

# APPENDIX A. ABBREVIATIONS, ACRONYMS, AND GLOSSARY

## Abbreviations and Acronyms

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<b>ACS</b>	Aquatic Conservation Strategy
<b>ACSO</b>	Aquatic Conservation Strategy Objective
<b>ACS ROD</b>	The Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen National Forests within the Range of the Northern Spotted Owl – Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy
<b>AWWCs</b>	Areas with Watershed Concerns
<b>BA</b>	Biological Assessment
<b>BLM</b>	Bureau of Land Management
<b>BMPs</b>	Best Management Practices
<b>CEQ</b>	Council on Environmental Quality
<b>CFR</b>	Code of Federal Regulations
<b>CHU</b>	Critical Habitat Unit
<b>CO</b>	Carbon monoxide
<b>CWE</b>	Cumulative Watershed Effects
<b>EIS</b>	Environmental Impact Statement
<b>EPA</b>	Environmental Protection Agency
<b>ERA</b>	Equivalent Road Acres
<b>ERA/TOC</b>	Equivalent Road Acres /Threshold of Concern ratio
<b>FEMAT</b>	Forest Ecosystem Management Assessment Team
<b>Fish BA</b>	Biological Assessment/Biological Evaluation For Threatened, Endangered, Proposed, Petitioned and Sensitive Species That may be affected by the Meteor Timber Sale
<b>FOFEM</b>	First Order Fire Effects Model
<b>Forest</b>	Klamath National Forest
<b>Forest Plan</b>	Klamath National Forest Land and Resource Management Plan
<b>FS</b>	Forest Service
<b>FSEIS</b>	Final Supplemental Environmental Impact Statement
<b>FWS</b>	United States Fish and Wildlife Service
<b>GIS</b>	Geographic information system
<b>GS</b>	Group Selection
<b>GTR</b>	Green Tree Retention <i>or</i> General Technical Report

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<b>IDT</b>	Interdisciplinary Team
<b>LSR</b>	Late-Successional Reserve
<b>MAAs</b>	Management Areas
<b>MBF</b>	Thousand Board Feet of timber
<b>NEPA</b>	National Environmental Policy Act
<b>NFFL</b>	Northern Forest Fire Laboratory
<b>NOAA Fish</b>	National Oceanic and Atmospheric Administration Fisheries (previously NMFS)
<b>NSO</b>	Northern spotted owl
<b>NW ROD</b>	Record of Decision for Amendments to Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl
<b>OHV</b>	Off-Highway Vehicle
<b>PM<sub>10</sub></b>	Particulate matter less than 10 microns
<b>PM<sub>2.5</sub></b>	Fine particulate matter generally less than 2.5 microns.
<b>RAP</b>	Roads Analysis Process
<b>RRs</b>	Riparian Reserves
<b>ROD</b>	Record of Decision
<b>S&amp;M</b>	Survey and Manage
<b>S&amp;M ROD</b>	Record of Decision and Standards and Guidelines for Amendments to the Survey and Manage, Protection Buffer, and other Mitigation Measures Standards and Guidelines
<b>SONCC</b>	Southern Oregon/Northern California Coasts
<b>SQS</b>	Soil Quality Standards for Region 5 of the Forest Service
<b>TES</b>	Threatened, Endangered, and Sensitive
<b>TSA</b>	Timber Sale Administrator
<b>USDA</b>	United States Department of Agriculture
<b>USDI</b>	United States Department of the Interior
<b>USLE</b>	Universal Soil Loss Equation
<b>WA</b>	Watershed Analysis
<b>Wildlife BA</b>	Biological Assessment/Evaluation For Wildlife Species for the Meteor Timber Sale
<b>WSR</b>	Wild and Scenic River
<b>WWOS</b>	Wet Weather Operation Standards

## Glossary

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**Activity Fuels:** Fuels created by management actions.

**Adit:** Nearly horizontal mine passage.

**Alevin:** Very young fish immediately after egg hatch that remains buried in the gravel until the food in its yolk sac is used up, then it pushes its way up and out of the gravel.

**Anadromous Fish:** Species of fish that are born in freshwater, move to the ocean to mature, and return to freshwater to reproduce.

**Aquatic:** Living or growing in water.

**Aquatic Conservation Strategy (ACS):** A strategy “developed to restore and maintain the ecological health of watersheds and aquatic ecosystems contained within them on public lands” (NW ROD, page B-9).

**Aquatic Conservation Strategy Objectives (ACSOs):** Objectives that “define the context for the agency review and implementation of management activities. Complying with the Aquatic Conservation Strategy objectives means that an agency must manage the riparian-dependent resources to maintain the existing condition or implement actions to restore conditions. The baseline from which to assess maintaining or restoring the condition is developed through a watershed analysis. Improvement relates to restoring biological and physical processes within their ranges of natural variability.” (NW ROD, page B-10).

**Areas with Watershed Concerns (AWWCs):** areas identified in the ROD for the *Forest Plan* EIS because cumulative watershed effects are a special concern due to a combination of high disturbance levels (roads, timber harvest, fire), potential for landslides, and surface erosion, or poor aquatic habitat conditions. The *Forest Plan* EIS ROD states that a “cautious approach will be taken in AWWC, with respect to future land management activities,” and that “Watershed Analysis, as part of ecosystem analysis, will be required prior to implementing site-disturbing activities.”

**Background:** A watershed’s natural sediment production and delivery, or sediment delivery, assuming no disturbance (Fish BA page 16).

**Bankfull:** Water level in a stream during a one to two year flood event.

**Beneficial Uses:** “Beneficial uses” of the waters of the state that may be protected against water quality degradation include, but are not necessarily limited to, domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetic enjoyment; navigation; and preservation and enhancement of fish, wildlife, and other aquatic resources or preserves (from Section 13050(f) of California’s Porter-Cologne Water Quality Control Act).

**Best Management Practices (BMPs):** Measures certified by the State Water Quality Control Board and approved by the Environmental Protection Agency as effective means of reducing water quality impacts from non-point sources of pollution.

**Biological Diversity:** The variety of life in an area, including gene pools, species, plant and animal communities, ecosystems and the processes through which individual organisms interact with one another and their environments.

**Board Foot:** A unit of measurement equal to an unfinished board one-foot square by one-inch thick.

**Capable lands:** Lands where at least 20 cubic feet of commercial wood products can be grown per acre per year.

**Class I Airshed:** Select pristine airsheds, including wildernesses greater than 5,000 acres that were federally designated prior to the 1977 amendments to the Clean Air Act.

**Class II Airshed:** Clean air areas where a moderate amount of development can be permitted, including wildernesses designated after 1977.

**Coarse Woody Debris:** Woody material, at least 20 inches in diameter from whatever source that is dead and lying on the forest floor.

**Community Capacity:** The collective ability of residents in a community to respond to external and internal stresses, to create and take advantage of opportunities, and to meet the needs of residents. Physical capital, human capital and social capital are the primary components of community capacity

**Compacted soils:** Soils with reduced porosity.

**Connectivity:** Contiguous habitat across the landscape, usually of concern for mature forest.

**Critical Habitat:** Defined in the Endangered Species Act as (1) the specific areas within the geographical area occupied by the species, at the time it is federally listed, on which are found those physical or biological features essential to the conservation of the species, and which may require special management considerations or protection; and (2) specific areas outside the geographical area occupied by the species at the time it is listed, when it is determined by the Secretary of the Interior that such areas are essential for the conservation of the species.

**Crown Classification:** Classification of trees in a stand in terms of their relative position in the canopy.

- **Dominant Trees** – Crowns rise somewhat above the general level of the canopy so they are exposed to full light above and, to a certain degree, laterally.
- **Codominant Trees** – Trees not as tall as dominants. Crowns receive overhead light, but they may be hemmed in laterally to a certain degree by dominants. Nearly as thrifty as dominants and with them comprise the main canopy of the stand.
- **Intermediate Trees** – Crowns occupy a definitely subordinate position and are subjected to sharp lateral competition from crowns of the two previous classes, although they receive some direct overhead light through holes in the canopy.
- **Suppressed Trees** – Overtopped trees having almost no free overhead light. Exist by virtue of sunlight that filters through the canopy or skylight that may be received through some chance opening. They are commonly weak and slow growing.
- **Dead Trees**

**Cumulative Effects:** Those effects resulting from incremental effects of actions, when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions.

**Direct Effects:** Those effects occurring at the same time and place as the initial cause or action.

**Ecosystem:** A dynamic community of biological organisms, including humans, and the physical environment with which they interact.

**Effects:** Impacts; physical, biological, economic, and social results (or expected results) from implementing an activity.

**Endangered Species:** Any species that is in danger of extinction throughout all or a significant portion of its range.

**Environmental Justice:** Executive Order 12898 requires an assessment of whether minorities or low-income populations would be disproportionately affected by proposed actions.

**Erosion:** A general term for movement of soil particles on the surface of the land initiated by rainfall and running water. This includes surface erosion and channel erosion, as opposed to landsliding. **Fuels:** Anything within the forest that will burn. Usually live and dead woody vegetation.

**Evapotranspiration:** The process of trees returning water to the atmosphere by interception, evaporation, and transpiration.

**Fuel Loading:** The quantity of fuel per acre in a given area.

**Fuel Treatment:** The process of removing and/or modifying natural or human created fuels to reduce fire hazard and achieve other resource objectives.

**Geologic Riparian Reserves:** RR associated with unstable land.

**Geomorphic:** Pertaining to the form of the earth's surface.

**GIS Coverage:** Data layer in a Geographical Information System

**Group Selection (GS):** A harvest treatment in an uneven-aged silvicultural system that removes small groups of trees, creating differing age classes in the stand.

**Green Tree Retention (GTR):** A regeneration cut in an even-aged silvicultural system that maintains a portion of the existing stand, creating a two-storied structure with two or more age classes present.

**Hydrologic Riparian Reserves:** RR associated with stream courses.

**Impacts:** Physical, biological, economic, and social results (or expected results) from implementing an activity.

**Incorporation by Reference:** A technique used to cut down on the bulk in environmental documents without impeding agency and public review of the action. The material included as part of the document must be cited in the document and its content briefly described.

**Indirect Effects:** Those effects occurring later in time or are spatially removed from the activity.

**Inference Point:** The midpoint of the transition zone where disturbances become great enough to cause concern about initiating or contributing to adverse cumulative watershed effects. This point is used in the CWE modeling to inform management decisions as it is an indicator of increasing susceptibility for significant adverse effects.

**Interdisciplinary:** The utilization of individuals representing two or more areas of knowledge and skills focusing on the same subject.

**Irretrievable:** An irretrievable commitment of resources entails a loss of production, harvest, or use of natural resources. Such decisions are reversible, but the production opportunities foregone are irretrievable (50 Federal Register 26082).

**Irreversible:** An irreversible commitment of resources entails a loss of future options. This applies primarily to the effects of use of non-renewable resources such as minerals or cultural resources, or to those factors, such as soil productivity, that are renewable only over a long period of time (50 Federal Register 26082).

**Issue:** Point of discussion, debate, or dispute about the environmental effects of the proposed action.

**Jackpot Burning:** Burning concentrations of fuels.

**Key Watershed:** A watershed containing habitat for potentially threatened fish species or stocks of anadromous salmonids or other potentially threatened fish.

**Land Allocation:** The assignment in the Forest Plan of a management emphasis to particular land areas with the purpose of achieving goals and objectives.

**Landscape Character:** Describes the unique aesthetic image and identity of a place, in terms of socially valued scenery and other sensory attributes.

**Late-Successional Reserves (LSRs):** Large blocks of habitat that are distributed across the range of the northern spotted owl and spaced closely enough to facilitate dispersal of owls. LSRs are managed to provide habitat for late successional and "old growth" species".

**Lithology:** The science dealing with the mineral composition and structure of rocks, especially with such characters of structure as can be studied without high magnification.

**Maintenance Levels.** The level of service provided by a specific road and the maintenance required for that road, consistent with road management objectives and maintenance criteria.

- **Maintenance Level 5:** Roads that provide a high degree of user comfort and convenience. Normally are double lane, paved facilities, or aggregate surface with dust abatement. This is the highest standard of maintenance.
- **Maintenance Level 4:** Roads that provide a moderate degree of user comfort and convenience at moderate speeds. Most are double lane, and aggregate surfaced. Some may be single lane. Some may be dust abated.
- **Maintenance Level 3:** Roads open and maintained for travel by a prudent driver in a standard passenger car. User comfort and convenience are not considered priorities. Typically low speed, single lane with turnouts and native or aggregate surfacing.
- **Maintenance Level 2:** Roads open for use by high-clearance vehicles. Passenger car traffic is discouraged. Traffic is minor administrative, permitted, or dispersed recreation. Non-traffic generated maintenance is minimal.
- **Maintenance Level 1:** These roads are closed. Some intermittent use may be authorized. When closed, they must be physically closed with barricades, berms, gates, or other closure devices. Closures must exceed one year. When open, it may be maintained at any other level. When closed to vehicular traffic, they may be suitable and used for nonmotorized uses, with custodial maintenance.

**Management Area (MA):** A distinct geographical area with specified objectives and prescriptions.

**Management Direction:** A statement of multiple use and other goals and objectives, along with the associated management prescriptions and standards and guidelines to direct resource management.

**Masticator:** Equipment that grinds or chews up vegetative material.

**Matrix:** Lands outside of reserves and withdrawn areas; lands assigned a regulated timber yield.

**Mycelium:** The vegetative part of a fungus.

**National Environmental Policy Act (NEPA):** The act that governs how Federal agencies assess impacts to public lands. The process is interdisciplinary and requires consideration of the environmental effects of alternatives and disclosure of those effects.

