that the burning for this project could be completed in 2 to 3 years after the thinning portion of the project is completed. The ability of the thinned units to withstand a wildland fire during the short duration would be mitigated by the increased height to live crowns, allowing even 6 to 8 foot flame lengths to pass beneath the taller trees without initiating crown scorch or passive torching.

31) Closure of roads to public use:

The Sheriff's Office has a necessary need to access lands managed by the Forest Service to provide law enforcement, search and rescue, evacuation, medical assistance, and law enforcement related to resource protection. The Sheriff's Office appreciates the commitment in the Callegat plan to improving and maintaining many of the roads identified in the plan document. The Sheriff's Office disagrees that roads 9N39, 9N51, 9NY09 and 9NY08A, should be automatically closed following project completion. We recognize that these roads are not currently open to the public. However the plan does call for the roads to undergo brush removal to allow passage and public access for firewood cutting.

The Sheriff's office has received numerous complaints from members of our community expressing frustration over the enforcement practices of the Forest Service in issuing citations for the use of closed Forest roads. The frustration stems from citizens being able to identify when a road is actually closed and what type of travel is prohibited. Certainly during the period of time that these roads are open a pattern of usage by the public will develop. Since these are numbered roads the assumption by citizens of allowable passage could result in their continued but unintentional illegal use.

The Sheriff's Office suggests that further study be undertaken prior to any re-closing of these roads to determine their benefit to recreation, Sheriff's Office and firefighting access, and mitigation to prevent unnecessary USFS law enforcement action.

(J. D'Agostini-El Dorado County Sheriff #2)

Forest Service Response: Non-Issue After further review of the roads proposed to be left open for public fire wood cutting, it was determined that there would be a very small amount of wood made available in these areas. It is estimated that a total of 1-3 landings maybe created off of the

9NY09 and 9NY08A. Most of roads in the project area are open to the public and will provide ample access for firewood cutting.

32) Access to water sources on roads closed to public:

The Sheriff's Office is also aware there may be locations along some of these roads where natural or developed water supplies are available for use by fire fighting operations to supply water during fires. The Sheriff's Office suggests that any of these roads identified for re-closure remain open to allow access to these water supplies. The Sheriff's Office also desires to retain access to these water supplies to monitor the sites for illegal usage by operators of illegal drug operations. These operations not only threaten the safety of the recreation users of the Forest but also threaten the natural resources in the plan area. (J. D'Agostini-El Dorado County Sheriff #3)

Forest Service Response: Non-Issue: The 2008 Eldorado National Forest Public Wheeled Motorized Travel Management Environmental Impact Statement (Travel Management EIS) did not apply to access for emergency responders including accessing water supplies for fire suppression. There is no restriction on access for law enforcement activities. Any access needed by the Sheriff's office into areas behind locked gates can be coordinated through the Eldorado National Forest Service Law Enforcement Staff.

32) Need to support the local economy:

The Sheriff's Office requests that further study be undertaken to identify the feasibility of increased revenue to the County through additional product value creation such as bio-mass. Additionally the Sheriff's Office requests the above mentioned roads identified for re-closure following the completion of the project be studied for their recreational value which could generate additional recreation based revenue to the County. (J. D'Agostini-El Dorado County Sheriff #4)

Forest Service Response: Non-Issue: The biomass created at the landings used for this project will be available for purchase to be utilized in whatever fashion a bidder would choose. The market for this material remains to be uncertain and is beyond the control of the Forest Service.

As stated previously the roads mentioned above will not be opened to the public and remain under the direction of the 2008 Eldorado National Forest Public Wheeled Motorized Travel Management Environmental Impact Statement (Travel Management EIS).

33) Questions on herbicide use: Where will the cleaning and inspection be done to make sure you are not spreading noxious weeds? There are many chemical herbicides that give a better result than glyphosate. Have you considered any of those? Will you or a licensed contractor be doing the spraying? Will this be one year or multiyear spray program? (Boitano-Amador County Ag. Commissioner)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. Equipment must be inspected and cleaned before entering the project area. There is no

pre-designated location for this to occur. This is done by agreement with the contractor at a location outside of the National Forest Boundary. There are no known locations within the project area that would be entered by equipment. If equipment were to enter a noxious weed infestation it would be required to be washed at that site before moving. Spraying will be done through a combination of Forest Service employees as well as licensed contractors. This will be a multi-year spray program.

34) Lack of treatments in RCAs: Without being able to thin or burn within certain distances from rivers, creeks, and or seasonal creeks, are we not setting up paths for fire to travel? Is there any way you can thin or reduce fuels in these areas? (Boitano-Amador County Ag. Commissioner)

Forest Service Response: Non-Issue: This comment was originally was classified as an issue. However a phone call to Mr. Boitano was made to clarify his concern on this topic. As documented in the project record an explanation was made that the project did consider the risk of fire in riparian areas and developed treatments that would maximize the areas treated while remaining with in Forest Plan direction. After further discussion it was determined that Mr. Boitano did not have a dispute with the proposal.

32) Use of grazing for release program: Have you thought about using grazing as part of a release program? (Boitano-Amador County Ag. Commisioner)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The project is in a cattle allotment that has been inactive for many years.

33) Analyzing the development of water sources: I would like to formalize my oral comments at the meeting regarding the need to analyze for development of adequate water sources for road maintenance and fire protection as part of this project's environmental assessment.

Specifically, there may be water drafting locations in or near the project area that can be maintained or enhanced through the road maintenance package. Work items such as rocking approaches, rip-rapping, etc. could be accomplished by the road crew in a cost efficient manner when re-constructing the roads in the area.

My experience has been that this works well when this work is planned and analyzed for in the EA and included in the road plans. (Harcus-SPI)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. We are currently including the maintenance of known water sources as part of this project.

34) Need for a Smoke Management Plan: This e-mail is to inform the Amador Ranger District of the need for a Smoke Management Plan for the proposed Big Mountain Ridge and Cat Creek Ridge Projects. If material remaining at the landings will be burned producing more than 1 ton particulate matter (PM10) emissions or if material to be burned is derived from greater than 10

acres of land a Smoke Management Plan must be submitted to El Dorado County Air Quality Management District for approval before any burning takes place. (Ford-El Dorado County Air Quality)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. A smoke management plan is a standard part of any prescribed burn plan of this magnitude on the Amador Ranger District.

35) Temporary Road Placement for Skyline Unit: I have concerns about road placement in skyline units 134 and 151. Is there correct road placement in unit 134 to be able to place the yarder around the contour of the entire unit on the top? Does there need to be some kind of temp road into unit 151 to be able to reach all areas with adequate deflection? (R. D'Agostini #1)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The location of temporary roads is being analyzed for this project. There does not appear to be a conflict with placing a road at the break in slope on unit 134.

36) Use of borax fungicide: The mention of using Borax on stumps. I don't think that economically all stumps on the project site can be treated. I don't see any problem of treating WF stumps within the disease zones. (R. D'Agostini #2)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The proposal is to treat all conifer stumps only within the 60 acres of openings around annosus root rot infection sites as well as in the PiPi campground.

37) Coordination with local counties: Was the county government/s that the project resides in contacted to be certain that the project is consistent with their plans and needs? (R. D'Agostini #3)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The proposal was mailed to the county supervisors' office of both El Dorado and Amador counties. Neither has provided comments at this time. The El Dorado County Sheriff's Office has been added to our mailing list and has provided input for the project.

38) Purpose and Need: The scoping letter announces the main objective of the project is "to reduce unnaturally high fuel loadings and improve forest health". In actuality, it is much more than that. Reducing fuel loads and improving forest health can be accomplished in many ways, but many of those ways will not accomplish the ecological restoration envisioned. I would suggest expanding or clarifying the objective to include an ecological balance of tree species with suitable growing conditions, performed according to socio-economic-ecological practices. (Hoffman #1)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. This is a suggestion to improve project description. Although the above statement is

made in the introduction of the scoping document, there is expansion in multiple sections that explain how ecological restoration will be achieved with this proposal.

39) Background Description: You provide a great description of the cause. Many like to attribute our current forest condition to fire suppression. It is more than that. You describe it as “due in part to fire exclusion as well as a lack of other vegetation treatments that would remove suppressed or intermediate sized trees”. From experiments in Yosemite we learn that natural fire (lightning) strikes the same locations in rotating patterns, resulting in reoccurring fires predominantly in the higher elevations. Chances are, natural fire would have rarely affected this area, and then it would have been catastrophic. For that reason and a host of other reasons, Native Americans introduced periodic fire as a management tool. Settlers, desiring wood products, chose a different management tool to accomplish the same effects. For the last two decades, we have applied neither management and the result is uncontrolled vegetative growth. Vegetative treatments, either fire or mechanical, have long been recognized as essential for Sierra forest landscapes and the lack of them has produced our current condition. I hope you will retain your description as the environmental document is written. (Hoffman #2)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action.

40) Ecological Restoration: You note that the USFS Region 5 Ecological Restoration Leadership Intent describes three major drivers of change, namely: climate change and shifting hydrologic patterns, increasingly dense and unhealthy forests, and rapidly growing human populations are defining the need for ecological restoration. You then declare that out of these three drivers, the Callegat project can affect only the increasingly dense and unhealthy forest driver. I would suggest that with the many human uses in the Callegat project, the project can affect how growing human populations define the need for ecological restoration. Humans will by nature, define ecological restoration through social and economic needs. For example, wildfire may be natural and ecologically beneficial, but an ecology not socially acceptable. A restoration unaffordable across the landscape will equally not be acceptable. A restoration that does not accommodate recreational demand will not be acceptable. A Callegat project that provides cost-efficient, visually appealing and ecologically sustainable treatments, coupled with adequate recreational use will help human populations define the need for ecological restoration. Moreover, the treatments will help many define vegetative treatments around their own homes. I would encourage you to expand the effect of the Callegat project in terms of the three drivers. (Hoffman #3)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The scoping document was trying to explain that the project activities may not be able to change the processes of growing human populations or shifting hydrologic patterns but will try to make the forest more resilient to the effects associated with these “drivers of change”.

41) Wildland Urban Interface: The scoping document notes that part of the area falls into the wildland urban intermix (WUI). Yet there is no discussion on how this project applies

treatments differently within and without of the WUI. It does not discuss the location, what it is protecting, or the strategy to protect. The WUI is not shown on the maps or discussed in the document. The environmental document will need to show how the treatments will effectively reduce the risk of wildfire and provide protection. Hopefully this project will provide adequate protection without a piecemeal approach under several future projects.

As mentioned in the public meeting, with a WUI within the project area, it will be particularly important to evaluate and develop where needed, water sources for fire suppression and other management activities. (Hoffman #4)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. There are two WUI areas within the project area. These are associated with the PiPi campground and surrounding private land parcels with residents and structures and secondly the Lumberyard fire station. Much of the requested information will be available in the fuels report in the project record.