**National Forest System Road:** A classified forest road under the jurisdiction of the Forest Service. The term “National Forest System Roads” is synonymous with the term “forest development roads” as used in 23 U.S.C. 205.

**New Road Construction:** Activity that results in the addition of forest classified or temporary road miles (36 CFR 212.1).

**Obligate:** Restricted to a certain condition.

**Outstandingly Remarkable Value:** Rivers designated as part of the WSR System have one or more identified outstandingly remarkable values, which may include scenic, recreation, geologic, fish and wildlife, historic, cultural or other similar values.

**PM<sub>10</sub>:** Particulate matter in the air less than 10 microns in size.

**PM<sub>25</sub>:** Fine Particulate matter in the air generally less than 2.5 microns in size.

**Prescribed Burning:** Controlled application of fire to wildland fuels under specified environmental conditions allowing the fire to be confined to a predetermined area at an intensity and rate of spread that attains resource management objectives.

**Redd:** Area of gravel substrate required for anadromous fish spawning.

**Reforestation:** The natural or artificial restocking of an area with forest trees.

**Refugia:** Locations and habitats that support populations of organisms that are limited to small fragments of their previous geographic range.

**Residual:** The trees remaining after harvesting; also known as the crop trees.

**Resilience:** An ecosystem's ability to maintain structure and patterns of behavior in the face of disturbance.

**Riparian Reserves (RRs):** A land allocation in the Forest Plan that includes an aquatic ecosystem and the adjacent upland areas directly affecting it. It also includes unstable and potentially unstable lands that are not associated with aquatic areas. Specific standards and guidelines provide direction for these areas as outlined in Management Area 10 of the Forest Plan.

**Risk:** The chance of loss.

**Risk Ratio:** In CWE modeling, the inference point divides accelerated sediment and ERA values and the result serves as an indicator of relative watershed condition. Risk ratio values approaching or greater than 1.0 need to be reviewed and evaluated more closely on the ground.

**River Corridor:** For WSRs, a strip of land averaging 320 acres per mile and extending at least ¼ mile from the high water mark on both sides of the river.

**Road:** A motor vehicle travelway over 50 inches wide, unless classified and managed as a trail. A road may be classified, unclassified, or temporary (36 CFR 212.1).

- **Classified Roads:** Roads wholly or partially within or adjacent to National Forest System lands that are determined to be needed for long-term motor vehicle access, including State roads, county roads, privately owned roads, National Forest System roads, and other roads authorized by the Forest Service (36 CFR 212.1).
- **Temporary Roads:** Roads authorized by contract, permit, lease, other written authorization, or emergency operation, not intended to be a part of the forest transportation system and not necessary for long-term resource management (36 CFR 212.1).
- **Unclassified Roads:** Roads on National Forest System lands that are not managed as part of the forest transportation system, such as unplanned roads, abandoned travelways, and off-road vehicle tracks that have not been designated and managed as a trail; and those roads that were once under permit or other authorization and were not decommissioned upon the termination of the authorization (36 CFR 212.1). The regulations at 36 CFR 223.37 require revegetation within 10 years.

**Road Decommissioning:** Activities that result in the stabilization and restoration of unneeded roads to a more natural state (35 CFR 212.1)(FSM 7703).

**Road Maintenance:** The ongoing upkeep of a road necessary to retain or restore the road to the approved road management objective.

**Road Reconstruction:** Activity that results in improvement or realignment of an existing classified road as defined below:

**Road Improvement:** Activity that results in an increase of an existing road's traffic service level, expansion of capacity, or a change in its original design function.

**Road Realignment:** Activity that results in a new location of an existing road or portions of an existing road and treatment of the old roadway (36 CFR 212.1).

**Salvage:** Removal of recently-dead, dying, or deteriorating trees to minimize the loss of wood products.

**Sanitation:** The removal of damaged, or susceptible trees, essentially to prevent the spread of insects or disease; an improvement cut.

**Scenic Integrity:** Describes the magnitude of visible alterations to the valued landscape character. Scenic Integrity is measured within a range of 6 possible levels, called Visual Quality Objectives in the *Forest Plan*.

**Scoping:** The process used to identify the scope of issues to be addressed and to determine the significant issues related to a proposed action.

**Sediment:** Soil particles in water. Suspended sediment consists of small soil particles carried along by the water's turbulent flow.

**Seed Tree:** Removal of the mature timber from an area leaving a small number of trees to provide seed.

**Silviculture:** The art and science of growing and tending forest vegetation. It includes controlling the establishment, composition, and growth of forests for specific management goals.

**Soil Mesofauna Populations:** Organisms between 0.2 millimeters and 1 centimeter in size.

**Stand:** A community of trees or other vegetation uniform in composition, constitution, age, spatial arrangement, or condition to be distinguishable from adjacent communities.

**Standard and Guideline:** A principle requiring a specific level of attainment, a rule to measure against.

**Snag:** A standing dead tree.

**Social Analysis:** Analysis that uses social science information to determine how proposed actions would affect humans.

**Socioeconomic Status:** A measurement of the well being of humans. For this analysis, assumes that higher levels of home ownership, education and employment indicate higher levels of socioeconomic well-being, and higher levels of poverty and higher percentages of children in homes receiving public assistance income indicate lower levels of socioeconomic well-being.

**Soil Productivity:** The capability of a soil to produce a specific crop such as fiber, forage, etc., under defined levels of management.

**Stocking:** The degree to which trees occupy the land, measured by basal area and/or number of trees by size and spacing, compared with a stocking standard; that is, the basal area and/or number of trees required to fully utilize the land's growth potential.

**Stormproofing:** Making a road self-maintaining.

**Survey and Manage (S&M):** Species that are rare, uncommon, or about which little is known. The Forest Plan has special provisions for them, including several types of surveys as well as management recommendations.

**Terrane:** A land classification unit based on patterns of soil characteristics, the form of the land, and the character of landslide and erosion processes that act on the land. Also, geomorphic terrane.

**Thinning:** Removing trees from a stand to redistribute the growth potential or to benefit the quality of the residual stand.

**Thinning from Below:** A type of thinning that favors the dominant and codominant trees by removing the lower crown classes.

**Threatened Species:** Any species that is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range.

**Turbidity:** The optical property of water as affected by suspension of material such as sediment.

**Visual Quality Objective (VQO):** Measurable standards for scenery management that are based on the acceptable degree of alteration of the characteristic landscape.

**Watershed:** The entire land area that drains to a specific point.

- **5th field watershed:** A watershed that ranges from about 40,000 to 250, 000 acres in size.
- **7th field watershed:** A watershed or drainage that ranges from about 2,500 to 10,000 acres in size.

**Watershed Analysis (WA):** Watershed analysis is a systematic procedure for characterizing watershed and ecological processes to meet specific management and social objectives.

**Wet Weather Operations Standards (WWOS):** Specific information used to help determine when activities are at risk of not meeting BMPs. The guidelines are used to determine if conditions are favorable for wet weather or winter operations, and to provide guidance as to when conditions warrant suspension of operations, when operations may begin or resume, or when and what remedies may be appropriate.

**Wild and Scenic Rivers (WSRs):** Rivers or river segments which have been designated as part of the National Wild and Scenic Rivers System (Public Law 90-542, 1968).

## APPENDIX B. BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are measures certified by the State Water Quality Board and approved by the Environmental Protection Agency as the most effective way of protecting water quality from impacts stemming from non-point sources of pollution. These practices have been applied in timber sales and road construction projects in this and other watersheds over the last 20 years and have been found to be effective in protecting water quality within the Klamath National Forest. Specifically, effective application of the Region 5 Forest Service BMPs has been found to maintain water quality that is in conformance with the Water Quality Objectives in the North Coast Regional Water Quality Control Board Basin Plan.

The Region 5 Forest Service BMPs have been monitored and modified since their original implementation in 1979 to make them more effective. Numerous on-site evaluations by the North Coast Regional Water Quality Control Board have found the practices to be effective in maintaining water quality and protecting beneficial uses.

The Forest monitors the implementation and effectiveness of BMPs on randomly selected projects each year (USDA Forest Service, 2000, 2001, 2002, 2003). BMP effectiveness requirements were met on 92% of the sites sampled in 2003. The success rate for effectiveness has been in the high 80s and 90s each year since 1993. The results of this monitoring can be found on the Forest Web page using the link:

<http://www.fs.fed.us/r5/klamath/projects/forestmanagement/>

The following list of BMPs would be implemented in the Meteor project area if one of the Action Alternatives were selected for implementation. A description of the objective of each BMP is included, as well as how this practice would be specifically implemented in the timber sale or the other activities proposed. In addition, Chapter 2 of the EIS contains a detailed description of the Resource Protection Measures that would be implemented to prevent resource damage.

**BMP 1.1 – Timber Sale Planning Process:** Requires the Interdisciplinary Team (IDT) to consider methods of reducing water quality impacts during the planning phase of a project. The project design incorporated the following to reduce water quality impacts:

- Hazard trees would only be removed from RRs according to the *NMFS Letter of Concurrence Regarding Hazard Tree Removal* dated August 1, 1997.
- Helicopter harvest method is used on 73% of the project area to minimize ground disturbance.
- Tractor harvest is limited to slopes generally less than 35%.
- Tractor use would be restricted to designated skid trails and end lining would be employed.
- Construction of new full bench skid trails is prohibited.

- The temporary roads would be blocked and hydrologically restored in a self-maintaining condition (for example, removing culverts, leaving no structures that move water and could fail, outsloping, ripping of the roadbed, seeding, straw mulching, etc.). The amount of work to be done is site-specific and would be included in the roads contract package for the project. Work would be completed after the harvest activity (prior to the first winter after use).
- The rock source to be used for road rocking is outside of RRs.
- Water drafting sites are existing sites and rocking of approaches would be used as required; all boards and black plastic would be removed after use.
- An earth scientist would review all landings to determine if any geologically sensitive lands are present.

**BMP 1.2 – Timber Harvest Unit Design:** Requires the IDT to consider methods of reducing water quality impacts due to changes in unit design.

- The IDT selected helicopter logging over skyline harvest in numerous units to minimize soil disturbance.
  - Helicopter logging is used on about 73% of all harvest acreage and the operation creates very minor disturbance and impacts to water quality.
  - Tractor harvest is limited to slopes generally less than 35%.
  - The project would use a brush chipper or masticator to grind slash and woody vegetation in associated treatment areas of Units 88, 123, 132, 139, and 190. The purpose of this work is to reduce the amount of competing vegetation, reduce fire risk, physically protect the soil surface, and add nutrients to the soil.
  - Fuels treatment consists of hand piling on 48% of the area. Hand piling produces less soil disturbance and leaves more organic matter in the soil than either broadcast burning or tractor piling.
  - Cover portions of skid trails greater than 35% slope with straw, chips, or slash.

**BMP 1.3 – Use of Erosion Hazard Rating for Unit Design:** Identifies high or very high erosion hazard areas and adjusts management activities to prevent downstream water quality impacts; and to increase soil cover for those areas that have a high risk of contributing sediment into streams.

- Same as BMP 1.1, especially through the designation of RRs.
- Two GTR units were deleted to reduce watershed risk.
- Tractor piling was limited by the IDT to portions of two units to reduce soil impacts.
- Residual slash and competing vegetation in Units 88, 123, 132, 139, and 190 would be chipped or masticated to protect the soil surface.

**BMP 1.4 – Use of Sale Area Maps for Designating Water Quality Protection:** Identifies sensitive areas and water uses as part of the Timber Sale Contract to assist operators in locating watershed concerns and applying protection methods.

- All protected stream courses would be illustrated on the Project Area Map.
- Helicopter landings and temporary roads are designated and placed outside of RRs. Any other landings to be used will be existing landings only, no new ones will be created.
- Water drafting sites are located to avoid sensitive areas and would use measures to prevent turbid water from running back into the stream.
- Steep areas within the Meteor project would be helicopter harvested to minimize soil disturbance.
- Tractor skid trails are designated by the Forest Service to minimize disturbance. Tractor end lining would be used to minimize the need for tractor skid trails.

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**BMP 1.5 – Limiting Operating Period of Timber Sale:** To prevent soil compaction and erosion from operations during wet weather; and to ensure placement of erosion control structures prior to the onset of winter to reduce water quality impacts.

- Timber Sale Administrators (TSAs) are responsible for administering the Forest Service Timber Sale Contract and would periodically inspect the Contractor's operations.
- When stormy weather is predicted, TSAs would be on-site to insure that winterization procedures are implemented in a timely fashion and to initiate shutdown or resume operations. Operations would not resume until suitable weather, soil, and forecast conditions exist.
- The Klamath Wet Weather Operation Standards (WWOS) would be used to guide operations, especially haul, during periods of wet weather. Earth scientists would examine field conditions to determine when the soil and/or road have dried out enough to enable operations to resume without risk of watershed impacts. The earth scientist would make recommendations to the TSA who would provide direction to the Timber Sale Contractor as to when operations may resume to insure that BMPs would be met and adverse impacts would be avoided.
- Where needed helicopter landings would be rocked to prevent erosion.

**BMP 1.8 – Streamside Management Zone Designation:** Designates zones adjacent to water and/or riparian areas as zones of special management.

- RRs have been designated in harvest units and excluded from landings.
- Water drafting areas for dust abatement would be designated by the Forest Service and agreed to by the purchaser.

**BMP 1.10 – Tractor Skidding Design:** Designates a tractor skid pattern to avoid over-steepened areas, designates tractor crossings, and reduces skid patterns in sensitive areas to reduce erosion and compaction.

- Skid roads would be water-barred after use.
- Skid trails that intersect Forest Roads would be obliterated at the intersection.
- The location of new skid trails would be by agreement between the purchaser and the TSA.
- For tractor piling in Units 132 and 261, the fuels specialist and earth scientist would examine the unit after harvest and before piling to determine measures to assure that the tractor piling (for example, using a brush rake rather than a blade, leaving the rake height high enough to minimize soil disturbance) would meet the R-5 Soil Quality Standards.
- The tractor piling in Units 132 and 261 would be done with the brush rake not fully lowered to assure that after piling the unit would meet Soil Quality Standards.

- Portions of skid trails on slopes greater than 35% would be covered with straw, chips, or fine slash (less than three inches in diameter).

**BMP 1.11 - Suspended Log Yarding in Timber Harvesting:** Protects the soil mantle from excessive disturbance and maintains the integrity of the streamside management zone and other sensitive watershed areas.

- The IDT chose to use helicopter logging in place of skyline harvesting on most of the steep ground in the Meteor Project Area to minimize soil disturbance.

**BMP 1.13 – Erosion Prevention and Control Measures During Timber Sale Operations:** Ensures that the Purchaser's operations shall be conducted reasonably to minimize soil erosion.

- Erosion control measures are discussed during the pre-operations meeting with the purchaser and the Forest Service. They are updated throughout the operations phase of the timber sale.
- The WWOS would be used.
- TSAs are responsible for administering the Forest Service Timber Sale Contract and would periodically inspect the contractor's operations to assure that erosion control measures are implemented in a timely manner.
- An earth scientist would make periodic inspections of the sale to insure that the erosion control measures are having the desired effect and are in compliance with BMPs. The earth scientist would make recommendations to the Forest Service Representative as to any action needed to comply with BMPs.
- Storms may necessitate temporarily suspension of operations to insure BMP compliance and to avoid adverse impacts to TES species.
- When stormy weather is predicted, Timber Sale Administrators would be on-site to insure that winterization procedures are implemented in a timely fashion and to initiate shutdown or resume operations. Operations would not resume until suitable weather, soil, and forecast conditions exist.

**BMP 1.15 – Revegetation of Areas Disturbed by Harvest Activities:** Establishes a vegetative cover on disturbed sites to prevent erosion and sedimentation.

- For all tractor and some cable units the Forest Service will provide advice as to soil preparation and application of suitable seed mixtures, mulch, and fertilizer, and the timing of such work, where needed.

**BMP 1.16 – Log Landing Erosion Prevention and Control:** The objective of this BMP is to reduce erosion and prevent subsequent sedimentation from log landings. The Timber Sale Contract provides for erosion prevention and control measures on all landings.

- Landings are located outside of RRs.
- Any landings used during wet weather would be adequately rocked to prevent erosion and control runoff.

**BMP 1.17 – Erosion Control on Skid Trails:** Employs preventative measures such as water bars, mulching, spreading slash, or chipping to reduce water concentration and erosion. This is accomplished during the operations phase of the project

- No full bench skid trails would be constructed. (Full bench skid trails have the entire road surface cut into the hill slope).
- Each skid road would be water-barred before the sale is completed.
- Skid trail on slopes exceeding 35% would be covered with straw mulch, chips, or fine slash.
- Skid trails that intersect Forest Roads would be obliterated at the intersection.
- Slash would be spread on cable corridors steeper than 60% slope to reduce erosion.
- Tractor skidding would be done when soil moisture conditions are dry within four inches of the ground surface. At this point, equipment is restricted to main designated skid trails, and endlining is required to move material to the skid trail. After soils are dry to a depth of 10 inches, equipment may, by agreement, leave designated skid trails. The soil is considered dry when squeezing it in the hand cannot mold the soil, or the molded soil breaks apart with agitation in the hand.

**BMP 1.18 – Meadow Protection During Timber Harvesting:** Avoids damage to the ground cover, soil, and water in meadows.

- All skid road locations would be designated by the Forest Service in conjunction with the timber sale purchaser to avoid entry into wet areas.

**BMP 1.19 – Stream Course Protection:** Protects the natural flow of streams and reduces the entry of sediment and any other pollutants into streams.

- Service landings are located away from channels. Fuel containment systems would be used at helicopter landings.
- Skid trails on slopes exceeding 35% would be covered with straw mulch, chips, or fine slash.
- Straw bales, rocking, and containment dikes would be used as needed at water drafting sites to capture any spilled water and prevent runoff to streams.

**BMP 1.20 – Erosion Control Structure Maintenance:** Requires periodic inspection of erosion control structures to assess maintenance needs and effectiveness. This is accomplished during the operations and post-operations phase of the project; this ensures the adequacy of erosion control measures.

- When stormy weather is predicted, TSAs would be on-site to insure that winterization procedures are implemented in a timely fashion and to initiate shutdown or resume operations. Operations would not resume until suitable weather, soil, and forecast conditions exist.
- Earth scientists would examine field conditions to determine when the soil and/or road have dried out enough to enable operations to resume without risk of watershed impacts. The earth scientist would make recommendations to the TSA who would provide direction to the Timber Sale Contractor as to when operations may resume to insure that BMPs would be met and adverse impacts would be avoided.
- Temporary roads would be water-barred after use at the end of the season.
- WWOS guidelines would be followed. Spot rocking would be used as necessary if small and isolated portions of the road system do not adequately dry to allow haul when most of the road is capable of haul, provided haul over the newly rocked areas would not create adverse impacts, such as sediment moving off-site towards channels.

**BMP 1.21 – Acceptance of Erosion Control Measures Before Timber Sale Closure:** Erosion control measures are inspected for adequacy to ensure erosion control as planned. This is accomplished during the post-operations phase of the project during the contract final inspection.

- Landings would be shaped for drainage. At project completion, permanent water-bars would be installed as necessary on all skid trails and temporary roads.
- Rock sources would be water-barred and shaped for drainage.

**BMP 1.23 – Five Year Reforestation Requirement:** Forest Service Manual 2400 requires the reforestation assessment before offering a stand for harvesting. Prompt reforestation reduces the amount of time land is unprotected from climatic and hydrologic events. This is accomplished during the post-sale phase of the project.

- Reforestation would start approximately in the spring following the year of harvest and occur over the next 3 to 5 years.
- Surveys would verify regeneration success.
- Manual release is planned to accompany reforestation actions to insure seedling survival.

**BMP 1.25 – Modification of the Timber Sale Contract (as needed):** Allows contract language to be modified to add or increase protection of water quality not identified in the planning process.

- Modifications are not expected at this time, but this BMP is retained to illustrate that contract alteration would occur if needed to insure maintenance of water quality, especially if unforeseen circumstances and impacts occur.

**BMP 2.2 - Erosion Control Plan:** The objective is to limit and control sedimentation through effective planning prior to the initiation of construction activities and through effective contract administration. During the pre-operations meeting between the Forest Service and the Purchaser, an erosion control plan is agreed to. During the operations phase of the project the plan is implemented.

- Resource protection measures are identified by the IDT and these actions are then incorporated into the contract specifications and provisions. Examples are most of the actions described above and include such items as shaping landings, the temporary road and skid roads for drainage, and use of rock as necessary to obtain suitable haul bases on Forest Service roads.
- TSAs are responsible for administering the Forest Service Timber Sale Contract and would periodically inspect the Contractor's operations.
- When stormy weather is predicted, TSAs would be on-site to insure that winterization procedures are implemented in a timely fashion and to initiate shutdown or resume operations. Operations would not resume until suitable weather, soil, and forecast conditions exist.
- The WWOS Guidelines would be used to guide operations, especially haul, during periods of wet weather. Earth scientists would examine field conditions to determine when the soil and/or road have dried out enough to enable operations to resume without risk of watershed impacts. The earth scientist would make recommendations to the TSA who would provide direction to the Timber Sale Contractor as to when operations may resume to insure that BMPs would be met and adverse impacts would be avoided.

**BMP 2.3 - Timing of Construction Activities:** The objective is to minimize erosion by conducting operations during minimal runoff periods. This is accomplished during the operation phase of the project by the contract administrator and by the hydrologist.

- TSAs are responsible for administering the Forest Service Timber Sale Contract and would periodically inspect the contractor's operations.
- When stormy weather is predicted, TSAs would be on-site to ensure that winterization procedures are implemented in a timely fashion and to initiate shutdown or resume operations. Operations would not resume until suitable weather, soil, and forecast conditions exist.
- The WWOS Guidelines would be used to guide operations, especially haul, during periods of wet weather. Earth scientists would examine field conditions to determine when the soil and/or road have dried out enough to enable operations to resume without risk of watershed impacts. The earth scientist would make recommendations to the TSA who would provide direction to the Timber Sale Contractor as to when operations may resume to insure that BMPs would be met and adverse impacts would be avoided.

- All existing landing and temporary road maintenance would be conducted during appropriate periods of weather and soil moisture to insure BMP attainment and the avoidance of adverse impacts to listed species. Forecast periods would also be of a suitable length to allow completion or winterization of the task undertaken before precipitation events occur.

**BMP 2.4 - Road Slope Stabilization (Preventative Practices):** The objective is to improve road slope stabilization by applying mechanical and vegetative measures. This is accomplished during the operations phase of the project.

- All existing landing and temporary road maintenance would be conducted during appropriate periods of weather and soil moisture to ensure BMP attainment and the avoidance of adverse impacts to listed species. Favorable forecast periods would also be of a suitable length to allow completion or winterization of the task undertaken before precipitation events occur.
- Landings are shaped for drainage at the time of construction. Rock armoring and silt fences with straw bales would be used as necessary to direct water to suitable areas of drainage and to capture sediment. All landing cut and fill slopes would be straw mulched and the mulch would be maintained throughout the life of the project.
- WWOS guidelines would be followed. Rocking would be used as necessary.
- Temporary roads would be water barred and blocked after project completion. Steeper segments would be mulched as needed with straw mulch, chips, or slash.

**BMP 2.5 - Road Slope Stabilization (Administrative Practices):** The objective is to reduce sedimentation by minimizing erosion from road slopes and by minimizing the chances of slope failures along roads. This is accomplished by road design measures during the planning phase of the project.

- TSAs are responsible for administering the Forest Service Timber Sale Contract and would periodically inspect the Contractor's operations.
- When stormy weather is predicted, TSAs would be on-site to insure that winterization procedures are implemented in a timely fashion and to initiate shutdown or resume operations. Operations would not resume until suitable weather, soil, and forecast conditions exist.
- The WWOS Guidelines would be used to guide operations, especially haul, during periods of wet weather. Earth scientists would examine field conditions to determine when the soil and/or road have dried out enough to enable operations to resume without risk of watershed impacts. The earth scientist would make recommendations to the TSA who would provide direction to the Timber Sale Contractor as to when operations may resume to insure that BMPs would be met and adverse impacts would be avoided.

**BMP 2.11 - Minimization of Side cast Material:** The objective is to minimize sediment production originating from material side cast during road construction or

maintenance. This is accomplished during the design phase of the project by the contract inspector.

- Minor blading would occur on temporary roads used by the project. Side-casting of soil during blading operations would be minimal due to the low gradient slopes on which the temporary roads are located.

**BMP 2.12 - Servicing and Refueling of Equipment:** The objective is to prevent pollutants such as fuels and lubricants from being discharged into or near rivers, streams, impoundments, or natural and man-made channels which lead into them. This is accomplished through the use of designed and designated refueling areas.

- Fuel containment systems would be in place at each helicopter landing.

**BMP 2.21 - Water Source Development Consistent with Water Quality Protection:** The objective is to limit and mitigate the effects of water source development through the planning of impoundments and withdrawals.

- Drafting sites are existing sites and rocking of approaches would be used as required; all boards and black plastic would be removed after use. Straw bales, rock surfacing, and containment dikes would be used at all locations where the possibility of water spill or overflow would result in sediment being moved toward the creek.

**BMP 2.22 – Maintenance of Roads:** The objective is to limit sedimentation and erosion by road drainage maintenance and road surface protection. This is accomplished during the operations phase of the project and the post-operations final inspection.

- The WWOS guidelines would be followed. Spot rocking would be used as necessary if small and isolated portions of the road system do not adequately dry to allow haul when most of the road is capable of haul, provided haul over the newly rocked areas would not create adverse impacts, such as sediment moving off-site towards channels.
- TSAs are responsible for administering the Forest Service Timber Sale Contract and would periodically inspect the contractor's operations.
- When stormy weather is predicted, TSAs would be on-site to insure that winterization procedures are implemented in a timely fashion and to initiate shutdown or resume operations. Operations would not resume until suitable weather, soil, and forecast conditions exist.
- The WWOS Guidelines would be used to guide operations, especially haul, during periods of wet weather. Earth scientists would examine field conditions to determine when the soil and/or road have dried out enough to enable operations to resume without risk of watershed impacts. The earth scientist would make recommendations to the TSA who would provide direction to the Timber Sale Contractor as to when operations may resume to insure that BMPs would be met and adverse impacts would be avoided.
- Appropriate road watering would occur as roads dry to maintain road fines on-site.

**BMP 2.23 – Road Surface Treatment to Prevent Loss of Materials:** The objective is to reduce road-related erosion through treatment of the road surface, usually through spot rocking and dust abatement. This is accomplished during the operations phase of the project.

- The WWOS guidelines would be followed. Spot rocking would be used as necessary if small and isolated portions of the road system do not adequately dry to allow haul when most of the road is capable of haul, provided haul over the newly rocked areas would not create adverse impacts, such as sediment moving off-site towards channels.
- TSAs would be on-site daily when new locations and conditions are encountered and to insure that appropriate winterization procedures are implemented in a timely fashion and to initiate shutdown or resume operations. Operations would not resume until suitable weather, soil, and forecast conditions exist.
- Appropriate road watering would occur as roads dry to maintain road fines on-site.

**BMP 2.24 – Traffic Control During Wet Periods:** The objective is to reduce damage to road drainage and limit sedimentation from roads during wet periods. This is generally achieved by increased surfacing and/or road closures during the operations phase of the project.