42) Desired Condition: Six general items are listed describing the desired condition. Describing desired conditions in general terms permits a wide selection of alternatives, not all of which may provide the full conditions desired. I would suggest the addition of site specific conditions, such as:

- Provide forest conditions suitable for native oak regeneration
- Provide forest conditions suitable for native tree species diversity
- Provide protection for white pine blister rust resistant propagation
- Reduce impacts from insect and disease
- Integrate recreational use with ecological protection
- Improve erosion control
- Reverse conifer encroachment on forest meadows
- Reduce fire risk and damage to people and property improvements
- Provide forest by-products that help sustain local economies (Hoffman #5)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. Much of the suggested conditions are included under project needs.

43) Region 5 Ecological Restoration Leadership Intent

The scoping document lists 6 areas of the Region 5 Ecological Restoration Leadership Intent that are addressed by this project. I would suggest it also addresses, or has the opportunity to address the following areas included in the Leadership Intent document.

- Restore at least 50% of accessible, degraded forest meadows to improve their habitat function and ability to hold water longer into the summer and deliver clean water when most needed. – Does this project treat at least 50% of the degraded forest meadows within the project area?
- Decrease the occurrence of uncharacteristically severe wildfires and their associated impacts through environmentally and ecologically sensitive vegetation treatments and fire management.

- Ensure vegetation and fire management efforts are grounded in concern for biodiversity and ecological process before disturbances like fire.
- Ensure the retention and sustainability of forests, forest resources, and forest carbon over the long term, even as climates change.
- Work with partners to increase restoration actions that will improve habitat connectivity. (Hoffman #7)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. Ideally the project will meet the broader stated goals of ecological restoration; the proposal just listed those that were most specific to the actions planned. A full inventory of meadows in the project area was not completed to determine the percent that would be treated.

44) Terrestrial Wildlife

This section lists some management standards and guidelines that include retaining snags 15 inches and greater, in addition to targeted snag creation. I am sure more will be said in the environmental document, but I am concerned with excessive snag retention and more so with snag creation. (Hoffman # 8)

Forest Service Response: Non-Issue: No disagreement or dispute with effects of the proposed action. The statement in the scoping document was worded incorrectly and has been changed in the EA. There is no targeted snag creation planned as part of the prescribed burning in PACs.

Alternatives Proposed by Public

An alternative that would use only prescribed fire (preferably including mixed-intensity effects, in order to recruit additional large snags for cavity-nesting species), and no thinning, on the acres proposed for mechanical/commercial thinning; (Hanson)

An alternative with a 12-inch diameter limit on the acres of forest proposed for mechanical/commercial thinning; (Hanson)

An alternative in which, within the acres of forest proposed for mechanical/commercial thinning, instead of the live trees over 16" dbh being removed, the trees that would otherwise be marked for removal would instead be girdled or killed in some other way in order to actively recruit more large snags for wildlife, or such trees would be felled to provide large downed log structure for small mammals, amphibians, and invertebrates. (Hanson)

An alternative that would include not only all the design criteria and restoration efforts noted in the present Proposed Action, but also an assessment of aquatic habitat condition, and provide for identified site-specific in-channel aquatic habitat restoration activities (e.g. placement of large woody debris, root wads, etc). (Holst)

An alternative that would incorporate all of the restoration efforts at the described dispersed recreation sites and areas where gullying is noted, but that would only allow hand treatments of fuels/vegetation and prescribed fire in the Sierra Nevada Forest Plan Amendment designated RCAs of the Middle Fork Cosumnes River and Cat Creek, i.e., ground-based equipment would be excluded from these RCAs. (Holst)

An alternative that would incorporate all of the restoration efforts at the described dispersed recreation sites and areas where gullying is noted, but that would not include the use of herbicides within the Sierra Nevada Forest Plan Amendment designated RCAs. (Holst)

**Callecat Ecological Restoration Project
Important and Non-Important Issues
(Referenced from Scoping Comment Summary)**

Important Issues

1. New Information on the California Spotted Owl is showing a declining population. This project proposes to modify spotted owl habitat in an area that was previously thought to have a steady population. (Comments #1 and #14)

An EIS must be prepared for this project to analyze the alarming new information showing that California Spotted Owl (CSO) populations in the central Sierra Nevada study area (including Eldorado N.F.) has been declining precipitously over the past decade and more—contrary to the previous representations from the Forest Service that no such decline was occurring (apparently some errors were caught, and corrected, recently, resulting in the new data showing declines). Please see SNAMP (2011) attached hereto (see pp. 33-34 of that document). (Hanson)

Nonetheless, the conclusions in the US Fish and Wildlife Service’s decision not to list the California spotted owl are no longer accurate. For instance, they found that “the best available data indicate that survival of spotted owl populations in the balance of the State of California (the Sierras) has been improving at the population level... We expect this trend to continue as the Forest Service in the Sierras implements its fuels reduction strategy that includes protections for the spotted owl and its habitat” (Federal Register, Vol. 71, No. 100, p. 29901). Contrary to this finding, populations have declined in two study areas (Lassen and Eldorado) within the Sierra Nevada during the time that the Forest Service has been implementing its fuels reduction strategy. (Thomas and Alford)

2. There are multiple wildlife species that need all existing and future snags and for habitat. This project proposes to remove mature trees and reduce future mortality that could affect the number of snags into the future.

(Comments #2, #6, #12)

There is no ecologically defensible evidence to indicate that the forests have too many large snags for the many wildlife species that need high levels of large snag density. Nor is there any ecologically credible reason as to why the forest ecosystem, and the native wildlife species, would be better off if these mature trees are cut and placed on the bed of a log truck, as opposed to remaining in the forest ecosystem to provide habitat as mature live trees, large snags, and/or large downed logs. Given that the SN's proposal to severely reduce stand densities would greatly reduce or essentially halt future recruitment of large snags (reducing future tree mortality to very low levels), or substantially reduce future large snag recruitment levels relative to no action, as discussed in the section immediately above, densities of large snags (generally, snags over 15 inches dbh, and preferably over 20 inches dbh) in future decades will necessarily be reduced relative to current levels, as attrition of currently-standing snags occurs. The SN does not mention the impacts that this would have on cavity-nesting wildlife species, including Sensitive Species and Management Indicator Species. (Hanson)

3. A reduction in high severity fires may have adverse effects to wildlife species that benefit from high severity patches. (Comments #3, #7, #11, #13)- If our treatments are effective in preventing high severity fire there may be adverse effects to wildlife species that benefit from high severity patches. (Hanson)

4. Based on the low probability that the treated area will encounter a high severity wildfire it is questionable to whether or proposed treatments will be effective in modifying fire behavior. (Comment #9) (Hanson)

5. Based on a study by Blakesley et al. (2005) a reduction of canopy cover below 70% would negatively affect CSO occupancy. (Comment #10) (Hanson)

6. Treatments such as herbicide application and mechanical thinning in Riparian Conservation Areas could have negative effects to aquatic habitats. (Holst)

Non-Important Issues and Reasons for Classification

1. Misrepresentation of Data on Historic Fire Intensity (Comment #4) : The SN asserts that patches of high-intensity fire (generally termed "high-severity fire" by the Forest Service),

wherein most or all trees are killed within a mosaic of low- and moderate-intensity fire effects, is damaging and implies that such fire is unnatural in the Sierra Nevada management region. This is flatly inaccurate. The scientific evidence is clear that, historically, prior to fire suppression and logging, Californian mixed-conifer and ponderosa/Jeffrey-pine forests experienced a mix of low, moderate, and high-intensity fire effects (Leiberg 1902, Minnich et al. 2000, Beaty and Taylor 2001, Bekker and Taylor 2001, Nagel and Taylor 2005, Bekker and Taylor 2010, Collins and Stephens 2010), and high-intensity fire was always a natural part of historic fire regimes. (Hanson)

Forest Service Response: Already decided at a higher level: Regardless of the size or intensity of historic fires, it is current Forest Plan direction to “strategically place fuels treatments across the landscape to interrupt fire spread and achieve conditions that reduce the size and severity of wildfire”.

2. Misrepresentation of Stand Density Index (SDI) Data (Comment #5): The SN cryptically claims that, due to insects and competition between trees, stand density must be substantially reduced supposedly in order to improve the ecological health of the forest. No citation to any scientific document is provided by the SN to support this statement, nor are maximum SDI values that were used provided. Moreover, the SN fails to describe the levels of basal area mortality that would likely occur, and how or why additional medium and large snags would be undesirable ecologically. The SN grossly misrepresents the data and presents it in a seriously misleading fashion, implying that high, and ecologically undesirable, levels of tree mortality will occur if intensive commercial thinning, as proposed, does not occur. This is flatly erroneous. (Hanson)

Forest Service Response: Conjectural and not supported by evidence: Actual stand exam data as well as on the ground observations have shown that stand density are above desirable levels to meet Forest Service objectives. Stand Density Index was not used as target threshold in the design of prescriptions for the project. Rather it is used as an indicator measure, along with basal area per acre and canopy closure, to compare the effects of the alternatives. Based on extensive research, forest scientists have determined that certain species of trees can only thrive up to a threshold density before widespread mortality is incurred. Stand Density Index can be used as an indicator of stand density and potential risk of insect attack. It is applicable regardless of site class or age. The Maximum SDI for natural stands in this project are described in the Silvicultural Report in the project record. See below. The Forest Vegetation Simulator (FVS) was used to model the effects of the proposed action and alternatives on treated forest stands. Estimates of mortality as a result of implementing the alternatives are described in the Silvicultural Report in the project record 20 years post project. The importance of snags for a variety of wildlife species is discussed throughout the wildlife sections in EA. There is no proposal in this project to reduce the number of large snags within the treatment units. All snags

15 inches diameter and greater within the project area would be retained unless they pose an immediate danger to the public or workers. The potential of epidemic levels of tree mortality caused by insect attack due to high levels of inter-tree competition would be reduced through the proposed treatments. Endemic levels of insect and disease mortality would continue to be present within the stands and within the project area, and would continue to provide large snags in the future (as indicated by mortality projections).

3. The Project Proposes to Apply the Wrong Forest Plan (Comment # 8) The federal courts have ruled that the 2004 Framework forest plan is illegal under NEPA. You are using the wrong forest plan. This project must be governed by the 2001 Framework FEIS and ROD.

Forest Service Response: Already decided at a higher level: The final ruling on the merits of the 2004 Framework ROD was issued by District Judge Morrison England on August 1, 2008, which adopted the Ninth Circuit's rationale in its May 14, 2008 opinion that the 2004 Framework SEIS's range of alternatives was inadequate under NEPA. The 2004 Framework was upheld on all other NEPA and NFMA claims. On August 13, 2009, upon rehearing, the Ninth Circuit issued an amended opinion that supersedes its May 14, 2008 ruling, leaving Judge England in a position to rule on the remedy. As a result, Judge England, on November 4, 2009 ruled that the Forest Service must address the procedural Framework defect through a supplemental EIS process, and rectifying any on-site substantive deficiency, for new fuel-reduction projects, an amplified alternative analysis at the project level. Based on the 2009 District Court ruling the 2004 Forest Plan Amendment was used as the Forest Plan direction and a Non-Commercial Alternative was analyzed for this project. The latest ruling involving the 2004 Framework occurred in May 2011, *Sierra Forest Legacy et al v Sherman*, 646 F.3d 1161 (9th Cir. 2011). In that decision, the 9th Circuit remanded the case to the District Court for further proceedings related to proper remedy for the Framework NEPA violation. Until the District Court rules again on remedy, Forest Service activities on the Eldorado continue to implement the 2004 Framework and are not constrained during the remand process.