- The WWOS Guidelines would be used for all project activities (harvest, hauling, planting), but the public uses many roads within the project area throughout the year.
- The WWOS Guidelines dictate conditions that control ground-disturbing operations. For example, if more than 10% of a road segment were rutted two inches in depth, road use would be suspended.

**BMP 2.26 – Obliteration or Decommissioning of Roads:** The objective is to reduce sediment generated from temporary roads, unneeded system (classified), and non-system (unclassified) roads by obliterating or decommissioning them at the completion of the intended use. This is accomplished during the post-operations phase of the project.

- Crossings are removed and natural drainage restored.
- Roads are to be drained by measures such as re-contouring or outslipping to return the road prism to near natural hydrologic function.
- Roads and associated disturbed surfaces will be stabilized through appropriate treatment such as tillage, ripping, fertilization, and/or revegetation.
- Road take-offs will be obliterated or effectively blocked to vehicle access.

**BMP 2.27 – Restoration of Borrow Pits and Quarries:** The objective is to protect water quality by minimizing sediment production from borrow pits and quarry sites. This is accomplished during the operations and post-operations phase of the project.

- Where required for site revegetation and prior to excavation of the site, topsoil will be removed and stockpiled for surface dressing in the post-operation, rehabilitation period.
- Post-excavation sides will be sloped and graded to ensure proper drainage, and general pit area smoothed and stabilized.
- Seeding and or mulching may be required as determined by an Earth Scientist.
- Proper drainage upslope will be established to minimize increased drainage into the pit area.

**BMP 5.4 - Revegetation of Surface Disturbed Areas:** The objective is to protect water quality by minimizing soil erosion through the stabilizing influence of vegetation. This is accomplished during the operations and post-operations phase of the project.

- Segments of skid trails on slopes exceeding 35% would be covered with straw, chips, or fine slash. Mulching would minimize surface erosion and would assist in re-establishment of native vegetation.
- All harvest openings would be promptly replanted.
- Slash would be spread on cable corridors steeper than 60% slope to reduce erosion.

**BMP 5.6 – Soil Moisture Limitations for Tractor Operations:** The objective is to prevent soil compaction, rutting, and gulling that may result in increased sedimentation and turbidity.

- This is accomplished during the operations phase of the project by ongoing monitoring performed by a earth scientist.
- Tractor skidding would be done when soil moisture conditions are dry within four inches of the ground surface. At this point, equipment is restricted to main designated skid trails, and endlining required to move material to the skid trail. After soils are dry to a depth of 10 inches, equipment may, by agreement, leave designated skid trails. The soil is considered dry when squeezing it in the hand cannot mold the soil, or the molded soil breaks apart with agitation in the hand.
- Tractor operations would occur only where slopes are generally less than 35% in slope, but some end lining may occur on steeper slopes, but these areas would be very limited in size and extent. Tractor operations would be restricted to designated skid roads and utilize end lining, which would limit the amount of area impacted.
- TSAs are responsible for administering the Forest Service Timber Sale Contract and would periodically inspect the contractor's operations.
- When stormy weather is predicted, TSAs would be on-site to insure that winterization procedures are implemented in a timely fashion and to initiate shutdown or resume operations. Operations would not resume until suitable weather, soil, and forecast conditions exist.

- The WWOS Guidelines would be used to guide operations, especially haul, during periods of wet weather. Earth scientists would examine field conditions to determine when the soil and/or road have dried out enough to enable operations to resume without risk of watershed impacts. The earth scientist would make recommendations to the TSA who would provide direction to the Timber Sale Contractor as to when operations may resume to insure that BMPs would be met and adverse impacts would be avoided.

**BMP 5.8 – Pesticide Application According to Label Directions and Applicable Legal Requirements:** The object is to avoid water contamination by complying with all label instructions and restrictions for use.

- Follow all applicable laws and product labels on the use of poisoned bait.
- Project supervisor and/or COR will have a Qualified Applicator Certificate.

**BMP 5.9 – Pesticide Application Monitoring and Evaluation:** The objectives are: 1) To determine whether pesticides have been applied safely, restricted to intended target areas, and not resulted in unexpected non-target effects; 2) To document and provide early warning of possible hazardous conditions resulting from possible contamination of water or other non-target areas by pesticides; and 3) To determine the extent, severity, and possible duration of any potential hazard that might exist.

- Project supervisor and/or COR will have a Qualified Applicator Certificate.
- Baiting devices will be a closed-system baiting probe and designed to prevent the accidental spillage of bait.
- Monitor and report the total amount of strychnine applied during the project.
- Notify, in writing, District wildlife and fisheries biologists of any spills. The report should include the reporting person, responsible party, time, location, amount of spill, and cleanup procedure.
- Flag all buffer strips around wetlands, stream, and inner gorges.
- No entry will be permitted through streams, channels, or wetlands to prevent the accidental delivery of poison to watercourses. Where anadromous and resident fisheries are present and where domestic water uses are present, a 100-foot buffer will be in place. For all other situations where water is present, a 25-foot no treatment buffer will be in place.

**BMP 6.1 – Fire and Fuels Management Activities:** The objective is to reduce the effects of wildfires on water quality by informing the public, and the development of access plans, fuel breaks, and fuel reduction programs.

- The District Fuel/Fire department helped determined acceptable levels of slash to retain on the site following harvest activities and also to identify areas and methods to remove standing slash of a sub merchantable size, that otherwise would create an unacceptable fire risk.

- On-going fire management work maintains fire access plans and restricts public activities, such as woodcutting, on days when fire weather predictions indicate significant risk from such activities in the Meteor Project Area.

**BMP 6.2 – Consideration of Water Quality in Formulating Fire Prescriptions:**

The objective is to provide for water quality while achieving management objectives of prescribed fire. This is done during the planning phase of the project.

- Hand and tractor piles would burn under controlled settings to contain fire spread.

**BMP 6.3 – Protection of Water Quality from Prescribed Burning Effects:** The objective is to prevent water quality and soil productivity effects by implementing specific on-the-ground measures during and after the prescribed fire.

- Water quality protection practices include construction of waterbars across fire lines, prevention of intense fires in streamside management zones, and retention or reestablishment of ground cover after prescribed fires.
- Ground cover will be maintained as needed, to insure that erosion within the burned site stays within the limits of the burn plan and Forest Plan guidelines.
- If a handline needs to be constructed within a RR as a control point, it will be located no closer than 30 feet from any water channel. Handline construction in riparian vegetation will be avoided whenever possible.
- In RRs, prescribed fire effects will mimic a low intensity backing fire.

## APPENDIX C. SCOPING COMMENTS FOR METEOR PROJECT

A scoping letter, dated January 16, 2003, was sent to interested and potentially affected parties. A Notice of Intent to prepare an Environmental Impact Statement (EIS) was published in the Federal Register on April 7, 2003, and one was published in the Siskiyou Daily News on April 10, 2003. Comments were received from 22 groups and individuals as part of the scoping process for the Meteor Project. Letters were received from 18 groups and individuals, e-mails were received from two, and telephone calls were received from ten. Some group representatives commented multiple times. One commenter was in favor of the project. Thirteen commenters expressed opposition to the project; twelve of these were modified form letters. The telephone calls were primarily requests for information; the one that provided comment is included below. The comments received were from the following people and are numbered for tracking:

1. Richard Marshall, San Francisco, CA; letter
2. Michael L. Rilla, Eureka, CA; letter
3. Philip C. Barney Jr. Palo Alto, CA; letter and telephone call
4. Regina Chichizola, Klamath Siskiyou Wildlands Center, Ashland, OR; 2 letters, 3 telephone calls
5. Jim Steitz, Logan, UT; letter
6. William J. Marcy, Forks of Salmon, CA; letter
7. Pamela Joy, Ashland, OR; letter
8. Raymond Thiel, Williams, OR; letter
9. Will J. Arcand, California Regional Water Quality Control Board, Santa Rosa, CA; letter
10. Petra Taylor-Vandormael, Californians for Alternatives to Toxics, Arcata, CA; letter
11. Warren Troy and Sharon Laskey, Grants Pass, OR; letter
12. Christine Ambrose, Environmental Protection Information Center, Arcata, CA; 4 letters
13. Amy Wright, Orleans, CA; letter
14. Steve Hodge, Spokane, WA; telephone call
15. Ramie and Richard Streng, Ashland, OR; letter
16. Marty Bergoffen, Southern Appalachian Biodiversity Project, Asheville, NC; letter
17. Kathy Balogh, Ashland, OR; letter
18. Richard K. Nawa, Siskiyou Project, Cave Junction, OR; letter
19. Salm Stroich, Klamath Forest Alliance, Eugene, OR; e-mail letter
20. Amy Schell, Cave Junction, OR; e-mail
21. Deborah Coleman, Ashland, OR; letter
22. Tera Palmer, Orleans, CA; 2 letters

The following table shows how each comment was handled. The first column includes the comments made. Many comments are paraphrased and similar comments combined. The second column indicated the source(s) of the comment. Letter numbers are as indicated above. Comments in each letter were numbered to aid in tracking. The third column shows the response to each comment. Issues are identified. Issues are points of discussion, dispute, or debate about the proposed action. Issues are categorized as significant or non-significant

for this proposal. Significant issues are based on the extent, duration, and intensity of the issue. They have been assigned an issue number and will be given substantial treatment in Chapter 3 of the EIS. Non-significant issues are discussed only briefly in the EIS body or appendices. Other comments are categorized as alternatives, concerns that appropriate procedures be followed, other concerns, and questions.

Disposition of Comments		
Comment	Letter #/ Comment #	Disposition
	IDT	<b>Significant Issue:</b> <u>Jones Gulch Stability Issue:</u> <i>Timber harvest in conjunction with past cumulative effects in the upper Jones Gulch Drainage could trigger slope failure in the dormant landslide area below.</i> Addressed in Chapter 3, Geology Section.
We are concerned about cumulative impacts to the watershed at all scales, due to the many recent and proposed projects. There are potential impacts related to turbidity, sediment, nutrient, temperature, dissolved oxygen, and other water quality parameters.	4/1, 12/8, 16/9, 17/6, 19/10, 20/6, 22/8	<b>Significant Issue:</b> <u>Cumulative Watershed Effects Issue:</u> <i>Timber harvest, fuel reduction, and road activities, may cause soil erosion or trigger slope failure, which could increase sediment in streams, contributing to cumulative effects to water quality.</i> Addressed in Chapter 3, Water Quality Section.
The Klamath River and its tributaries, including the North and South Forks of the Salmon River, contain coho salmon, Chinook salmon, and steelhead trout. Coho salmon is part of an Evolutionary Significance Unit that has been listed as threatened under the Federal Endangered Species Act. The project should be designed and implemented to provide protection for these species.	2/4, 5/1, 9/2, 12/7, 15/2, 16/11, 17/8, 19/8, 20/7, 21/2, 22/5	<b>Significant Issue:</b> <u>Aquatic Habitat Issue:</u> <i>Timber harvest, fuel reduction, and road activities may increase sediment in streams, affecting the habitat of anadromous fish and other aquatic species.</i> Addressed in Chapter 3, Fisheries Section.
We are concerned that the proposal to log in riparian reserves will not maintain or improve riparian and aquatic habitat conditions to comply with the Aquatic Conservation Strategy objectives. We are concerned about the impacts resulting from logging on steep slopes, erosion-prone soils, and unstable areas.	12/9, 12/10, 19/7, 20/5	<b>Significant Issue:</b> <u>Riparian Reserve Issue:</u> <i>Logging in riparian reserves may cause erosion and result in sedimentation in streams.</i> Addressed in Chapter 3, Geology, Water Quality, and Riparian Reserves Sections.
We are concerned with cumulative impacts to Critical Habitat and the condition of the LSR and RR networks.	4/6, 16/8, 17/5, 20/9	<b>Significant Issue:</b> <u>Critical Habitat Entry in the Matrix Issue:</u> <i>Timber harvest and underburning may reduce the quantity and quality of habitat providing for northern spotted owl (NSO) nesting, roosting, foraging, and dispersal activities in Critical Habitat in the Matrix.</i> Addressed in Chapter 3, Wildlife Section.
We are concerned that the project will degrade the Wild and Scenic character of the Salmon River and its tributaries.	2/2, 4/9, 5/2, 7/1, 8/3, 12/29, 13/1, 16/6, 20/12, 22/1	<b>Significant Issue:</b> <u>Wild and Scenic Rivers Issue:</u> <i>Units located along segments of the WSR System could adversely affect WSR values.</i> Addressed in Chapter 3, Wild and Scenic River Section.
We are concerned about potential impacts to soil integrity and productivity, the level of ground disturbance and compaction, all potential soil impacts from past and proposed future activities, the removal of gophers, which are known to aerate soils and decrease compaction.	4/16, 12/3	<b>Non-Significant Issue:</b> <u>Soil Productivity Issue:</u> <i>Projects activities may affect long-term site productivity and not meet Regional Soil Quality Standards.</i> This was decided in the Forest Plan. Standards and Guidelines are designed to protect soil productivity. Refer to discussion in Chapter 3, Soil Productivity Section.
We are concerned with the cumulative impacts to plant species that are Proposed, Endangered, Threatened, Sensitive, or Survey and Manage.	4/4, 12/4,	<b>Non-Significant Issue:</b> <u>Botanical Issue:</u> <i>Project activities may affect the habitat or known sites of Sensitive and/or Survey and Manage plant species.</i> This was decided in the Forest Plan. Standards and Guidelines are designed to protect botanical species. Refer to discussion in Chapter 3, Vegetation Section.
We are concerned with the cumulative impacts	4/4, 8/1,	<b>Non-Significant Issue:</b> <u>Listed Wildlife Species Issue:</u> <i>Timber harvest</i>

Disposition of Comments		
Comment	Letter #/ Comment #	Disposition
to habitat conditions, prey species, and viability of wildlife species that are Proposed, Endangered, Threatened, or Sensitive.	12/5, 15/3, 16/7, 17/4, 20/8, 22/4	<i>and underburning may reduce the quantity and quality of habitat for listed ESA wildlife species, R5 Sensitive species, and their prey.</i> This was decided in the Endangered Species Act and the Forest Plan. Forest Plan Standards and Guidelines are designed to prevent jeopardy or loss of viability to listed populations. Refer to discussion in Chapter 3, Wildlife Section.
We are concerned with the cumulative impacts to habitat conditions, prey species, and viability of Management Indicator Species.	4/4, 12/6	<b>Non-Significant Issue: Management Indicator Species Issue:</b> <i>Project activities may affect Management Indicator Species.</i> This was decided in the Forest Plan. Standards and Guidelines require an analysis of project effects on the habitat of Management Indicator Species; the Forest Plan does not prohibit effects on those species. Refer to discussion in Chapter 3, Wildlife and Fisheries Sections.
We are concerned about the cumulative impacts to Survey and Manage Species.	4/4, 12/24	<b>Non-Significant Issue: Survey and Manage Animal Issue:</b> <i>Project activities may affect Survey and Manage animal species.</i> This was decided in the Forest Plan. Standards and Guidelines are designed to protect Survey and Manage species. Refer to discussion in Chapter 3, Wildlife Sections.
We are concerned with the cumulative impacts to late-successional and old-growth forests as well as old-growth dependent species. Large-diameter logs, snags, and green trees are important for ecosystem recovery, regeneration, soils, wildlife, and watershed function.	2/1, 4/5, 4/12, 5/3, 7/2, 8/2, 12/15, 12/26, 12/27, 15/1, 16/2, 17/1, 18/2, 19/13, 20/1, 21/1	<b>Non-Significant Issue: Late-successional and Old-growth Issue:</b> <i>Removing large trees and snags may affect late-successional and old-growth forest habitat conditions.</i> This was decided in the Forest Plan. Management objectives are specific by land allocation. Standards and Guidelines determine if removal of these categories of trees is appropriate. Refer to discussion in Chapter 3, Vegetation Section.
We are concerned that wet weather operations may have significant adverse effects on soils and the aquatic system.	12/11	<b>Non-Significant Issue: Wet Weather Operations Issue:</b> <i>Operating during wet weather conditions may cause erosion and result in sedimentation in streams.</i> This was decided in the Forest Plan. Wet Weather Operating Standards are part of the Best Management Practices, which are Standards and Guidelines in the Forest Plan. Refer to Chapter 2, Watershed Health and Fisheries Section of Resource Protection Measures.
We are concerned that the proposed actions will not improve the fire resistance or resilience of the project area. They will open up the canopy which will make the understory more open and exposed, with increased sunlight, temperatures, and wind, decreased air humidities and fuel moisture levels, decreased conifer regeneration, and increased shrub and herb growth, leading to increased fire risk in the stands. They will remove fire resistant trees that have survived fires in the past.	4/2, 12/14, 16/13, 17/9, 18/2, 19/6, 20/2, 21/3, 22/7	<b>Non-Significant Issue: Fire Hazard and Regeneration Issue:</b> <i>Opening the canopy may increase understory growth, temperatures, and wind; decrease air humidity and fuel moisture; which could result in decreased conifer regeneration, and increased fire risk.</i> This is not supported by scientific evidence. A considerable body of research and personal experience exists demonstrating that the proposed actions lead to reduced fire risk and improved regeneration. Refer to Chapter 3, Vegetation and Fuels Sections.
We are concerned about the potential socio-economic impacts from this sale and the Forest Service timber program. Assess the value of ecosystem services provided by not logging this area, including soil and water conservation, flood control, pest control, and carbon sequestration. The project must maximize social and economic benefits to the American people.	12/17	<b>Non-Significant Issue: Socio-economic Issue:</b> <i>Projects activities may cause adverse socio-economic effects due to commercial logging, as might the federal commercial timber sale program.</i> Decisions at the National and Forest level are outside the scope of this project and analysis at those scales included a much broader range of resource benefits and externalized costs. Detailed economic and social analyses for Forest programs were conducted and are documented in the Forest Plan EIS consistent with the requirements of Forest Service Manual (FSM) 1970 and FSH 1909.17. Responses to many of these concerns at the national scale can be found in the Forest Service Washington Office letter from Ann M. Bartuska to John Talberth dated November 6, 2000, writing in response to the report entitled "The Economic Case Against National Forest Logging" (USDA FS 2000a). The alternative selected for implementation in the Forest Plan maximized net public benefit

Disposition of Comments		
Comment	Letter #/ Comment #	Disposition
		(Forest Plan Record of Decision, pages 9 and 11) as determined through public participation in national forest planning, as required by National Forest Management Act (NFMA) at 36 CFR 219.1(a). Identification of net public benefit is only appropriate at the programmatic scale. Because the action alternatives are consistent with the Forest Plan and would move towards the desired condition of the Forest, their implementation would also contribute towards the maximization of net public benefit. The effects of the alternatives are addressed in Chapter 3, Economic and Social Sections.
We are concerned about the reduction of snag and coarse woody debris.	12/18	<b>Non-Significant Issue: Snag and Coarse Woody Debris Issue:</b> <i>Projects activities may cause a loss of coarse woody debris and snags from forest and stream ecosystems.</i> This was decided in the Forest Plan. Standards and Guidelines are designed to provide adequate snags and coarse woody debris for fish and wildlife habitat needs. Removal of large trees, snags, or large logs as a result of harvest or fuels treatment would be inconsequential to the overall availability of those habitat elements across the landscape. The 1% reduction in snags and green recruitment trees in the analysis area, mainly in small-scattered openings, is not expected to measurably affect local populations of sapsuckers, woodpeckers, or swifts. These findings are supported by the detailed discussions of effects on habitat elements in the Wildlife BA and the MIS Project Level Assessment. Refer to discussion in Chapter 3, Soils and Fisheries Sections.
We are concerned the adequacy of mitigation measures and traditional Best Management Practices (BMPs) in protecting soils and watershed values.	12/19	<b>Non-Significant Issue: Watershed Resource Protection Measure Issue:</b> <i>Resource Protection Measures designed to protect soils and watershed values may not be adequate.</i> This is speculative and not supported by the evidence. Region 5 has been monitoring and modifying BMPs since their original implementation in 1979. Implementation and effectiveness success of BMPs have been quite high since 1993. The Forest also monitors soil cover standards and guidelines. Refer to Appendix B and to Soils Report.
We are concerned about the impacts to neotropical migratory birds.	12/20	<b>Non-Significant Issue: Neotropical Bird Issue:</b> <i>Project activities may affect neotropical migrant birds.</i> This was decided in the Forest Plan. The Forest Plan land allocations and standards and guidelines are designed to provide a diversity of habitats. The scale of consideration for neotropical migrant birds is greater than the project area or even the Forest. At the Forest scale, land allocations in the Forest Plan are designed to maintain a variety of habitat types, which would provide habitat for neotropical birds that may use the project area at some point during the year. In particular the designation and standards and guidelines for the Wilderness, LSR and RR land allocations are designed to ensure the viability of species that use late-successional forest and aquatic habitats (USDA FS and USDI BLM 1994b, page 28). The <i>Forest Plan</i> also has many provisions that provide for biological diversity on the Forest (USDA FS 1995b, pages 4-38 through 4-91). Matrix/regulated land is intended to provide for early seral habitats that are also used by some migratory bird species. "Land allocations and management direction are designed to maintain species, community and genetic diversity. Diversity will be provided through a mixture of vegetative types and seral stages. Early seral stages will be provided by management activities on regulated land and by wildfires" (USDA FS 1995c, page 2). Pages 3-29 through 3-40 and 4-38 through 4-56 of the <i>Forest Plan</i> EIS include an analysis of habitat types and provisions for biological diversity at the Forest scale. At the project scale, pertinent

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		standards and guidelines would be implemented to maintain habitat diversity. Habitat modification would not cause a measurable negative effect to migratory bird populations due to the small amount of acreage where project activities would occur during the breeding season relative to the large amount of migratory bird habitat across the Forest. The Forest would comply with Terms and Conditions for the protection of migratory birds as provided by the FWS.
Factors that create an environment conducive to the spread and invasion of noxious weeds or unwanted natives plants are present.	4/10, 10/4, 12/33, 19/9	<b>Non-Significant Issue: Spread of Noxious Weeds Issue:</b> <i>Project activities have the potential to spread noxious weeds.</i> This is covered by regulation. Forest Service Manual 2080 provides direction for assessing and minimizing the risk of noxious weed spread. Refer to discussion in Chapter 3, Vegetation Section.
We are concerned about the use of any chemical used in the management of flora and fauna.	12/25	<b>Non-Significant Issue: Chemical Use Issue:</b> <i>The use of chemicals may affect human health and environmental resources.</i> This is covered by law. The only chemical proposed for use is strychnine bait for gopher control. Label directions would be followed. Refer to discussion in Chapter 3, Wildlife and Social Sections.
We are concerned about the planned use of strychnine to control gophers and its affect on endangered species and other non-target species.	4/24, 10/6	<b>Non-Significant Issue: Gopher Control Issue:</b> <i>Using strychnine to control gophers may affect endangered species and other non-target species.</i> This is not supported by data. A 2001 study states "Our finding have been consistent with those of other studies that underground baiting of forest pocket gophers with 0.5% strychnine-treated grain is unlikely to induce long-term adverse effects on non-target wildlife species" (Nolte and Wagner 2001). Monitoring results from the Rogue River National Forest (Bulkin and others 1997) and the Klamath National Forest (Cuenca 2003 supports this. Monitoring on the Klamath has shown that improved application methods have reduced the risk of secondary poisoning to very low. Refer to discussion in Chapter 3, Wildlife Section.
Logging and road construction may lead to decreased forest health and exacerbate insect and disease problems, such as mistletoe and Port Orford cedar root rot.	4/10, 12/16	<b>Non-Significant Issue: Forest Health Issue:</b> <i>Logging and road construction may lead to decreased forest health, exacerbating insect and disease problems.</i> This is speculative and not supported by data. A wealth of scientific publications demonstrates how the silvicultural prescriptions proposed can reduce the incidence and spread of insect and disease. Refer to discussion in Chapter 3, Vegetation Section.
We are concerned about entering Roadless areas, both RARE II and ecologically important areas smaller than 5,000 acres.	4/13, 5/4, 12/27, 16/12, 19/5, 20/11	<b>Non-Significant Issue: Roadless Issue:</b> <i>Projects activities may affect roadless areas, both the Second Roadless Area Review and Evaluation areas and ecologically important areas smaller than 5,000 acres.</i> This is outside the scope of the proposal. The project is not within any inventoried roadless areas. All other areas that do not contain roads were released for multiple use management by the 1984 California Wilderness Act, allocated to various land allocations in the 1985 Forest Plan, and are not scheduled for review until Forest Plan revision. Refer to discussion in Chapter 3, Social Section.
We are concerned about adjacent Wilderness Areas.	12/28	<b>Non-Significant Issue: Wilderness Issue:</b> <i>Project activities may be noticeable in adjacent wilderness.</i> This was decided in the Forest Plan. The Forest Plan standards and guidelines establish Visual Quality Objectives and acceptable disturbance levels for wilderness. Refer to discussion in Chapter 3, Air Quality, Scenery, and Social Sections.
We feel the Salmon River is already very degraded and more sales will hurt recreation.	4/14, 17/3, 22/2	<b>Non-Significant Issue: Recreation Issue:</b> <i>Project activities may affect recreational use.</i> This was decided in the Forest Plan. The Forest Plan standards and guidelines establish Recreation Opportunity Spectrum classes for each land allocation. Refer to discussion in Chapter 3, Recreation and Social Sections.
Tractor piling and road building on landslide prone decomposed granite soils in this watershed will cause sedimentation.	4/17, 16/10, 17/7, 18/4, 19/15, 20/4, 22/6	<b>Non-Significant Issue: Decomposed Granite Soils Issue:</b> <i>Tractor piling and road building on landslide prone decomposed granite soils may cause sedimentation.</i> This is outside the scope of the proposal; there are no decomposed granitic soils within the project area. These soil types occur north of the North Fork Salmon River, but no activities are