4. Lack of Restoration for Aquatic Species (Comment #15): The "Background" information regarding the Callegat Project area notes that there are "dispersed camping areas adjacent to Cat Creek and the Middle Fork Cosumnes River that are contributing sediment into the stream at an accelerated rate;" however, little consideration is given to aquatic habitat condition as it relates to fisheries in this discussion. Such discussion is also lacking in the "Ecological Restoration" section. Throughout the document, the thrust of the aquatic rehabilitation effort focuses on rehabilitation of dispersed camping areas and stabilization of gullies, essentially ignoring issues related to fisheries and quality of existing aquatic habitats. Although these rehabilitation efforts are commendable, they ignore such issues as effects of road construction/location, historic timber

harvest, and past channel relocation on in-stream conditions (e.g. lack of large woody debris, pool depth, etc.) (Holst)

Forest Service Response: Conjectural: While these dispersed camping sites have been identified as contributing sediment to the stream channel from unchecked recreational use they are isolated segments that can be easily reclaimed by the restoration activities described (examples include: placing boulders to block access and re-vegetating the site). In addition, these isolated areas are not contributing to an overall degradation of the stream channel or aquatic habitat as evidenced by the presence of veined aquatic lichen downstream of identified dispersed camping sites where restoration activities will be occurring. Furthermore, fish distribution within the stream channel within, upstream, and downstream of the dispersed camping areas appear to be in abundance from visual encounter surveys.

A 2008 Road Sediment Inventory was conducted for the Cat Creek Watershed that included all road segments along Cat Creek and its tributaries. As part of that analysis 15 road segments in the headwaters of Cat Creek were rated as having diversion potential, meaning the potential to divert sediment into the stream channel. Of these 15 locations only one site was rated as “high risk” on Forest Service road 09N22 a chip sealed road and a perennial tributary to Cat Creek. In 2009 this site was evaluated by an ID Team convened for identifying potential legacy road funded projects for aquatic organism passage improvement projects. It was determined that the site would benefit from a culvert upgrade from the existing 48 inch structure to an 84 inch structure, but the amount of stream channel reclaimed, amount of disturbance to exiting channel, and cost did not warrant replacement of the structure. Therefore, is also likely beyond the scope of this project.

As part of the Callegat roads package, remaining road segments listed in the 2008 Road Sediment Analysis will be addressed using this information to repair problem areas. Any drainage problems including fill failures on roads being used for haul in the project will be included in the road package.

5. General Forest Plan Consistency for RCA Treatments (Comment # 16) With the exception of the planting of riparian vegetation as part of the rehabilitation of the dispersed camping areas, the rehabilitation efforts appear to rely mainly on the mechanical thinning of conifers within the RCAs. Additionally, as noted in the “Unit Specific Criteria” equipment is sometimes allowed within 25 feet of aquatic features that have a 300 foot RCA. With a reach-in of 25 feet permitted under the Proposed Action, this would mean that trees could be harvested right up to the edge of the aquatic feature. This does not appear to be consistent with the various provisions of the Sierra Nevada Forest Plan Amendment. (Holst)

Forest Service Response: Conjectural: The mechanical treatments in RCAs proposed in this project are designed to meet the Riparian Conservation Objectives (RCOs) and associated Standards and Guidelines (S&Gs) provided in the SNFPA. The proposed action includes design criteria to prohibit removal of vegetation on stream banks and in stream channels of perennial and intermittent streams. The meadows in unit 112 would have material cut up to the edge to deal with conifer encroachment as described in S&G # 105 of the SNFPA.

6) Approval of Activities in RCAs (Comment # 17): Furthermore within the RCA, approval for construction of new landings, construction of new permanent roads, and equipment crossings of perennial streams only requires the approval of one resource specialist – defined as a Soil Scientist, Fisheries Biologist, Botanist, or Hydrologist. And although the Proposed Action states the primary contact would be the Hydrologist of Fisheries Biologist for changes in the Protection Measures, as written, a Soil Scientist or Botanist could approve a new landing within an RCA. Again, this does not appear to be consistent with the various provisions of the Sierra Nevada Forest Plan Amendment. Furthermore within the RCA, approval for construction of new landings, construction of new permanent roads, and equipment crossings of perennial streams only requires the approval of one resource specialist – defined as a Soil Scientist, Fisheries Biologist, Botanist, or Hydrologist. And although the Proposed Action states the primary contact would be the Hydrologist of Fisheries Biologist for changes in the Protection Measures, as written, a Soil Scientist or Botanist could approve a new landing within an RCA. Again, this does not appear to be consistent with the various provisions of the Sierra Nevada Forest Plan Amendment. With these issues in mind and given the fact that Callegat is an “ecological restoration project,” please fully consider: Modifying the Proposed Action under “Design Criteria” – “Riparian Conservation Area” – “Entire RCA” – bullet 3 – to read “Approval by the Hydrologist and Fisheries Biologist is needed for: a) construction of new landings and/or modification and use of existing landings, b) construction of permanent and/or temporary roads, c) equipment crossings of perennial and intermittent streams, d) use of ground-based equipment and/or removal of vegetation in inner gorges.” (Holst # 5)

Forest Service Response: Conjectural: There is no mention of who can approve certain activities within RCAs in the SNFPA. The mention of approval by resource specialists is a design criteria added to this specific project is to ensure that S&Gs and RCOs are being met.

6) Harm to non-vegetative natural resources (Comment # 18) : The scoping package indicates that 3,021 acres will be logged. Based on my research it appears timber harvest harms the non-vegetative natural resources in the forest. I am very interested in reading how this harm will be eliminated. (Artley)

Forest Service Response: Conjectural: The proposed timber harvest activities in this project are similar in nature to many that have been carried out on the Eldorado National Forest. Local expertise in implementation of these types of projects minimizes the chance of highly uncertain effects, which involve unique or unknown risks. Proposed activities are routine in nature, employing standard practices and protection measures, and their effects are generally well known, and well documented in research studies.

7) Lumber market (Comment #19): At a time when the lumber market is saturated and given that logging is harmful it seems clear to me that the Responsible Official should reconsider this timber sale.

Forest Service Response: Conjectural and irrelevant to the decision being made: As stated above the proposal is designed to avoid negative environmental effects. The statement that logging is harmful is unsupported. The state of the lumber market does not play into the decision on whether or not to implement this project. As long as there are potential bidders for stewardship contracts, the project will be implemented.

8) Dispersed Camping (Comment #20): We discussed briefly in the public meeting the closure to dispersed camping off Forest Service Road 9N17F. In restoring and protecting this area, I would hope the Forest Service would evaluate the opportunity for future dispersed camping and restore accordingly. Obviously, this area appealed to some of the public for camping in the past. Its close proximity to the Consumes River Campground make it an ideal overflow if camping can be accommodated ecologically. Perhaps a trail up the Consumes River or other locations would enhance camping. The need for camping, developed and dispersed, is great and will only increase in the future. Many studies have linked camping to local economies. I would encourage you to consider expanding and restoring camping opportunities where ever possible. (Hoffman #6)

Forest Service Response: Already decided by regulation: This area is currently under a Forest Order that prohibits camping in areas directly adjacent to the Middle Fork Cosumnes River Campground. It has been determined that excess damage to water quality was occurring in this area due to garbage and unsanitary camping practices. There are other opportunities for dispersed camping in the Cat Creek area that are being restored and left open under this proposal.

Alternatives Considered but Eliminated from Detailed Study

1) An alternative was proposed by the public that would use only prescribed fire and no thinning, on the acres proposed for mechanical/commercial thinning. (Hanson)

This alternative was dismissed due to the potential for unreasonable environmental harm. Due to the existing conditions of high surface fuel loading as well as overly dense stands with abundant ladder fuels, a prescribed fire would not be feasible to implement. The effects of introducing fire with no pre-treatment thinning would be similar to wildfire. Impacts to resources such as soils, water quality and spotted owl and goshawk habitat would not support a finding of no significant impact required in an environmental analysis.

2) An alternative was proposed by the public with a 12-inch diameter limit on the acres of forest proposed for mechanical/commercial thinning.(Hanson)

This alternative is within the existing range of the non-commercial alternative already being analyzed in the EA.

3) An alternative that would include not only all the design criteria and restoration efforts noted in the present Proposed Action, but also an assessment of aquatic habitat condition, and provide for identified site-specific in-channel aquatic habitat restoration activities (e.g. placement of large woody debris, root wads, etc). (Holst)

The issue that is driving this alternative was determined to be non-important. The proposed action does take into consideration the condition of aquatic habitat and has proposed restoration activities accordingly. See description in project record for important and non-important issues.

Appendix C
RCA Unit Specific Design Criteria

Unit 112	<ul style="list-style-type: none"> ▪ No-ground based equipment within 25 feet of the edge of meadows. ▪ No active fire ignition within meadows or adjacent riparian vegetation. Back-burning into meadows is allowed, but not encouraged. ▪ For perennial streams: No ground-based equipment within 50 feet of the stream on slopes less than 25% and no ground-based equipment within 75 feet on slopes between 25% and 35%. 	Minimizes sediment delivery to the meadow and allows for fuel reduction activities near the meadow. May reduce the encroachment of conifers into the meadow.
Unit 113	<ul style="list-style-type: none"> ▪ No ground-based equipment within 50 to 150 feet of the edge of the stream channel – equipment exclusion zone will roughly follow the slope break on the slopes next to the stream. (50 ft. equipment exclusion zone where slopes are gentle near the stream and 150 ft. equipment exclusion zone where slopes are steep). ▪ Pacific yew (<i>Taxus brevifolia</i>) will be avoided to the extent possible during thinning within the unit. ▪ Broadcast burning will be excluded within the equipment exclusion zone along Pipi Creek to limit impacts from fire to Pacific yew (<i>Taxus brevifolia</i>). Jackpot burning would be allowed in areas free of Pacific yew. 	Minimizes the amount of sediment delivered to the stream and maximizes fuel reduction activities near the stream by: a) keeping ground-based equipment away from the stream on steep slopes, and b) allowing fuel reduction activities near the stream on gentle slopes.
Unit 114	<p><u>For the intermittent stream (S11) in the middle of the Unit:</u></p> <ul style="list-style-type: none"> ▪ No ground-based equipment within 25 feet of the channel where the slope is less than 35 percent. ▪ No ground-based equipment within 100 feet of the channel where the slope is greater than 35 percent. 	