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		proposed in that area by the Meteor Project.
We are concerned that mastication could cause soil damage and run-off problems and suggest hand release as an alternative	4/18	<b>Non-Significant Issue: Mastication Issue:</b> <i>Mastication could cause soil damage and run-off problems.</i> This is speculative not supported by data. Mastication leaves high levels of soil cover, which prevents soil damage. Refer to discussion in Chapter 3, Soil Productivity Section.
Protect carnivores.	2/3	<b>Non-Significant Issue: Forest Carnivores Issue:</b> <i>Project activities have the potential to adversely affect habitat used by forest carnivores.</i> This was decided in the Forest Plan. The Forest Plan land allocations and standards and guidelines are designed to provide a diversity of habitats. Refer to discussion of effects on wolverine and fisher in Chapter 3. No effects to American marten are anticipated, as the project area is not within marten habitat, which is true fir at elevations above 5,000 feet. Timing restrictions to avoid adverse effects to individual NSOs in the Action Alternatives would also reduce disturbance effects to fisher and wolverine in the early breeding season. The Wildlife BA contains additional discussion on these species.
Further logging will further degrade the area. Past mistakes have not been corrected. Plant replacement trees.	3/1, 6/1, 14/2	<b>Non-Significant Issue: Scenery Issue:</b> <i>Logging can degrade the scenic quality of the area.</i> This was decided in the Forest Plan. The Forest Plan standards and guidelines establish Visual Quality Objectives and acceptable disturbance levels by land allocation. Refer to discussion in Chapter 3, Scenery Section.
We are concerned about impacts to archaeological and cultural resources.	12/31	<b>Non-Significant Issue: Heritage Resources Issue:</b> <i>The activities associated with Meteor have the potential to adversely impact cultural sites.</i> This was decided by law. Laws and regulations provide for the protection of historic and cultural properties. Refer to discussion in Chapter 3, Social Section.
We are concerned about ecosystem functioning, including nutrient and hydrologic cycling.	12/30	<b>Non-Significant Issue: Ecosystem Functioning Issue:</b> <i>Projects activities may affect ecosystem functioning, including nutrient and hydrological cycling.</i> This was decided in the Forest Plan. The Forest Plan standards and guidelines for each land allocation are designed to provide for ecological functioning within the natural range of variability. Refer to discussion in Chapter 3, Soils and Fisheries Sections.
Helicopter logging can destroy the tranquility of the area, especially if it goes on for a long period of time.	3/2, 6/3	<b>Non-Significant Issue: Noise Issue:</b> <i>The noise from helicopter logging could destroy the aesthetic quality of the area.</i> This was decided in the Forest Plan. The Forest Plan standards and guidelines establish acceptable disturbance levels by land allocation. Refer to discussion in Chapter 3, Social Section.
The Salmon River is a key migration route between the Marble Mountain, Trinity Alps, Russian, and Siskiyou Wildernesses.	4/21, 16/1, 19/11	<b>Non-Significant Issue: Connectivity Issue:</b> <i>The project activities could affect connectivity between wildernesses.</i> This is outside the scope of the proposal. Connectivity at the larger scale is addressed in the Forest Plan EIS on pages 4-52 through 4-54 and in the Forest-wide Late-Successional Reserve Assessment on pages 2-17 through 2-18 and 2-29 through 2-31. This project will maintain the functioning of RRs and provide for structural elements within regeneration stands. Refer to discussion in Chapter 3, Vegetation, Geology, Water Quality, Riparian Reserves, and Wildlife Sections.
Logging will impact biodiversity.	16/3, 17/2	<b>Non-Significant Issue: Biological Diversity Issue:</b> <i>Project activities could affect biological diversity.</i> This issue was already decided in the Forest Plan. Standards and guidelines from the Forest Plan are incorporated into the design of the action alternatives as resource protection measures which provide for the maintenance of a wide variety of species. Examples are the provisions in the Coarse Woody Debris, Snags, Wildlife, Watershed, Fisheries, and Noxious Weed Management sections in Chapter 2 of the EIS. Refer to discussion in Chapter 3, Vegetation, Fisheries, and Wildlife Sections.
Devastation to local salmonid runs have devastated the local economy.	19/14	<b>Non-significant issue: Fishing Economic Issue:</b> <i>Devastation to local salmonid runs have devastated the local economy.</i> This is outside the scope of this proposal. The multiple causes of the reduction in

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		anadromous fish populations occurred prior to this proposal. This project is consistent with the Endangered Species Act and will not jeopardize listed species. Whether the local economic downturn can be attributed solely to the reduction in anadromous fish populations is speculative and unsupported.
Consider a no-harvest, restoration only alternative that involves real fuels protection without removing the large, fire resistant trees on the landscape that are important for wildlife and aquatic values.	4/15, 12/1, 14/1, 19/3	<b>Alternative</b>
We request a chemical-free alternative. Rodents are part of the ecosystem.	12/32, 19/4, 20/13, 4/23	<b>Alternative</b>
Analyze an alternative that does not impact "areas with Watershed Concerns", subwatersheds that are cumulatively impacted, northern spotted owl habitat, or late-successional/old growth forests.	12/2	<b>Alternative</b>
Include a comprehensive program to aggressively identify and decommission environmentally harmful roads.	12/12	<b>Alternative</b>
Consider decommissioning new and existing landings as part of this project.	12/13	<b>Alternative</b>
We suggest creating no new roads, road re-opening, or adding roads to the system.	4/11, 12/12	<b>Alternative</b>
Accomplish the project in the near future, not in 3-5 years. Set aside some portion of the timber sales to improve the main road and signage in the area.	1/1	<b>Alternative</b>
We suggest hand release as an alternative to mastication.	4/18	<b>Alternative</b>
Focus on protecting communities from fire.	16/14, 17/10, 20/3	<b>Alternative.</b>
Limit logging to trees less than 17 inches in diameter or less than 12 inches diameter breast height (2 separate proposals). Maintain crown cover in the long term (eg. Commercial thin only).	4/22, 18/1, 19/12	<b>Alternative</b>
Allow no commercial logging in Riparian Reserves.	18/8	<b>Alternative 3</b>
Allow no commercial logging in the Wild and Scenic River corridor.	18/9	<b>Alternative</b>
Allow no commercial logging in roadless areas.	18/10	<b>Alternatives 2 and 3</b>
Alternatives besides the No Action should be developed.	10/3	<b>Procedural Concern.</b> A range of alternatives was developed. Refer to Chapter 2.
For many Proposed, Endangered, Threatened, Sensitive, and Management Indicator Species, the Forest Service has no up-to-date population data describing population numbers, locations, and trends, nor monitoring data to determine that the proposed actions will maintain numbers and distribution of these species sufficient for ensuring long term viability.	12/22	<b>Procedural Concern.</b> There is no requirement to collect population data. Habitat and population trends are believed to be within the range of historic variation and the <i>Forest Plan</i> allows little additional habitat disturbance in many areas, one exception is in the less than 21% of the Forest that is Matrix. A variety of tools are used to assess project-level effects on species as required in <i>Forest Plan</i> Standard and Guideline 8-21. Habitat assessments have been completed. The mixture of land allocations designated in the <i>Forest Plan</i> provides for species diversity and viability. The Late-Successional Reserve land allocation and other

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		provisions of the <i>Forest Plan</i> provide for late-successional species. Refer to pages 4-38 through 4-91 of the Forest Plan EIS. Because the project is consistent with the <i>Forest Plan</i> requirements, it is not expected to affect species viability. Survey information on species is cited in Chapter 3, the Fish BA, the Wildlife BA, and the MIS Report when it is used in the analysis.
Provide adequate information on the Affected Environment including vegetation types, topography, precipitation, and known populations of invasive weeds.	10/2, 12/21	<b>Procedural Concern.</b> 40 CFR 1502.14 states that the affected environment "shall succinctly describe the environment of the area(s) to be affected or created by the alternatives under consideration. The descriptions shall be no longer than is necessary to understand the effects of the alternatives. Data and analysis in a statement shall be commensurate with the importance of the impact, with less important material summarized, consolidated, or simply referenced." This EIS is consistent with this requirement.
Analyze projected vegetation regrowth and fuelbreak maintenance.	10/1	<b>Procedural Concern.</b> The beneficial effects of thinning and regeneration are discussed in Chapter 3, Vegetation Section. There is no proposal for a fuelbreak.
Perform a noxious weed assessment with mitigation and control measures	10/5	<b>Procedural Concern.</b> A noxious weed assessment was completed and is incorporated by reference. Refer to discussion in Chapter 3, Vegetation Section.
Design and implement the project to meet the water quality standards outlined in the Basin Plan, including the non-degradation requirements.	9/1, 12/8	<b>Procedural Concern.</b> The action alternatives were designed to be consistent with the Basin Plan, Clean Water Act, and Forest Plan. Refer to discussion in Chapter 3, Water Quality Section.
The document should contain a cumulative watershed effects analysis. When there are watersheds that are over, or proposed to be elevated above, established thresholds of concern there should be a thorough discussion of the cumulative impacts. In general, project mitigation measures should be designed to minimize and/or reduce cumulative impacts to below the threshold of concern upon completion of the project.	9/3	<b>Procedural Concern.</b> Cumulative watershed effects are analyzed and discussed as required by NEPA. Refer to discussion in Chapter 3, Water Quality Section.
The EA and any contract(s) associated with this project should list the Best Management Practices to be employed and include a discussion of wet weather operation standards, the width of the streamside management zones, erosion control measures.	9/4, 12/36	<b>Procedural Concern.</b> These are standard operating practices. Refer to discussion in Chapter 2, Watershed Health and Fisheries Section; Chapter 3, Water Quality Section; and Appendix B.
The Sale will violate the NW ROD and many environmental laws.	4/25, 16/4	<b>Procedural Concern.</b> The project was designed to be consistent with the NW ROD and all applicable laws.
Logging will be in proposed wilderness, which violates the letter and spirit of the Wilderness Act.	16/5, 20/10, 22/3	<b>Procedural Concern.</b> The Wilderness Act of 1964 and California Wilderness Act of 1984 designate areas for wilderness. They do not provide that other eligible areas be protected. In fact, the California Wilderness Act contains language that releases all other areas to multiple use management. The project is not within any designated wilderness. Numerous proposals for additional wilderness have been made over the years; few become designated.
Must disclose the cumulative effects of commingled timber sales.	18/5	<b>Procedural Concern.</b> Refer to Chapter 3 for cumulative effects analyses.

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The EIS must address cumulative effects at multiple scales, including subwatershed, watershed, Klamath Basin.	4/19, 12/35	<b>Procedural Concern.</b> Refer to Chapter 3, Water Quality Section for cumulative watershed effects analyses at appropriate scales. Cumulative effects at larger scales were address in the <i>Forest Plan</i> EIS and the <i>NWROD</i> FSEIS.
What is the basis for the 14-day comment period?	19/1	<b>Procedural Concern.</b> As the comment period initiated by the notice of intent was a continuation of the scoping process initiated by the mailing of the January 16, 2003 letter, an extended comment period was not deemed to be necessary. Refer to discussion of Public Involvement in Chapter 1.
Are management guidelines being changed?	19/2	<b>Procedural Concern.</b> None of the alternatives include a <i>Forest Plan</i> amendment to change land allocations or standards and guidelines.
Identify and map Riparian Reserves before locating the timber sale on the ground. Riparian Reserves must include adjacent unstable lands.	18/7	<b>Procedural Concern.</b> This is standard operating procedure. Refer to discussion of Riparian Reserves in Chapter 3, Water Quality and Riparian Reserves Sections.
We are concerned that the Forest does not have a recovery plan for the spotted owl.	4/7	<b>Procedural Concern.</b> Developing recovery plans for ESA listed species are not within the authority of the Forest Service. This is the responsibility of the FWS. They have found that the NW ROD “will accomplish or exceed the standards expected for the Federal contribution to recovery of the northern spotted owl and assurance of adequate habitat for its reproduction and dispersal.” (NW ROD FSEIS, Appendix G). The action alternatives were designed to be consistent with the NW ROD.
Ensure that habitat conditions for each Management Indicator Species, Proposed, Endangered, Threatened, and Sensitive species is maintained.	12/23	<b>Procedural Concern.</b> Maintenance is not always required. The action alternatives were designed to be consistent with <i>Forest Plan</i> direction. Refer to discussions in Chapter 3, Wildlife Section.
We were not sent a copy of the Notice of Intent. We believe you are required to notice in writing all interested parties.	12/23	<b>Procedural Concern.</b> There is no requirement to this effect. The requirement at 40 CFR 1501.7 is that “as soon as practicable after its decision to prepare an environmental impact statement and before the scoping process the lead agency shall publish a notice of intent (1598.22) in the Federal Register.” One of the purposes of an environmental assessment is to determine whether to prepare an environmental impact statement (40 CFR 1508.9, (a)(1)). Based on the scoping information and preliminary effects analyses for the environmental assessment, the Forest determined that the potential for significant effects existed, so decided to prepare an environmental impact statement and placed the notice of intent in the Federal Register as required. As the proposal had not changed, (except to be slightly narrowed in scope as it was found that some wildlife habitat improvement actions were on an Indian Allotment, which has a status similar to private land), the notice was not sent to those who had received the scoping letter. A notice of intent to prepare an environmental impact statement was published in the Siskiyou Daily News, the Forest’s paper of record. The change in document type also showed in the Schedule of Proposed Actions that was mailed on April 1, 2003.
You must assess the short-term impacts of activities with the long-term benefits, like road decommissioning.	12/37	<b>Procedural Concern.</b> This is required by NEPA. For road decommissioning, short-term adverse effects are included in the CWE model along with long-term benefits. Many times the short-term effect is so small in magnitude that it does not have a numerical expression. The net value is displayed in the CWE tables. Refer to discussion in Chapter 3, Water Quality Section.
You must provide sufficient justification for changing road standards.	12/38	<b>Procedural Concern.</b> Recommendations for maintenance level changes are taking from the road analysis process, which identifies the need for use and resource problems associated with each road or road segment. The decision to change any maintenance levels will be made in the Record of Decision.

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We are concerned with total maximum daily loads in the Salmon River.	4/20	<b>Procedural Concern.</b> The items identified for total maximum daily load analysis for the Salmon River watershed were high levels of nutrients and high temperature. The North Coast Water Quality Control Board has almost completed their nutrient study with the conclusion that high nutrients are not a problem. They hope to complete the temperature analysis by Fall of 2004. The Forest is cooperating with the North Coast Water Quality Control Board in these studies. The Meteor analysis addresses the effects on listed fish for temperature. Refer to Chapter 3, Fisheries Section.
The Salmon River District has been unreliable in the treatment of slash throughout the District.	4/3	<b>Other Concern.</b> This is not accurate. The use of prescribed fire is authorized only after a burn plan has been prepared and approved defining the prescription in which fire will be applied to meet management objectives as defined in the environmental documentation. Prescribed burning cannot be implemented unless all prescription parameters are met. The Upper South Fork Timber Sale is one example of this. Prescription parameters for this project were not met for several years for fuels treatment using prescribed fire, so underburning did not occur. Treatment of hand piles and landing piles was completed the first winter after the sale closed. However, in 2002, prescription parameters were met and the District was able to treat approximately 1,000 acres of the Upper South Fork Project. In the Meteor action alternatives, a number of methods other than prescribed fire (underburning) are proposed. This would facilitate the timely treatment of activity-generated fuels. Refer to discussion in Chapter 3, Fuels Section for discussion of timing of actions.
We are concerned that the Forest does not have a fire management plan.	4/8	<b>Other Concern.</b> This is inaccurate. The Forest's Fire Management Plan has been completed and is dated December 21, 2001.
The Meteor timber sale purports to be a scientific study of the effects of logging on monitored species.	5/5	<b>Other Concern.</b> This is inaccurate. The Meteor project is not and does not claim to be a study. Refer to Chapter 1, Proposed Action.
Define Group Selection in more detail so it can be properly evaluated.	6/2	<b>Other Concern.</b> The silvicultural prescriptions are defined in Chapter 3, Vegetation Section as well as in Appendix A.
Additional measures to mitigate water quality impacts should be considered in the design of the Meteor Project. These measures might include further abandonment of existing roads, installation of critical dips and replacement of undersized culverts at watercourse crossings, and application of erosion control measures at actively eroding or unstable areas. Additionally, if not already addressed, the project should be implemented so that any temporary stream crossings are removed prior to the winter period so as to eliminate the possibility of crossing failures during high flows.	9/5	<b>Other Concern.</b> This is outside the scope of this proposal. Crawford Road Decommissioning, Black's Gulch Road Decommissioning, Summerville Road Decommissioning, Yoakumville Roads, and other restoration projects are designed specifically to reduce impacts on water quality based on the recommendations made in the Forestwide and project level Road Analysis Processes. The action alternatives do include some decommissioning of non-system roads. Refer to Chapter 2, Alternative Descriptions.
The Regional Water Board is concerned that water quality protection measures proposed by your planning staff and described in the EA be understood and implemented by the Sale Administrator(s) responsible for overseeing the work.	9/6	<b>Other Concern.</b> The planning staff and implementing personnel on the Salmon River District work closely together to implement projects. The Sale Administrator is involved in the planning. There is a "crosswalk" defined that structures the transfer of information from the EIS to the Timber Sale Contract. The District Ranger signs off this document, to ensure that all applicable actions, such as BMPs and Resource Protection Measures, are followed through from EIS to Contract. Also, subsequent field inspections with Regional Water Board staff of

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		completed timber sales have shown that BMPs have been implemented successfully (Arcand 2000, Arcand and Bennett 2001).
Estimate the number of 18-32 inch diameter trees (mature) and number over 32 inches (old growth) that will be logged for each unit.	18/6	<b>Other Concern.</b> This detailed information is not necessary for assessing the effects of the alternatives. The NEPA implementing regulations at 40 CFR 1500-1508 discourage encyclopedic documents.
Where and to what extent will the proposed logging be seen in the Petersburg area?	3/3	<b>Other Concern.</b> The action alternatives were designed to meet the Visual Quality Objectives in the Forest Plan. Refer to discussion in Chapter 3, Scenery Section.



## APPENDIX D. REASONS FOR NOT INCLUDING STANDS

Reasons for Not Including Stands	
Stand	Reasons
434-107	This 16-acre stand is in the Knownothing Creek drainage and was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
437-72	This 42-acre stand lies within NSO critical habitat (CA-25) and meets the criteria for suitable habitat. The stand, if treated, would have been highly visible as it is along the ridge at Grouse Point and would have been in the group selection pool.
422-92	There is suitable Del Norte salamander habitat throughout this 98-acre stand. The stand is also within the 0.5 mile radius nest zone of a known northern goshawk territory. Treatment would have reduced the available habitat to near the Forest Plan standard and guideline limits.
430-99	This 19-acre stand is in the foraging zone of a known northern goshawk territory. Available habitat acres are currently below the desired number identified in the Forest Plan. The stand is on the edge of the 1977 and 1987 burns. It is surrounded by young plantations and shrub fields and provides mature conifer habitat.
434-117	This 33-acre stand is easily visible from the county road, although it was not being considered for a regeneration harvest. The flight distance for helicopter logging would have made the logging costs economically unviable.
435-125	This 35-acre stand is in the foraging zone of a known northern goshawk territory. Available habitat acres are currently below the desired number identified in the Forest Plan.
435-127	The 1987 fires burned through this 21-acre stand killing many trees and leaving the residual stand in poor shape with few trees of commercial value left. Although classified as Forest Survey Site 5, there are areas of poorer site in the stand that are currently dominated by hardwoods and brush. There is not enough value in the stand to offset the costs of helicopter logging, fuel treatment, and reforestation.
444-140	There has been a significant die-off of the overstory Douglas-fir in the past few years reducing the value of this 73-acre stand. The ridge top has poorly developed soils and much surface rock. Due to the thin soils and slope locations, this stand is experiencing density related mortality at lower stocking levels due to less water holding capacity of the soils. It was not believed to be a typical site. It was being considered for group selection. There is not enough value in the stand to offset the costs of helicopter logging, fuel treatment, and reforestation.
427-185	This 12-acre stand is in McNeal Creek, which was affected by the 1977 fires. The watershed has active landslides in the inner gorge areas and there is an active slide adjacent to the stand that continues to deposit material on Road 10N03. Because the upper reaches of the drainage were heavily salvage harvested after the 1977 wildfires, this remnant stand has value.
432-214	This 28-acre stand is in the Knownothing Creek drainage and was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. The stand is in the foraging zone of a known northern goshawk territory. Available habitat acres are currently below the desired number identified in the Forest Plan. Cumulative effects on wildlife species were a consideration.
422-262	Cumulative effects are a consideration as there are treatment units from both Glassups and Knob Timber Sales in the near vicinity. The 14-acre stand also has potential Del Norte salamander habitat.
427-189	The 73-acre stand in McNeal Creek was affected by the 1977 fires. The watershed has active landslides in the inner gorge areas. Because the upper reaches of the drainage were heavily salvage harvested after the 1977 wildfire, this remnant stand has value.
437-73	This 23-acre stand lies within NSO critical habitat (CA-25) and meets the criteria for suitable habitat.
427-187	The lower part of the stand has unstable ground. The 24-acre stand is in McNeal Creek, which was affected by the 1977 fires. The watershed has active landslides in the inner gorge areas. Because the upper reaches of the drainage were heavily salvage harvested after the 1977 wildfire, this remnant stand has value.
435-129	The 4-acre stand was considered for regeneration, but was found not to need it at this time.
434-115	The 14-acre stand in Hotelling drainage was affected by the 1987 fires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
435-118	The 23-acre stand is within the 0.5 mile radius nest zone of a known northern goshawk territory that is currently below the desired acreage identified in the Forest Plan standard and guideline.
444-136	The 20-acre stand was being considered for thinning, but less than 50% of the stand needs thinning.

Reasons for Not Including Stands	
Stand	Reasons
437-76	The 9-acre stand is on a poor site due to serpentine rock, has small trees, and the stand size is small. It is isolated from the rest of the proposed units, especially other helicopter areas. The stand is located on a county road and would require traffic control to transport logs across the highway.
432-210	The 25-acre stand is in West Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern.
432-215	The 21-acre stand is in West Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
422-264	This 8-acre stand is not close enough to the proposed stands in the Blue Ridge area to make it economically feasible at this time.
422-266	The 25-acre stand is in Kanaka/Olsen AWWC. It is not close enough to the proposed stands in the Blue Ridge area to make it economically feasible at this time.
422-267	The 20-acre stand is in Kanaka/Olsen AWWC. It is not close enough to the proposed stands in the Blue Ridge area to make it economically feasible at this time.
434-50	The 20-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
434-109	The 18-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
434-110	The 32-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
432-211	The 19-acre stand is in West Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
432-213	The 20-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
432-218	The 16-acre stand is in West Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
432-219	The 12-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
428-54	The 50-acre stand is in Kanaka/Olsen AWWC. This stand is not close enough to the proposed stands in the Blue Ridge area to make it economically feasible at this time. There are also many geo-riparian areas, which would make the planned treatment difficult to achieve.
427-183	The 30-acre stand is in McNeal/Glasgow AWWC.
450-13	This 24-acre stand is not close enough to the proposed stands in the Blue Ridge area to make it economically feasible at this time. There are also many geo-riparian areas, which would make the planned treatment difficult to achieve.
430-75	This 22-acre stand is not close enough to the proposed stands in the Blue Ridge area to make it economically feasible at this time. There are also many geo-riparian areas, which would make the planned treatment difficult to achieve.
430-100	The 24-acre stand is in Indian Creek AWWC. It is also in a Goshawk nest core area. There were many of the Survey and manage mollusk <i>Helminthoglypta talmadgei</i> found in the stand.
430-101	The 38-acre stand is in Indian Creek AWWC. It is also in a Goshawk home range. There were many of the Survey and manage mollusk <i>Helminthoglypta talmadgei</i> found in the stand.
430-102	The 36-acre stand is in Indian Creek AWWC. It is also in a Goshawk home range. There were many of the Survey and manage mollusk <i>Helminthoglypta talmadgei</i> found in the stand.
427-186	The 18-acre stand is in McNeal/Glasgow AWWC. The stand is in McNeal Creek, which was affected by the 1977 fires. The watershed has active landslides in the inner gorge areas. Because the upper reaches of the drainage were heavily salvage harvested after the 1977 wildfire, this remnant stand has value.
428-55	The 16-acre stand is in Kanaka/Olsen AWWC.

Reasons for Not Including Stands	
Stand	Reasons
422-74	This 18-acre stand is not close enough to the proposed stands in the Blue Ridge area to make it economically feasible at this time.
432-217	The 16-acre stand is in West Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
422-257	There is much Del Norte Salamander habitat in the 16-acre stand.
422-260	This 10-acre stand is not close enough to the proposed stands in the Blue Ridge area to make it economically feasible at this time.
434-105	The 12-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern.
434-106	The 18-acre stand in Negro/Hotelling AWWC has many S&M mollusk <i>Helminthoglypta talmadgei</i> locations.
434-144	The 17-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
434-145	The 15-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
434-146	The 16-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
428-53	The 13-acre stand is in Kanaka/Olsen AWWC.
445-67	The middle part of the stand has unstable ground. The 24-acre stand was affected by the 1987 fires.
436-66	Many S&M mollusk <i>Helminthoglypta talmadgei</i> were found in the 32-acre stand.
427-188	The 10-acre stand is in McNeal/Glasgow AWWC. The stand is in McNeal Creek, which was affected by the 1977 fires. The watershed has active landslides in the inner gorge areas. Because the upper reaches of the drainage were heavily salvage harvested after the 1977 wildfire, this remnant stand has value.
430-98	The 17-acre stand is in Indian Creek AWWC. It is also in a Goshawk nest core area. Many S&M mollusk <i>Helminthoglypta talmadgei</i> were found in the stand.
434-103	The 69-acre stand is in Negro/Hotelling AWWC. It is also in a Goshawk nest core area. Many S&M mollusk <i>Helminthoglypta talmadgei</i> were found in the stand.
434-150	The 14-acre stand is in Negro/Hotelling AWWC. Many S&M mollusk <i>Helminthoglypta talmadgei</i> were found in the stand.
430-191	The 28-acre stand is in Indian Creek AWWC. It is also in a Goshawk nest core area. Many S&M mollusk <i>Helminthoglypta talmadgei</i> were found in the stand.
434-111	The 16-acre stand is in East Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. Many S&M mollusks <i>Helminthoglypta talmadgei</i> were found in the stand.
434-112	The 19-acre stand is in East Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. Many S&M mollusks <i>Helminthoglypta talmadgei</i> were found in the stand.
444-143	Many S&M mollusks <i>Helminthoglypta talmadgei</i> were found in the 16-acre stand.
434-149	The 15-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern. This stand was affected by the 1987 wildfires. The area has a high degree of fragmentation and this remnant stand within the burn area has value as a forested landscape. Cumulative effects on wildlife species were a consideration.
432-216	The 35-acre stand is in West Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern.
432-220	The 30-acre stand is in Lower Knownothing 7 <sup>th</sup> field watershed, which is near the threshold of concern.
427-184	The 23-acre stand is in McNeal/Glasgow AWWC.
422-265	This 10-acre stand is not close enough to the proposed Blue Ridge stands to make it economically feasible.
436-65	Many S&M mollusks <i>Helminthoglypta talmadgei</i> were found in the 22-acre stand.
434-104	The 26-acre stand in Negro/Hotelling AWWC has many S&M mollusks <i>Helminthoglypta talmadgei</i> .
444-135	Many S&M mollusks <i>Helminthoglypta talmadgei</i> were found in the 14-acre stand.

<b>Reasons for Not Including Stands</b>	
<b>Stand</b>	<b>Reasons</b>
422-263	This 12-acre stand is not close enough to the proposed Blue Ridge stands to make it economically feasible.