Unit 116	For the stream in the northwest corner of the Unit, no ground-based equipment within 75 feet of the stream channel.	Minimizes amount of sediment delivered to the stream from steep slopes adjacent to the stream.
Unit 117	<ul style="list-style-type: none"> ▪ No equipment crossing of the stream in unit 117. ▪ No ground-based equipment within 75 ft of channel of the perennial stream. ▪ No ground-based equipment within 50 ft. of the channel of the intermittent stream. 	Protection of habitat for the aquatic lichen in Unit 117 by minimizing amount of sediment delivered to the stream.
Unit 118	No ground-based equipment within 75 feet of the two perennial streams (S10 and S11) in the Unit.	Minimizes amount of sediment delivered to the stream from steep slopes adjacent to the stream.
Unit 119	<ul style="list-style-type: none"> ▪ No ground-based equipment within 10 feet of the ephemeral stream in northern boundary of Unit (between road 9N40 and S10). ▪ No activities between road 9N77 and S10. 	Allows fuels treatment to occur near streams while minimizing the amount of sediment delivered to the stream.
Unit 120	No ground-based equipment within 50 feet of the edge of the channel of all streams.	Minimizes the amount of sediment delivered to the stream from fairly steep slopes adjacent to the stream.
Unit 124	No ground-based equipment within 75 feet of the edge of the channel of stream S9.	
Unit 125	No ground-based equipment within 25 feet of stream S9.	
127	<ul style="list-style-type: none"> ▪ No ground-based equipment between road 9N17J and stream S8C. ▪ No ground-based equipment within 50 feet of the channel of stream S8C outside of the area between road 9N17J and stream S8C. 	Allows fuels treatment to occur near streams while minimizing the amount of sediment delivered to the stream.
123, 126, 129	<ul style="list-style-type: none"> ▪ No ground-based equipment with 75 feet of stream S9. ▪ No equipment crossing of stream in Unit 129. 	Protection of habitat of the aquatic lichen in the stream in Unit 129 by minimizing the amount of sediment delivered to the stream.

Stream S9a	<ul style="list-style-type: none"> ▪ Downstream of road 9N79a: no-ground-based equipment within 50 feet of the channel of Stream S9a. ▪ Upstream of road 9N79a: no-ground-based equipment within 25 feet of the channel of Stream S9a 	Allows fuel reduction activities closer to the stream where needed and better protects the area near the stream where the slope is steeper.
Unit 130	No ground-based equipment west of skid trail situated approximately 50 to 75 feet of Dark Canyon. Do not use skid trail situated immediately adjacent to Dark Canyon.	This segment of Dark Canyon is in good condition.
Unit 131	No ground-based equipment within 50 feet of the edge of the channel of intermittent and ephemeral streams.	Minimizes the delivery of sediment to streams that are in close proximity to Cat Creek.
Units 134, 151, 152, 159	<ul style="list-style-type: none"> ▪ No ground-based equipment within 100 feet of the edge of the channel of perennial streams. ▪ No ground-based equipment within 50 feet of the edge of the channel of intermittent and ephemeral streams. ▪ For Units 134 and 159, there would be no removal of trees within 100 feet of Cat Creek. Trees that would be felled to facilitate skyline corridors would be left on site. If possible trees, would be felled perpendicular to the slope. 	Protection of the aquatic habitat of Cat Creek from sediment inputs from Units 134 and 159 – those Units border approximately 1.3 miles (28 percent) of Cat Creek with a moderate slope towards the stream. Protection of the aquatic habitat of the aquatic lichen in stream in Unit 152 by minimizing the amount of sediment delivered to the stream.
135	No ground-based equipment with 75 feet for all streams in the Unit.	Minimizes the delivery of sediment to streams that are in close proximity to the Middle Fork Cosumnes River.
136	<ul style="list-style-type: none"> ▪ No-ground-based equipment between road 9N17J and stream S8C. ▪ No ground-based equipment within 75 feet of the channels of the streams located to the north of road 9N17J. 	Sensitive areas that are at risk of sediment delivery to stream channels.

Units 137, 138, 140	<ul style="list-style-type: none"> ▪ Landings and temporary roads would be fully rehabilitated after use (subsoiled, waterbarred, placement of slash on surface, and possible seeding with native species to be determined the project Botanist. ▪ No machine piling within 50 feet of a road. ▪ No ground-based equipment within 100 feet of the edge of the channel of the ephemeral stream on the northern edge of Unit 140. ▪ No ground-based equipment within 50 feet of ephemeral streams in Unit 137. 	The slopes next to the ephemeral stream in Unit 140 are actively eroding as a result of steep slopes and low ground cover.
Unit 139	<ul style="list-style-type: none"> ▪ No ground-based equipment within 100 feet of the edge of the channel of the ephemeral stream in the northeast corner of the Unit. ▪ No ground-based equipment within 25 or 50 feet of other ephemeral streams. (See detailed map of Unit for stream-by-stream designations). 	The slopes next to the ephemeral stream in Unit 139 are actively eroding as a result of steep slopes and low ground cover.
Unit 142	No project activities between road 9N22D and Stream S4.	Minimizes sediment delivery into the headwaters of Stream S4.
Unit 145	No ground-based equipment within 50 feet of Cabin Creek.	Minimizes the amount of sediment delivered to Cabin Creek and maximizes fuel reduction activities near the stream by: a) keeping ground-based equipment away from the stream on steep slopes, and b) allowing fuel reduction activities near the stream on gentle slopes.
Unit 146	<ul style="list-style-type: none"> ▪ No ground-based equipment within 50 feet of Stream S4. ▪ Watershed specialists will flag a variable equipment exclusion zone adjacent to Cabin Creek. 	
Unit 148	Denuded area (approximately 1 acre just upslope of landing next to road 9N0Y8B) would be treated according a prescription that will be designed by the Soil Scientist. The treatment may include one or more of the following: ripping, covering with wood chips, covering with slashing, waterbars,	Area is actively eroding.

Appendix D
Public Comment Analysis for the Callegat Ecological Restoration EA

The legal notice for the opportunity to comment appeared in the Mountain Democrat newspaper on January 17, 2013. Letters were mailed to 25 adjacent property owners, federal, state and local agencies and interested individuals. Nine comment letters were received during the 30-day comment period to the EA. The interdisciplinary team (IDT) sequentially numbered each letter and each comment within each letter, and provided a unique comment identification number (see Table below). The ID team provided responses for the substantive comments received. Substantive comments are: within the scope of the proposed action; specific to the proposed action; have a direct relationship with the proposed action; and, include supporting reasons for the Responsible Official to consider (36 CFR 215.2)

Letter #	Name	Date Received	Address	City	State	Zip Code	Organization
1	Karen Schambach	2/20/2013	PO Box 603	Georgetown	CA	95634	Center for Sierra Nevada Conservation and Public Employees for Environmental Responsibility
2	Stanley Backlund	2/21/2013	3604 Wren Court	Camino	CA	95709	
3	Ron Zigelhofer	2/20/2013	PO Box 1605	Placerville	CA	95667	Eldorado Chapter of Trout Unlimited
4	Erik Holst	2/17/2013	6456 Mica Ct.	Pollock Pines	CA	95726	
5	Craig Thomas	2/20/2013	PO Box 244	Garden Valley	CA	95633	Sierra Forest Legacy
6	Dick Artley	1/30/2013	415 NE 2nd St	Grangeville	ID	83530	
7	Chuck Iley	2/13/2013	810 Court St	Jackson	CA	95642-9534	Amador County Administrative Officer
8	Matt Waverly	2/18/2013	PO Box 247	Standard	CA	95373	Sierra Pacific Industries
9	Steve Brink	2/18/2013	1215 K St, Suite 1830	Sacramento	CA	95814	California Forestry Association

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
1-1	The purpose and need fails to include the need to improve watershed condition. Project needs should include watershed restoration through road removal.	<u>Combined response for (1-1), (1-6), (2-1), (3-6),(4-16)</u> A road sediment inventory (RSI) of the Cat Creek watershed was conducted in 2008 and aquatic organism passage (AOP) surveys were conducted in 2012 on perennial streams throughout the Callegat project area. The road sediment inventory data was reviewed and several upgrades will be implemented including upgrading culverts on (09N17J) in order to pass 100 year flood events. Several high risk RSI sites were identified along road 09NY08. In most circumstances engineering identified road maintenance (example: construction or reconstruction of rolling dips) will correct the risk of sediment entering streams in the project area. A low number of non-system roads (NSRs) were identified during field surveys likely due to the restricted use of Off-highway vehicles (OHVs) in this area. NSR (09N22A) was identified in a riparian conservation area (RCA) and is proposed to be decommissioned under the Callegat project.
1-6	The CERP fails to propose or analyze benefits to the watershed from decommissioning non-system roads and OHV trails, or the decommissioning of system roads in an over-roaded watershed.	
2-1 (Grouped from Multiple Comments)	Address the importance of watershed health by closing multiple roads including, 8N42D, 9N17F, G, P, B, C, D, and 9N23 and 9N23B. Multiple roads are identified for maintenance. Specific work per road is not specified. "Roads listed in 2008 Road Sediment Inventory and Risk Assessment" is not mentioned. Specific treatment of known sediment sources should be addressed.	

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
3-6	<p>A number of roads were identified by your specialists to either be closed or repaired to curtail the sedimentation into adjacent streams. The EA is silent on these restorative measures. Please specify how the sedimentation will be reduced to acceptable levels during and after this project is completed. Please specify exactly what kind of restoration within the RCAs will be completed and by what specific date. Again, the EA is less than specific on this issue and vague enough that we have no idea what you have planned, if anything and when you expect it to be completed. The APA does require that you spell out this kind of information. If you will have no restoration work within the affected RCAs, there needs to be an explanation why and how not performing such remedial measures complies with all of the Federal and Forest requirements, including the CWEs.</p>	See above

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
4-16	<p>Although this project is titled the Callegat Ecological Restoration Project Environmental Assessment, the Purpose and Need discussion tends to focus on timber and ignore aquatic and riparian resources, save for the information provided on dispersed camping areas. In view of the fact that the R5 Ecological Restoration Leadership intent states “Our goal is based on a commitment to land and resource management that is infused by the principles of Ecological Restoration and driven by policies and practices that are dedicated to make land and water ecosystems more sustainable, more resilient, and healthier under current and future conditions.” and Page 3 of the EA notes “As water continues to be one of the most critical resources provided from the National Forests, watershed improvement projects are needed to ensure resource is protected and maintained.” It would seem that improvement of overall watershed condition would included in the listing of Project Needs on page 6.</p>	See above
1-2	<p>The conclusions in the EA and the Hydrology Report regarding the Threshold of Concern and Equivalent Roaded Acres are significantly lower than those reported in SNEP (1996) and the Eldorado NF Middle Fork Cosumnes River Watershed Landscape and Roads Analysis (2002). The Cumulative Watershed Effects Analysis for the project does not explain this difference, nor does it explain how it arrived at the TOC or ERA. The project requires an EIS that includes an explanation of the dramatic change in the TOC and ERA determinations.</p>	<p>The Hydrology Report has been revised to address this comment in the section on Cumulative Watershed Effects at the bottom of Table 5.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
1-3	<p>The Hydrology Report indicates the project will double ERA and TOC from the project in the Cat Creek Watershed, increasing the risk of CWE from Low to High. This is a significant effect that requires an EIS.</p> <p>An Environmental Impact Statement (EIS) is required for “major Federal actions significantly affecting the quality of the human environment...”42 U.S.C. §4332(2)C. The prepared Environmental Assessment (EA) should determine whether an action will have a significant impact, thus requiring preparation of an EIS 40 C.F.R. §1508.9. When an EA reveals a significant impact, as this one has, an EIS must then be prepared.</p>	<p><u>Combined response (1-3),(2-3),(3-3), (4-23)</u></p> <p>An Environmental Impact Statement (EIS) is not required by law, regulation or policy solely because a project causes the risk of CWE in one watershed to rise from low to high for a number of years. Design features have been included in the CERP in order to prevent the Cat Creek watershed from entering into the very high risk category of CWE: 1.) commercial timber harvest would be implemented over a minimum of four years, and no more than 500 acres (approximately 27 percent of the total acres) would be implemented in any single year, and 2.) no more than 300 acres of tractor piling would occur in commercial timber harvest units in a single year. The Decision Notice for the CERP takes into account the effects to all resources – natural and human - in order to arrive at a Finding of No Significant Effect (FONSI).</p>
1-3 cont.	<p>The Hydrology report describes several intermittent and perennial streams - S1, S2, S4 (southern), S5 (southern), S6, S8 (northern), s8c, and S9 - as having “moderate to severe degradation. For most of these streams, units of the CERP parallel between 0 and 57 percent of the length of each stream, within the Riparian Conservation Area. Please explain how a restoration project can justify adding to the existing degradation of these RCAs.</p>	<p>See above.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
2-3	<p>The risk of CWE deserves greater attention in a project to treat 6870 acres in a watershed. Proposed actions resulted in a determination of high risk of CWE. This was reduced to high risk by limiting thinning operations to less than 1000 acres in a single year. The risk is still high and probably very high in some stream locations. The hydrology report was based on severity over the first few years following action. This implies use of a model with a 5 year or less flood condition. Climate change has produced an increasing frequency of high rainfall events such as last December. Thus it seems prudent to use a more conservative flood model in determining risk. Altogether the project actions and scheduling should be defined to assure the lowest risk of CWE.</p>	See above

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
3-3	<p>Our concern is primarily on actions taken or not taken within the Riparian Conservation Areas (RCAs). The discussion regarding roads is again lacking on detail. So is the discussion and specification on the effects to the overall cumulative watershed effect (CWE) in this area. One question regarding CWE which we have is: Has your hydrologist been asked the basic question: "How would the CWE change if this EA was implemented as written?" We request that this question be asked of your hydrologist and his answer be relayed to us. Our conclusion is that the current moderate rating would dramatically increase to high or very high. If this is confirmed by your specialist, then we ask that you follow the requirements of NEPA and perform an Environmental Impact Statement (EIS). If you do perform an EIS, you could clarify all of the questions and issues presented in Messrs. Holst, Backlund and in our Comment Letters.</p>	See above.

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
4-23	<p>A full and thorough discussion of the risk of Cumulative Watershed Effects (CWEs) is largely lacking in the EA; the brief discussion of CWEs on page 47 fails to acknowledge:</p> <p>That a number of the tributaries of Cat Creek contain segments that are moderately or severely degraded.”</p> <p>(From page 4 of the Hydrology Report: “Degraded stream segments show one or more of the following characteristics: excessive and on-going lateral and/or vertical erosion of the channel, headcuts in the channel, excessive deposition of alluvial material, general absence of riparian vegetation, and upland vegetation next to the channel.”)</p> <p>That 12,580 feet (51.3 percent of the length) of Cat Creek itself are bordering treatment units within the RCA (Hydrology Appendix, page 19).</p> <p>That two tributaries to Cat Creek, S9 and S9a have 85.3 and 94.9 percent, respectively, of their stream lengths bordering units which are within the RCA. That S9 is acknowledged to have moderate to severe channel degradation (Hydrology Report, page 8) and that Stream 8c, a tributary of Dark Canyon (S8) has 3,050 feet (82.4 percent of the length) bordering treatment units within the RCA.</p>	See above

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
(4-23 cont)	<p>That within the Cat Creek Watershed, virtually the entire length of the east side of Loggers Delight, an intermittent stream, is immediately adjacent to either a thinning unit or a plantation. Similarly, for virtually it's entire length, both sides of Sugar Pine Canyon, which has both intermittent and perennial segments³ within the project area, is immediately adjacent to either a thinning unit or a plantation. Both of these streams have roads paralleling them on both sides of the channel. Similarly, upstream from its confluence with Cat Creek for about the next $\frac{3}{4}$ mile, Sugar Pine Canyon, a perennial stream, has roads paralleling it on both sides. All of these roads are within the RCA and are contributing fine grained sediment into the adjacent stream channel. Presently, there is only one paragraph on page 46 of the EA that addresses the risk of CWEs. It simply states that the CWE "...is currently either low or moderate in the four watersheds that contain the project area. The project would increase the risk of CWE in each watershed for a few years - the risk would be high in three of the watersheds and moderate in one watershed" and then goes on to state that in the Cat Creek Watershed, implementation of the project would be spaced over two years to prevent the risk from moving to "very high."</p>	See above

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
(4-23 cont)	<p>The analysis does not articulate which activities would be spaced out over time, where these activities would be geographically located relative to streams⁵, nor does it provide CWE, ERA, or TOC information relative to these activities. Based on the discussion immediately above, I believe that the risk of CWEs in and adjacent to these channels as well as the overall risk in the Cat Creek watershed constitutes a significant issue and as such, the appropriate NEPA document for this project is an Environmental Impact Statement, not an EA.</p>	See above
4-24	<p>Given the limitations of the CWE model and amount of prescribed fire in the Cat Creek Watershed (~76 percent) and the amount commercial thinning and plantation work immediately adjacent to Cat Creek, S8c, S9, S9a, Sugar Pine Canyon, Loggers Delight, and Dark Canyon⁴, it appears that the although the risk for the watershed maybe “high;” these stream segments may be at “very high” risk for CWEs. Statements regarding this potential are not adequately discussed or disclosed in either the EA or the Hydrology Report.</p>	<p>Dividing the Cat Creek watershed into smaller areas for CWE analysis would not substantially add to the existing CWE analysis for several reasons: a.) the Cat Creek watershed (5,700 acres) falls in the middle of the intended size range of the model used to assess CWE (3,000 to 10,000 acres), b) the Cat Creek watershed is a classic leaf-shaped watershed that routes surface water to a single exit on Cat Creek, d) the CERP is spread throughout the watershed and is not concentrated in one discrete portion of the watershed, and e) a new and unvalidated method of addressing CWE at a smaller scale would have to be created.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
4-24 (cont)	<p>The question that needs to be answered is “Will the treatments proposed in the Preferred Alternative of the Callegat Ecological Restoration Project raise the CWEs risk to “very high” in watersheds, or portions thereof (e.g. sub- watersheds), in the Callegat Project area?” To provide context that will enable the public to effectively evaluate the actual risk of CWEs for each watershed in the project, the EA also needs to state the actual numerical percentage of Equivalent Roaded Acres (ERA) relative to the Threshold of Concern (TOC); how close is the will the project bring the ERA to exceeding the TOC?</p>	See above
1-4	<p>The equipment exclusion buffer zones have been significantly reduced from those analyzed in the Hydrology Report and RCO analysis, so those reports can no longer be relied on to accurately predict impacts to the watersheds from the project. An EIS needs to be prepared with analysis based on the actual disturbance within the RCAs.</p>	<p>Both the Hydrology Report and RCO analysis were done using the proposed action that is found in the EA, including those changes made since public scoping document.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
2-5	Design Criteria for Riparian Conservation Areas have been modified to allow for treatments with prescribed fire and glyphosate to occur closer to stream channels. No basis for acceptability was provided. We urge the retention of the 75 foot measure as it best reduces sediment delivery to the streams and glyphosate introduction to the streams.	<u>Combine with (3-2),(4-5) (4-6)</u> The EA has been updated on page 8 to clarify the changes to the proposed action since public scoping.
4-5	The RCA “buffers” on ignition of fire and hand treatments of vegetation have been greatly reduced compared to “buffers” stated in the original public scoping Proposed Action dated December 12, 2012; however, there is scant discussion as to why. The reasons for significant changes to the original Proposed Action such as the reduction in equipment exclusion zones and herbicide treatment buffers need to be explained in detail.	
4-6	These parameters were substantially changed in EA without explanation and they were not analyzed; therefore, they cannot be selected without additional analysis and re-scoping, effectively removing them from consideration. An alternative needs to be developed and analyzed that corresponds to the Proposed Action in the Scoping Letter of December 12, 2012.	

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
1-5	<p>There is a very high density of roads in the Cat Creek RCAs (18.9 miles/stream mile). The ERA consideration in CWE does not consider roads within RCAs any differently than those on ridge tops. The Cat Creek watershed has an extremely high road density of 5.1 miles/sq. mile, primarily ML-1 and ML-2 roads. The total Road mi/stream mile is 1.1, and the total RCA Road miles/stream mile is a high 18.9 miles/stream mile. The Callegat project would add one and a half miles of new road disturbance to the watershed. Since the EA does not disclose the location of the new road, it is possible it will also be within an RCA. An EIS needs to be prepared, including analysis of the probable effects of the reconstruction, use and maintenance of these RCA roads on the watershed</p>	<p>The revised Hydrology Report describes the locations of the approximately 1.5 miles of temporary roads. The analysis of Cumulative Watershed Effects includes roads as part of the calculations of Equivalent Roaded Acres.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
1-7	<p>The CERP proposes one-and-a-half miles of new temporary road without identifying why it is needed, where it will be located, or analyzing the effect of adding another road to an already over-roaded watershed.</p> <p>Page 10 of The EA notes "...1.5 miles of new construction temporary road needed for the project" but lacks any further discussion or map reference. Page 84 of the EA states: "The location of temporary roads is being analyzed for this project." If the specific placement of temporary roads is not documented on a map and is presently being analyzed, how can the specialists and/or public determine the potential effects of these roads on various resources during the public comment period?</p>	<p><u>Combined Response with 4-12</u></p> <p>A more specific location for temporary roads has been provided in the EA on page 11. Exact location of roads is not known until time of implementation as temporary roads are by agreement with a purchaser of the stewardship contract. Effects for construction of temporary roads have been evaluated for all resources as part of the commercial harvest activities.</p>
4-12	<p>Page 10 of the EA notes "...1.5 miles of new construction temporary road needed for the project" but lacks any further discussion or map reference. Page 84 of the EA states: "The location of temporary roads is being analyzed for this project." If the specific placement of temporary roads is not documented on a map and is presently being analyzed, how can the specialists and/or public determine the potential effects of these roads on various resources during the public comment period?</p>	

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
1-8	The CERP relies exclusively on herbicides for its weed and brush management. This is inconsistent with the Integrated Pest Management Strategy adopted by the ENF.	As stated on page 10 of the EA, understory vegetation in plantations would be treated using multiple methods including, manual, mechanical, and chemical. Under treatment of noxious weeds the EA states that both glyphosate and hand pulling would be used. The use of herbicides in the Callegat Project is consistent with the Integrated Pest Management Strategy as defined in the Silvicultural Report.
1-9	There is a presumption throughout the EA of a reintroduction of fire to the project area, but there is no analysis of the effects of fire.	Although effects from prescribed fire are only briefly discussed in the EA (pages 37-49), the effects were analyzed for all resources and a more in depth discussion can be found in the respective resource reports in the project record. All conclusions and determinations made in the EA were based on an analysis of the proposed action and alternatives as described on (pages 8-23). All but the no action include prescribed burning.

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
2-2	<p>Reduce thinning next to sensitive streams. We strongly request retention of the 75foot exclusion zone rather than the 25 foot proposed. Exclusion would be for mechanical equipment, fire and glyphosate application. Research studies in forested environments following timber harvest activities have shown that buffer widths of 100 feet (30 meters)or greater next to streams provide a high degree of protection from short term impacts in a variety of forest types and geomorphology. One study demonstrated that the amount of sediment delivered to the stream was reduced by 75 to 80 percent as a result of a 30 meter buffer (Parkyn 2004).</p>	<p>This is addressed in the revised Hydrology Report in the section Direct and Indirect Effects. The design features in Table 4 for aquatic features and RCAs reflect factors site-specific factors such as slope, soil type, degree of ground disturbance outside of the buffer zone, size of ground disturbance outside of the buffer zone, and type of vegetation in the buffer zone as a result of site specific field visits by resource specialists (Hydrologist, Soil Scientist, and Fisheries Biologist).</p>
2-6	<p>No criteria are provided for a thinning target other than tree size. All or area specific targets? Desired condition should be stated.</p>	<p>The desired conditions for commercial thinning can be found in the EA on pages 6 and 9 and include reducing stand densities and conduct forest health treatments to increase drought tolerance and reduce the risk of mortality from insect attack or disease as well as reducing shading around oaks to improve growing conditions and increasing the percentage of shade intolerant pine and hardwoods. The actual targets or measures of the thinning goals can be found in the silvicultural report in the project record. These include trees per acre, basal area per acre and canopy cover.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
2-7	Burning is also to be conducted following thinning. How is 70% ground cover maintained after this work?	A clarification was made to the Soils Report to state: For prescribed fire, 70% ground cover would be maintained within one year following burning activities. This cover value would maintain EHR values below high for all soil types and slopes. Needle fall and revegetation is expected to maintain these minimum cover values and would be monitored as part of the BMP monitoring program.
2-8	Show how CWE risk is reduced in treatment of 2737 acres and burning of 5862 acres.	There is no reference in the EA or Hydrology Report that CWE risk is reduced with implementing the proposed commercial thinning and prescribed. The hydrology report and EA both report the increase in risk to CWE for the various activities in the proposed action.
2-9	Provide specific criteria for limitations on use of mechanical equipment. Selected criteria are provided in Appendix A which raises the question of use in other unspecified locations.	The design criteria listed under the proposed action would apply to all areas in the project where the use of equipment is described. Some resource areas such as archeological sites or sensitive plant sites have very specific restrictions for equipment while others such as soils have broad scale restrictions such as slope. As shown in Appendix C, design criteria for mechanical equipment in riparian conservation areas is provided specifically for many of the units in the project.

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
2-10	Pre-commercial plantations- Application of glyphosate on 751 acres is unspecified. Discussion on page 35 implies total coverage in RCAs. Define the desired condition and species to be removed.	<u>Combined response with (4-2)</u> The RCO analysis for the Callegat project defines riparian vegetation as any native plant community composed of species which primarily occur when surface water or a shallow water table are accessible during the summer months. The RCO and Hydrology report have been updated to include this definition and also provide examples of common, easily recognized riparian species such as creek dogwood (<i>Cornus sericea</i>), white alder (<i>Alnus rhombifolia</i>), indian rhubarb (<i>Darmera peltata</i>), chain fern (<i>Woodwardia fimbriata</i>), wild ginger (<i>Asarum lemmonii</i>), columbine (<i>Aquilegia formosa</i>), and common monkey flower (<i>Mimulus guttatus</i>). Non-desirable vegetation targeted for herbicide generally consists of upland woody brush species such as deer brush (<i>Ceanothus integerrimus</i>), whitethorn (<i>Ceanothus cuneatus</i>), manzanita (<i>Arctostaphylos</i> sp), bearclover (<i>Chamaebatia foliosa</i>), and bitter cherry (<i>Prunus emarginata</i>).
4-2	The discussions on the application of herbicides in the Hydrology Report state that “riparian vegetation” will not be treated, but there is no list of what constitutes riparian vegetation vs. non-desirable vegetation.	
2-11	Reforestation-This topic was omitted in table A. How many acres and in what locations will be treated with glyphosate.	Appendix A has planting listed as a vegetation treatment in the following units, 114-30, 114-53, 114-55, 114-61, 119-31, 119-32, along with their acreages.

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
2-12	(In regards to herbicide application reference above) What is being killed and how will material be applied?	<u>Combined response with 4-1</u> Clarification has been added to the EA design criteria for Pesticide Application on page 13 that states: Herbicide will be applied with backpack sprayers using a directed spray on target vegetation. In reforestation units target vegetation is all competing vegetation and in the established plantations the target vegetation is woody brush.
4-1	The discussions on the application of herbicides do not articulate whether the applications will include broadcast spraying or spot treatments.	
2-13	Burning is allowed to creep back into RCAs. This should be stopped to restrict erosion and sedimentation into streams. Conceivably the entire RCA could be burned.	The effects of prescribed fire to water quality is described in the Hydrology Report in the section Direct/indirect effects.
2-14	Large burn area below units 151,152,153 deserves special care as it drains directly to the Middle Fork of the Cosumnes. Burning this area adds significantly to the risk of CWE. Burning can be distributed over many years, separated from thinning operations, to reduce risk if CWE.	Burning has been accounted for in the analysis of CWE, both within and outside of commercial timber harvest units. Design features have been included in the CERP in order to prevent the Cat Creek watershed from entering into the very high risk category of CWE: 1.) commercial timber harvest would be implemented over a minimum of four years, and no more than 500 acres (approximately 27 percent of the total acres) would be implemented in any single year, and 2.) no more than 300 acres of tractor piling would occur in commercial timber harvest units in a single year.

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2-15	Botany and Noxious Weeds. Are aquatic veined lichen sites listed or will the botanist approve all around road work within 100 feet of streams?	Known aquatic veined lichen sites will be included on the sale area map for the Callecatt project. Botanist approval is only required for road work within 100 feet of streams with veined aquatic lichen adjacent to the road crossing.
2-18	Soils- Feller bunchers are to be allowed on slopes up to 45% in skyline areas. Doesn't this eliminate the benefit of skyline? Show how erosion features are not increased while using Feller-Bunchers. All slopes are over 35% which doesn't leave much room. For consistency machines should be prohibited within skyline units.	Effects to soils are discussed in the Soils Report in the project record. Effects to soils from feller bunchers in skyline units are expected to be minimal.
2-19	Alternative 4. LWD recruitment is addressed as a future projection. Develop a large woody debris plan for Cat Creek and the Cosumnes River to provide positive action towards improved aquatic quality and health. The Hydrology report addresses the probability of negative effects from the proposed action. Placing large woody debris could provide positive actions to improve aquatic health.	The reduction in the recruitment of LWD to streams as a result of the project are expected to be minor. This is described in the Hydrology Report in the section Direct/Indirect Effects.
2-20	Appendix C-RCA Unit Specific Design -Unit 112- Unit omitted from criteria. It has numerous streams in a sensitive meadow area.	Unit 112 is the first unit listed in RCA Unit Specific Design table starting on page 96. Criteria is listed for streams as well as meadows.

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
2-21	Unit 119-Exclusion zone should be 75 ft in this apparently steep gully. See Unit 120 with a gentler slope. Unit 125-25 feet is inadequate and inconsistent with 75 feet of unit 124.Recommend 75 feet clearance from stream 59a as described for fuels reduction. Unit 139-25 or 50 foot exclusion zone appears inadequate in an actively eroding unit. A 75 feet clearance should be maintained. Use of the 75 foot clearance zone is prescribed to reduce sediment flow into adjacent streams and swales.	The revised Hydrology Report describes the rationale for equipment exclusion zones and other design criteria in the section Direct/Indirect Effects. The design features in Table 4 for aquatic features and RCAs reflect factors site-specific factors such as slope, soil type, degree of ground disturbance outside of the buffer zone, size of ground disturbance outside of the buffer zone, and type of vegetation in the buffer zone as a result of site specific field visits by resource specialists (Hydrologist, Soil Scientist, and Fisheries Biologist).
3-5	Additionally, please provide documentation how using glyphosates with undetermined surfactants (some more poisonous to fish than others) complies with the BMPs for the Watershed, the Riparian Conservation Objectives (RCOs) in the Sierra Nevada Forest Plan Amendment (SNFPA), the Federal Clean Water Act and the various other mandated guidelines required of this Forest when conducting fuels reductions projects such as this. The EA dances around the specific adjuvants to be used within the RCA. Please specify which adjuvants you plan to use. Each of these needs to be analyzed in the hydrology and fisheries reports. If you plan to use NPE (R-11) in these areas please explain how the EA established stream buffers will protect the fisheries from contamination. If you return to the stated stream buffers listed in the PA, you should have sufficient clearance from stream and drinking water contamination.	<u>Combined Response for (4-27)</u> Effects to aquatic habitat and species are analyzed in detail in the revised Aquatic Species Biological Assessment and Biological Evaluation for the Callegat Ecological Restoration Project (Grasso 2012). This report documents the effects of all surfactants proposed for use in the EA. The hydrology report has been updated to state the effects section for herbicides includes analysis for all associated ingredients (surfactants, marker dyes).

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4-27	The discussion of herbicide application in the Hydrology Report neglects to evaluate the effects of surfactants on water quality and consistency with Riparian Conservation Objectives.	See above
4-3	The EA does not explicitly state whether herbicide applications will be applied in thinning units, plantation units, or both. And although Appendix A of the EA lists glyphosate treatment units, page 9 of the EA notes there would be treatment of Annosus within thinning units that would include replanting and herbicide treatment. However, there is little discussion of the potential effects Annosus treatments vs. non-treatment in the aquatic and riparian specialists' reports.	The EA has been updated to list the commercial thinning units where annosus treatments would occur. Annosus treatments, including the use of borax and glyphosate have been evaluated in all specialists' reports.
4-8	Although the Design Features listed in Hydrology Report appear to apply to both commercial thinning units and activities in plantations, it is not explicitly stated and only commercial thinning units are listed. If applicable, the Design Features need to state that they apply to both thinning units and plantations.	The table for design features in the hydrology report has a column for the location of where criteria would apply. Language that states "all units" includes prescribed burn areas, commercial thin units and pre-commercial plantations.

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4-9	The scientific basis as to how the conclusions in the Hydrology Report and the Riparian Conservation Objective (RCO) Consistency Report were reached is not adequately articulated. The scientific basis and methodology used to reach the various conclusions needs to be explained in detail in the EA and these specialist reports. Additionally, it should be noted that neither the EA or the various specialists' reports provide for post-project monitoring to determine the effectiveness of the project Design Features.	The reasons for the conclusions in the Hydrology Report are described in detail. Design Criteria for Botany and noxious weeds includes Post-treatment monitoring of sensitive plants, noxious weed, and special habitat within the project area to ensure that the design criteria are effective. Post project monitoring of aquatic features will be considered as funding becomes available. BMP monitoring will occur as required to comply with State Water Quality standards.
4-11	The public has not been afforded an opportunity to comment on the following: Page 13 of the EA states: "A site-specific safety and spill plan would be developed to address site-specific attributes of proposed units." If the safety and spill plan has yet to be developed, how can the public review it for adequacy during the public comment period for the EA?	A safety and spill plan is developed as part of project implementation to provide applicators and inspectors necessary safety information such as emergency contact numbers and actions to take in case a spill were to occur. It contains information such as required personal protective equipment and pesticide product labels. It is not a part of the Environmental Assessment and would not affect a Decision for this project.

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4-13	<p>The EA states: "Management objectives include the USFS Region 5 Ecological Restoration Leadership Intent. Additionally, the Pacific Southwest Research Station General Technical Report 220 An Ecosystem Management Strategy for Sierran Mixed-Conifer Forests (PSW-GTR-220) will be consulted and interpreted as best available science to guide project analysis and implementation." However, the precepts of this GTR are not articulated in either the EA or the Silvicultural Report. Nowhere in the EA is thinning or canopy cover correlated to aspect. And although Page 6 of the Silvicultural Report mentions canopy closure and slope position, it does not articulate differences or variances in thinning or plantation treatments.</p>	<p>Page 6 of the Silvicultural Report states that residual canopy closure would higher than the stand average in multiple areas throughout the project including northern aspects. Page 5 of the Silvicultural Report states that canopy closure is one measure of density that is being used to evaluate vegetation treatments. This equates to varying density base on aspect as described in PSW-GTR-220. Plantations are mentioned only in the second printing addendum to PSW-GTR-220. It is noted that most concepts presented in the document would be most effective after plantations reach stem exclusion phase which would not apply to pre-commercial sized plantations. In addition, removal of conifers near desirable black oaks would reduce shading, improving growing conditions (page 6). Also, prescriptions would result in the increases in the percentage of shade intolerant pines (Jeffrey/ponderosa pine and sugar pine) Page 6.</p>
4-15	<p>The GTR emphasizes the importance of a management strategy that includes methods for increasing vertical and horizontal heterogeneity in forests, going so far as to state "Mixed- conifer forests were highly clustered with groups of trees separated by sparsely treed or open gap conditions. (Page 18)." However, the Proposed Action would propose reforestation of currently under stocked openings. I contend that without articulating a description of what openings would be plated and what openings would not be treated, the Proposed Action contradicts the PSW-GTR-220.</p>	<p>A clarification has been added to the EA on page 10 to state that reforestation of "under stocked openings" pertained to unsuccessful plantations from previous harvest entries. The only other openings that will be planted will be those associated with annosus treatment. Other "Gaps" created through GTR-220 silvicultural prescriptions will not be planted.</p>

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4-17	<p>Page 22 of the Hydrology Report states “No ground-based equipment on slopes greater than 35 percent” yet the EA on page 18 states “No ground-based equipment would be allowed on slopes greater than 35 without consultation by soil scientist. (Forest-Wide Forest Plan Standards and Guidelines 86, 1989 Eldorado National Forest Plan). An exception for this would occur in skyline units 134, 159, 151 and 152. In these units feller bunchers would be allowed to operate on slopes up to 45%. This would be allowed for cutting and pre-bunching of logs that would be removed using a skyline logging system.” Since there is no further discussion in the Hydrology Report regarding slope considerations for the operations of ground-based equipment in the skyline units, it appears the operation of equipment on slopes greater than 35 percent in the RCAs of these units was not fully analyzed.</p>	<p>The statement in the Hydrology Report "No ground-based equipment on slopes greater than 35 percent refers to Riparian Conservation Areas (RCAs). This includes all Units. The statement "No ground-based equipment would be allowed on slopes greater that 35 percent without consultation by a soil scientist" on page 19 of the EA refers to areas outside of RCAs.</p>

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4-20	<p>Given the operating parameters of skyline logging systems, crown breakage as well as removal of vegetation and trees in the RCAs will occur. However, the paucity of information provided in the Callegat Hydrology Report, the Riparian Conservation Objectives (RCO) Consistency Report, the Aquatic Species Biological Assessment and Biological Evaluation, or the Soil Specialist's Report regarding the potential effects to aquatic and riparian systems seems to indicate removal of trees and vegetation immediately adjacent to streams or within the RCA to facilitate skyline logging was not fully analyzed.</p>	<p>Unit specific design criteria states: For Skyline Units 134 and 159, there would be no removal of trees within 100 feet of Cat Creek. Trees that would be felled to facilitate skyline corridors would be left on site. General Design criteria for RCAs states: No removal of woody debris within stream channels or embedded in streambanks. No removal of vegetation (living or dead) within the stream channel or on streambanks. No hand treatments within 25 feet of the edge of perennial stream channels or within riparian vegetation, whichever is greater. These criteria would all apply to skyline units. All specialist reports take these criteria into account in their effects analysis.</p>
4-21	<p>As noted in "Appendix A. Hydrologic Information for the Callegat Ecological Restoration Project," land disturbances such as fire are considered; however, "Table A5-a. Equivalent Roaded acres (ERA) in 2014 for individual land disturbances for each HUC 7 watershed that contains the Callegat Ecological Restoration Project (CERP)" Roaded acres (ERA) in 2014 for individual land disturbances for each HUC 7 watershed that contains the Callegat Ecological Restoration Project (CERP)" shows a zero value for Equivalent Roaded Acres (ERA) for all watersheds. If the effects of prescribed fire are considered in the CWE analysis, why is the value zero. The EA and the Appendix need to explicitly define the reasons for the zero value.</p>	<p>There are no errors in Appendix A of the Hydrology Report with regard to Equivalent Roaded Acres (ERA) from fire, and footnotes have been added in Appendix A, item 4B for clarification.</p>

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4-22	<p>Page 30 of the Hydrology Report states that “Alternatives 1, 3, and 4 include thinning activities in approximately 33 percent of the Cat Creek watershed and prescribed fire in an additional 43 percent of the watershed.” And although there are repeated references to prescribed fire in the various hydrology documents that minimize adverse effects to water quality and riparian condition, nowhere in any of these reports are there scientific or peer- reviewed references for distances from the channel for the ignition of prescribed fire to minimize adverse effects.</p> <p>Additionally, nowhere in the Fuels Report or the EA is it explicitly stated that any effort will be made to reduce fire intensity in portions of any of the RCAs. Thus, the rationale for the conclusions of minimal effects to riparian condition and water quality appear to be unsupported.</p>	<p>The conclusions concerning effects to water quality from prescribed fire are supported by the bulk of published scientific research as summarized in Appendix A, item 2e of the Hydrology Report.</p>

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4-26	<p><u>“The reduction in the amount of shade on the surface of the stream would likely be less than 10 percent because of the protection measures that greatly limit the number of trees and other vegetation that can be removed near perennial streams.”</u> Comment: The Silvicultural Report estimates the overall post-treatment reduction in canopy closure at 13 percent and also states “Canopy closure would not be reduced by greater than thirty percent in any single unit.” Lacking any substantive discussions on existing canopy closure and desired canopy closure in the Riparian Conservation Areas (RCAs), the statement underlined above is does not appear to be supported in the EA or Silvicultural Report.</p>	<p>The conclusions concerning stream temperature in the Hydrology Report are supported by both rationale and calculations. However, the assumptions with regard to the stream temperature calculations have been clarified in Appendix A, item 2e of the revised Hydrology Report.</p>
4-28	<p>In the discussion of “Forest Health,” the EA notes “This alternative would result in a reduction of about 197 acres of understory vegetation treatment with glyphosate within plantations.” The EA goes on to state “Effects on the 197 untreated acres would be the same as the no action alternative. Stand growth and vigor would remain the same and stands would experience a delay meeting goals to accelerate the development of key habitat and old growth forest characteristics in plantations.” Thus, the discussion totally ignores that release treatments in the plantations could be accomplished by hand.</p>	<p>Both the Silvicultural Report and EA have been updated to include a description of the effects of using handwork instead of glyphosate to treat understory vegetation in plantations.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
5-2	<p>The California spotted owl effects analysis (Wildlife BE p. 17, EA p. 45) displays habitat reduction in PACs of WHR 5D of 35 acres pre-post treatment. Wildlife BE p. 22 has the HRCA WHR 5D habitat effects displayed. Neither table makes mention of impacts to 4D habitat for spotted owls in these 2 designations. WHR 4D is important nesting habitat and the effects to this strata must also be characterized in the analysis for the Callegat project. In the Goshawk effects analysis (Wildlife BE p. 32) displays impacts to WHR 4D and 5D habitat and suggests significant reductions on nearly 1000ac in higher quality habitat from project treatments. Since much owl and goshawk habitat overlap the same strata types how is it that no 4D owl habitat is affected in the project? While the EA/BE discuss Seamons (2005) and the need to maintain 617 acres of high quality habitat >70% cc to maintain a very low likelihood of a loss of occupancy within the 1000 ac core area around the nest stand. Seamons (2005) suggests a threshold amount of 370 ac of high quality habitat below which loss of site occupancy increases significantly. Many of the CSO HRCAs contain low levels of high quality habitat (Wildlife BE p.22).</p>	<p>The Terrestrial Wildlife BE has been clarified, to show where the 4D habitat is assessed for spotted owl, and the effects on this habitat type. See Terrestrial Wildlife BE pages 23-24.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
5-2 cont.	While the 1000ac HRCA and the Seamons (2005) 1000ac circle around the nest location may not exactly line up, the Callegat EA analysis should display the amount of high quality habitat (5D,4D) within the 1000ac area matching Seamons (2005) analysis and show that this area contains significant (>600ac) of high quality habitat in order to be able to support the claims in the Wildlife BE (p. 23,28) that the Callegat treatments won't cause a change (loss) in owl occupancy or status.	see above
5-3	Glyphosate has been increasingly under scrutiny for human health impacts, risks to wildlife and water quality. In 2004 and 2005, research published from University of Pennsylvania documented the severe effects from glyphosate products containing the surfactant POEA (in Monsanto's Roundup) upon frog tadpoles at exposure concentrations considered "environmentally relevant"—in other words, at dilute concentrations easily encountered by the organism in the field where run off may occur (Relyea 2005a, b, c). Further, Relyea found that different species react differently to the same chemical exposures. For example, Roundup exposure at realistic concentrations killed all leopard and gray tree frog tadpoles and 98 percent of wood frog tadpoles, but did not significantly effect spring peeper and American toad tadpoles.	The proposed action does not include the use of the POEA surfactant or the Monsanto product. The cited references are considered as part of SERA Risk Assessment for glyphosate on which the conclusions for this Environmental Assessment are based.

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
5-3 cont	<p>Glyphosate products were demonstrated to be endocrine disrupting chemicals (Richard et al. 2005) and interfere with transcription during cell mitosis (Marc et al. 2002, 2005). In 1996, Monsanto (the manufacturer of Roundup) was fined \$50,000 and found guilty of false advertising by New York State's Consumer Fraud Division for company claims that the product is "practically non-toxic", a claim that has been picked up and repeated in Forest Service and BLM documentation without critical analysis. Among other things, the NY State Attorney General's office ordered Monsanto to cease and desist:</p>	See above
5-4	<p>Amphibians are particularly vulnerable to exposure to toxins because of their ability to absorb chemicals through their thin skin. Effects to amphibians must be analyzed in terms of acute and chronic toxicity as well as endocrine disruption, immunotoxicity, neurotoxicity, and reproductive toxicity of the formulated product proposed for use, not simply for the primary active ingredient (glyphosate). The environmental analysis should include full disclosure of the type and quantities of surfactants and other additives that will be used. Sources of exposure must be analyzed relative to drift and run-off, puddles/ephemeral pools, cumulative effects, etc.</p>	<p>Effects to amphibians, their environment and other aquatic organisms on which they depend are based on the SERA risk assessments (http://www.fs.fed.us/foresthealth/pesticide/risk.shtml) and discussed in detail in the aquatics report which includes a discussion on acute and chronic toxicity.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
6-1 (Summarized from 5 comments and 74 Opposing Views)	<p><u>Logging is generally harmful to the environment and the EA fails to adequately disclose these effects.</u></p> <p>"Supervisor Hardy you willfully and consciously minimize, lessen and play-down the predicted adverse environmental effects of implementing the Callegat Ecological Restoration timber sale."</p>	<p>Logging techniques that will be used in the implementation of the project are considered standard for this geographical area and have been carried out with minimal environmental effects on numerous projects within the Eldorado National Forest. Effects to numerous resources including hydrology, soils, and wildlife have been fully considered and disclosed in the various specialist reports located in the project record. Conclusions from these reports indicated there will be no significant impacts associated with the logging or any other activities associated with the implementation of this project.</p> <p><u>Consideration of opposing views</u> ;Regulations at 40 CFR 1502.9(b) apply to the preparation of Environmental Impact Statements. There is no requirement to include responses to public comments in an Environmental Assessment. Under 36 CFR 215.6(b), the Agency is required to consider public comments. After a review of the material provided by Mr. Artley it was determined that much of the material provided was not scientific and instead multiple sources from popular press such as newspapers, magazines, and internet blogs. Much of the scientific research did not apply to the proposed action. None of the material provided contained findings or conclusions that would change the findings in the EA or the Responsible Official's Decision. A summary of the "Opposing View" citations are located in the Project Record.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
6-2 (Summarized from 6 comments)	<p><u>The public disapproves of logging on National Forest System Land.</u></p> <p>"The vast majority of the public does not want their national forests logged for any reason. The USFS has predicted a "timber famine" for decades. There is no timber famine nor is there a shortage of timber being harvested in the United States to meet domestic needs. Indeed, some of the timber cut from private land is being exported. If this timber were needed in the United States it would be purchased by domestic corporations. There is no reason to defy the will of the public by logging their land."</p>	<p>It is well accepted that there are many different opinions about logging on National Forest System Land. In an effort to better engage the local public in management of their National Forest the Amador Ranger District has been actively involved in a collaborative group known as The Amador Calaveras Consensus Group. The collaborative is made up of many local interested parties including loggers and environmental groups as well as individual citizens from the community. They have been involved in the project development and support the need for commercial thinning as it relates to fuels reduction and forest health in the Callegat Ecological Restoration Project.</p>
6-3 (Summarized from 21 comments and 105 opposing Views)	<p><u>The fuels treatments proposed will have little to no effect on fire behavior and will not protect houses from fire.</u></p> <p>"Supervisor Hardy, your pre-decisional EA doesn't even mention actions which best reduce the home ignitability. Certainly logging merchantable trees miles away from a home at risk is not as effective as reducing fine, flash fuels near the home. Keep in mind Dr. Cohen repeatedly states fuels reduction logging does not reduce fire intensity or rate of spread."</p> <p>"Supervisor Hardy, once again an unbiased, independent scientist says "logging-induced changes in fuel composition, vegetation, and microclimate can result in increased rate of fire spread, higher fireline intensity, and more severe fire effects" and you reject his observations."</p>	<p>The fuels treatments proposed in the project are consistent with management direction provided by the Eldorado National Forest Plan, as amended by the Sierra Nevada Forest Plan Amendment (SNFPA) (2004), along with recommendations and policy from our Pacific Southwest Region and Washington Office. Dispute with these policies are beyond the scope of this project. See (6-1) above for consideration of opposing views.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
6-4 (Summarized from 2 comments and 57 Opposing Views)	Temporary roads must be fully obliterated or they will cause negative effects to aquatic species.	Treatment of temporary roads is generally covered by standard Timber Sale Contract requirements such as outsliping, construction of drainage dips and water-spreading ditches and blocking to vehicular traffic. In three specific units identified in the EA, ripping and seeding was identified as an additional measure needed to alleviate excessive soil disturbance. By taking these actions the project is in compliance with Best Management Practices and all applicable Forest Plan Standards and Guidelines. See (6-1) above for consideration of opposing views.
6-5 (Summarized from 4 comments and 124 opposing Views)	<p><u>Glyphosate causes excessive harm to both humans and the environment and should not be used.</u></p> <p>"Supervisor Hardy the USFS claims glyphosate containing herbicides (specifically Roundup®) are safe. This 2002 article in a Monsanto authored article called "Backgrounder – Glyphosate and Wildlife" (link below) claims glyphosate-containing herbicides will not harm: wild mammals, birds, aquatic animals, amphibians, insects and other terrestrial arthropods, earthworms and soil microorganisms. If this were true there would not be hundreds of independent scientists' research showing otherwise."</p>	The effects from the use of glyphosate have been well studied and are summarized in the project record. With the application rates and methods proposed in this project, there is minimal risk to those applying the herbicide, the general public or other species analyzed as part of the Environmental Assessment. The majority of the negative effects discussed in material presented by the commenter has to do with ingredients in the trademarked Roundup solution which is not proposed for use on this project. See (6-1) above for consideration of opposing views.

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6-6	In order to assure that the logs will be processed by local labor in the woods and the logs are hauled to local mills the sale must be sold under the small business authority (SBA). The pre-decisional EA does not indicate this will be the case.	Whether or not the Timber Sale Contract is awarded through the small business authority is beyond the scope of the analysis in the EA. These decisions are made at time of implementation through timber sale contracting authority, policy and regulation.
7-1	I strongly urge that you expand or clarify the objective to include optimization of ecological, social and economic sustainability.	Ecological, social and economic sustainability are part of the needs listed for this project in the EA listed on page 6. Economics are discussed in the Silvicultural Report. The ecological sustainability will be met by meeting the purpose and need of this project while limiting environmental effects and meeting the standards and guidelines in the Forest Plan.
7-2	Without full inventory of meadows how will goals be met in meeting Leadership intent.	Field surveys were conducted to assess existing conditions of known aquatic features in the project area. Where conditions were found that do not meet the desired conditions, restoration was proposed. Full inventory of meadows and their conditions is not known at this time and is beyond the scope of this project.

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
7-3	<p>The listed indicator measure for #3, a reduction in high severity fires, needs further clarification. It is not the total acres on which the potential high severity fire has been reduced, but the patches of potential high severity fires that have been created. The objective is to reduce large landscape-scale catastrophic wildfire potential and in its place, create a patch work or mosaic burn pattern under wildfire conditions. Patches of dense forest will remain following treatments to the benefit of wildlife species that prefer dense forest patches and when burned, will favor wildlife species that prefer high severity fire patches.</p>	<p>The EA analyzed the effects related to issue #3 that was raised during public scoping that stated "A reduction in high severity fires may have adverse effects to wildlife species that benefit from high severity patches ". The indicator measure was created to determine our potential effects to these species. It was not a measure of meeting the purpose and need of the project.</p>
7-4	<p>The EA indicates boulders will be placed 20 feet from the edge of the stream channel and the campfire rings will be removed between the boulders and the stream. Given the need for dispersed camping and the social preference for this area, please consider re-installing the campfire rings at a more suitable location between the road and boulders.</p>	<p>The installation of campfire rings or other development of the camping areas is not being considered as part of this analysis.</p>

Letter & Comment No.	Comment	Responsible Official's Consideration of Comment
7-5	Several comments were received encouraging the Forest Service to search for additional waterholes or enhance existing waterholes for future fire suppression and other activities. The response was that the existing waterholes would be maintained. Thank you, but the request was for additional and enhancement. Please add a statement for developing or enhancing waterholes to keep that option available as the project is implemented.	The water sources proposed for use and maintenance during project implementation were found to be adequate for the needs of the project. Construction of new water sources for fire suppression was beyond the scope of this project.
8-1	It appears that around 70-75% of the commercial thinning acreage is under a California spotted owl or northern goshawk LOP. Most often the unit is under both. Given that the normal operating season could be from June 1 through October 15th (based on the recently sold Raintree 1 project prospectus), that gives an operator 1 to 2 months each year to operate on 75 % of the project area. This restriction will result in multiple entries over multiple years, quite possibly multiple entries in one year, which results in frequent moves and higher logging cost. I would suggest reviewing the implications of how the LOPs are being implemented.	<u>Combined Response with 9-1</u> Design criteria in the EA and BE, have been changed to reflect the original intent of applying the LOP to portions of units, where feasible. This clarification would retain the protections for California spotted owl, and northern goshawk consistent with the 2004 SNFPA ROD. When only applied to the sections of units affected, the LOPs would affect approximately 40-45% of the commercial thinning acreage.

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9-1	It appears about 75% of the harvest units are in Owl or Goshawk LOPs or both. This will require a substantial amount of move-in and move-out plus moving within the sale area from unit to unit since many of the units will only have 1-2 months/year outside of the LOP. This situation requires careful thought to the appraisal for both Callie Cat and Copy Cat. Just allowing the "black box" to do its thing will not reflect a reasonable estimate of the stump-truck costs that will occur on these sales.	
8-2	The EA states that portions of three units have sub-soiling on the primary skid trails and landings. This practice is costly and requires specialized equipment to be on site. Would the unacceptable conditions be mitigated by the standard harvesting practices (breaking up compacted soils) and standard erosion control measures.	The EA states under the Soils Design Criteria that there are three units where standard erosion control measures would not be sufficient to deal with soil conditions. In these three units ripping and seeding of main skid trails, landings and temporary roads is prescribed.
8-3	The stumps on the unit adjacent to PiPi campground do not need to be buried post treatment.	This design criteria was removed from the proposed action prior to the public comment period. It is no longer required that stumps be buried.