## APPENDIX E. LITERATURE CITED

- Agee, J.K. 1996. The Influence of Forest Structure on Fire Behavior. *In* Proceedings of 17<sup>th</sup> Annual Forest Vegetation Management Conference. Redding, CA. January 16-18, 1996: 52 – 68.
- Agee, J.K. 1997. The Severe Fire Weather – Too Hot To Handle? *Northwest Science*, Vol. 71, No. 1: 153-156.
- Agee, J.K. 1999. Fire Effects on Landscape Fragmentation in Interior West Forests. *In* Forest Fragmentation, Wildlife and Management Implications. Rochelle and others, eds. Brill. Boston, MA. p. 43.
- Agee, J.K. and Skinner, C.N. 2003. Abstract: Ecological Principles of Forest Fuel Reduction Treatments. *In* Risk Assessment for Decision-Making Related to Uncharacteristic Wildfire. 3 p. Powerpoint presentation on web:  
[http://outreach.cof.orst.edu/riskassessment/presentations/ageej\\_files/frame.htm](http://outreach.cof.orst.edu/riskassessment/presentations/ageej_files/frame.htm)
- Anderson, H.E. 1982. Aids To Determining Fuel Models For Estimating Fire Behavior. Gen.Tech. Rep. INT-122. Ogden, UT: U.S. Department of Agriculture, Forest Service, Intermountain Forest and Range Experiment Station. 22 p.
- Anderson, R.J.; Barnes, Jr., V.G.; Bruce, A.M. 1976. A Bibliography of Pocket Gophers Family Geomyidae. Weyerhaeuser Forestry Paper No. 16.
- Andrews, P. and Bevins, C. 2001. Behave Plus Fire Modeling System. Missoula, MT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station, Fire Sciences Laboratory.
- Arcand, W.J. 2000. Wet Weather Timber Operations Inspection, Upper South Fork Heli Timber Sale (Salmon River Ranger District, Klamath National Forest) Letter. 3 p.
- Arcand, W.J. and Bennett, J.E. 2001. Active Harvest Inspection Report for the Dogbark Heli Fire Salvage Resale (Oak Knoll Ranger District, Klamath National Forest, United States Forest Service) Letter, August 3, 2001, 5 p. Timber Sale Administration Report. 1 p.
- Bartuska, A.M. 2000. Letter in response to John Talbreth report entitled “The Economic Case Against National Forest Logging.”
- Benoit, C. 1978. Fluvial Sediment Deliveries As Percent Of Erosion; The Relationship Between Landslope And Effective Streamside Buffer Strip Width. *State and Private Forestry*. U.S. Department of Agriculture, Forest Service, Portland, Oregon. 4 p.
- Beschta, R.L.; Frissell, C.A.; Gresswell, R.; Hauer, R.; Karr, J.K.; Minshall, W.G.; Perry, D.A.; Rhodes, J.J. 1995. Wildfire And Salvage Logging: Recommendations For Ecologically Sound Post-Fire Salvage Logging And Other Post-Fire Treatments On Federal Lands In The West. Corvallis, OR: Oregon State University. 14 p.
- Bjornn, T.C. and Reiser, D.W. 1991. Habitat Requirements Of Salmonids In Streams. *American Fisheries Society Special Publication* 19. 83 –138p.
- Blackwell, J. 2003. Statement of Jack Blackwell, Regional Forester, Pacific Southwest Region, Forest Service, United States Department of Agriculture, Before the Committee on Resources, Subcommittee on Forests and Forest Health, United States House of

---

Representatives, on the Forest Health Condition of the San Bernardino National Forest, Lake Arrowhead, CA, September 22, 2003, 8 p.

Blonski, K.S. and Schramel, J.L. 1981. Photo Series For Quantifying Natural Forest Residues: Southern Cascades And Northern Sierra Nevada. Gen. Tech. Rep. PSW – 56. Berkeley, CA: U.S. Department of Agriculture, Forest Service, Pacific Southwest Forest and Range Experiment Station. 145 p.

Bulkin, S.P. et.al. 1997. 1997 Gopher Monitoring Report, Rogue River National Forest. 6 p.

Burns, R.M., tech. comp. 1983. Silvicultural Systems For The Major Forest Types Of The United States. Agriculture Handbook 445. Washington DC: U.S. Department of Agriculture. 191 p.

Burroughs, Jr. and King, J. G. 1989. Reduction Of Soil Erosion On Forest Roads. USDA Forest Service. Intermountain Research Station, General Technical Report INT-264. 23p.

Carey, H. and Schumann, M. 2003. Modifying Wildfire Behavior – The Effectiveness of Fuel treatments. The Status of Our Knowledge. National Community Forestry Center, Southwest Region Working Paper #2. 26 p.

Cleary, B.D., Greaves, R.D., and Hermann, R.K., comp. 1988. Regenerating Oregon's Forests. Oregon State University Extension Service, 287 p.

Cuenca, S. 2003. Summary Of Gopher Bait Monitoring 1996-2003, Klamath National Forest. Fort Jones, CA: U.S. Department of Agriculture, Forest Service, Scott River Ranger District. 20 p.

de la Fuente, J. and Elder, D. 1998. The Flood of 1997 Klamath National Forest Phase I Final Report. Yreka, CA: U.S. Department of Agriculture, Klamath National Forest, Internal Document November 24, 1998.

de la Fuente, J. and Haessig, P. 1993. Salmon Sub-basin Sediment Analysis. Yreka, CA: Klamath National Forest Internal Report.

Dieterich, J.H. 1979. Recovery Potential of Fire-Damaged Southwestern Ponderosa Pine. Rocky Mountain Forest and Range Experiment Station, Research Note RM-379. 7 p.

Dillingham, C. 1996. 1996 Klamath National Forest Economic Monitoring Report, Yreka, CA: Klamath National Forest Internal Report.

Dillingham, C. 1999. 1999 Klamath National Forest Economic Monitoring Report, Yreka, CA: Klamath National Forest Internal Report.

Doak, S.C. and Kusel, J. 1997. Well-Being Assessment Of Communities In The Klamath Region. Prepared for the U.S. Department of Agriculture, Forest Service, Klamath National Forest. 92 p.

Dombeck, M. and Thomas, J.W. 2003. P-I Focus: Declare Harvest of Old-growth Forests Off-limits and Move On. August 24, 2003. 3 p.

Dunc, J.R.; Zielinski, W.J.; West, K.; Schmidt, K.; Baldwin, J.; Perrochet, J.; Schlick, K.; Ford, J. 2002. Distributions of Rare Mollusks Relative to Reserved Lands in Northern California (*in Press*). Northwest Science.

- Elder, D. 1998. Westside Process Paper, Cumulative Watershed Effects from Three Models Applied to 249 Seventh-field Watershed on the Westside of the Klamath National Forest, March, 1998. 9 p.
- Elder, D.; Olson, B.; Olson, A.; Villeponteaux, J.; and Brucker, P. 2002. Salmon River Subbasin Restoration Strategy: Steps to Recovery and Conservation of Aquatic Resources. Prepared for The Klamath River Basin Fisheries Restoration Task Force, Yreka Fish and Wildlife Office, Yreka, CA. 55 p.
- Elder, D. 2003a. Summary Of First-year Erosion Delivered To Streams From Crossings/Near-channel Reconstruction and Road Decommissioning 1997 through 2002. Klamath National Forest, Yreka, California. 5 p.
- Elder, D. 2003b. Meteor Project Cumulative Watershed Effects Analysis Specialist Report. Klamath National Forest, Yreka, California. 46 p.
- Federal Register. 2000. Protecting People and Sustaining Resources in Fire-Adapted Ecosystems – A Cohesive Strategy; Notice. Federal Register Vol. 65, No. 218, Thursday, November 9, 2000. pp. 67480-67511.
- Fiddler, G.O.; Hart, D.R.; McDonald, P.M.; Frankel, S.J. 1995. Silvicultural Practices (Commercial Thinning) Are Influencing The Health Of Natural Pine Stands In Eastern California. *In* Gen. Tech. Rep. RM-GTR-267. 5p.
- Forest Ecosystem Management Team. 1993. Forest Ecosystem Management: An Ecological, Economic, And Social Assessment. Portland, OR: U.S. Department of Agriculture, Forest Service; U.S. Department of Interior, Fish and Wildlife Service; U.S. Department of Commerce, National Oceanic and Atmospheric Administration; U.S. Department of Interior, National Park Service, U.S. Department of the Interior, Bureau of Land Management, and Environmental Protection Agency.
- Forsman E.D.; Anthony, R.G.; Reid, R.A.; Loschl, P.J.; Sovern, S.G.; Taylor, M.; Biswell, B.L.; Ellingson, A.; Meslow, E.C.; Miller, G.S.; Swindle, K.A.; Thraillkill, J.A.; Wagner, F.F.; and Seaman D.E. 2002. Natal and Breeding Dispersal of Northern Spotted Owls. *Wildlife Monographs* 149:1-35. A Supplement to the *Journal of Wildlife Management*, Vol. 66, No. 4. The Wildlife Society, Inc.
- Fowells, H.A., comp. 1965. *Silvics of Forest Trees of the United States*. Agriculture Handbook 271. Washington DC: U.S. Department of Agriculture. 762 p.
- Franklin, J.F. 2004. Comments on Draft Environmental Impact Statement for Biscuit Recovery Project. 10 p.
- Franklin, J.F. and others. 2002a. Letter to President Bush and Members of Congress dated September 17, 2002. 5 p.
- Franklin, J.F. and others. 2002b. Disturbances and Structural Development of Natural Forest Ecosystems with Silvicultural Implications, Using Douglas-fir Forests as an Example. *Forest Ecology and Management* 155 (2002) 399-423.
- Franklin, J.F.; Agee, J.K. 2003. Forging a Science-Based National Forest Fire Policy. 8 p.
- Franklin, J.F.; Berg, D.R.; Thornburgh, D.A.; Tappeiner, J.C. 1997. Alternative Silvicultural Approaches to Timber Harvesting: Variable Retention Harvest Systems. *In* *Creating a Forestry for the 21<sup>st</sup> Century*, Kohm and Franklin, eds. 111-139.

- Franklin, J.F.; Cromack, Jr., K.; Denison, W.; McKee, A.; Maser, C.; Sedell, J.; Swanson, F.; Juday, G. 1981. Ecological Characteristics of Old-Growth Douglas-Fir Forests. USDA Forest Service. Gen. Tech. Rep. PNW-118. 40 p.
- Franklin, J.F.; Perry, D.; Noss, R.; Montgomery, D.; Frissell, C. 2000. Simplified Forest Management to Achieve Watershed and Forest Health: A Critique. A Report of the National Wildlife Federation, sponsored by the Bullitt Foundation. 51 p.
- Gallo, K., Moyer, C., and Lanigan, S. 2003. Interagency Regional Monitoring, Northwest Forest Plan, Aquatic and Riparian Effectiveness Monitoring Program, 2002 Annual Report, 50 p.
- Graham, R.T.; Harvey, A.E.; Jain, T.B.; Tonn, J.R. 1999. The Effects Of Thinning And Similar Stand Treatments On Fire Behavior In Western Forests. Gen. Tech. Rep. PNW-GTR-463. Portland, OR: U.S. Department of Agriculture, Forest Service, Pacific Northwest Research Station; U.S. Department of Interior, Bureau of Land Management. 32 p.
- Graham, R.T. and McCaffrey, S. 2003. Influence of Forest Structure on Wildfire Behavior and the Severity of Its Effects, Executive Summary. USDA Forest Service. 23p.
- Graham, R.T.; McCaffrey, S.; and Jain, T.B. 2004. Science Basis for Changing Forest Structure to Modify Wildfire Behavior and Severity. Gen. Tech. Rep. RMRS-GTR-120. USDA Forest Service. 50 p.
- Herr, L. F. 1999. Air Quality Impacts From The Megram And Onion Wildfire In Northern California, *in* Resource Management: The Fire Element, The Newsletter of the California Fuels Committee. 5 p.
- Hobbs, S.D.; Tesch, S.D.; Owston, P.W.; Stewart, R.E.; Tappeiner, J.C.; and Wells, G.E. comp. 1992. Reforestation Practices in Southwestern Oregon and Northern California. Oregon State University, 465 p.
- Kohm, K.A. and Franklin, J.F. 1997. Creating a Forestry for the 21<sup>st</sup> Century, the Science of Ecosystem Management. Island Press. Washington, DC. 475 p.
- Lindquist, J.L. 1977. Plant Moisture Stress Patterns In Planted Douglas-Fir: A Preliminary Study Of The Effects Of Crown And Aspect. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, Research Note PSW-325. 5 p.
- LSOG Monitoring Team. 2003. Late-successional and Old-growth Vegetation Effectiveness Monitoring, Northwest Forest Plan, 2002 Annual Summary Report. 25 p.
- McDonald, P.M. 1976a. Forest Regeneration And Seedling Growth From Five Major Cutting Methods In North-Central California. USDA Forest Service, Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, Research Paper PSW-115. 10 p.
- McDonald, P.M. 1976b. Inhibiting Effect Of Ponderosa Pine Seed Trees On Seedling Growth. Journal of Forestry, April 1976. 220-224 p.
- McDonald, P.M and Reynolds, P.E. 1999. Plant Community Development After 28 Years In Small Group-Selection Openings. Res. Paper PSW-RP-241. Albany, CA: U.S. Department of Agriculture, Forest Service, PSW Research Station. 17 p.
- Nakamura, G. 2002. Cone Fire Tests Fuel Reduction Treatment Effectiveness. UC Cooperative Extension. 3 p.

- National Research Council of the National Academies. 2004. Endangered and Threatened Fishes in the Klamath River Basin, Causes of Decline and Strategies for Recovery. The National Academies Press, Washington, DC. 397 p.
- Nolte, D. and Wagner, K.. 2001. Non-Target Impacts of Strychnine Baiting to Reduce Pocket Gopher Populations on Forest Lands in the United States. *In* Pelz, J.J.; Cowan, D.P.; Feare, C.J., eds. Advances in Vertebrate Pest Management II. Filander Verlag Furth. Pages 59-70.
- Norgaard, K.M. 1996. Learning from the Past: Timber and Community Well-Being in Siskiyou County.
- North Coast Region Water Quality Control Board. 1993. Water Quality Control Plan for North Coast Region: Santa Rosa, CA.
- Northern Spotted Owl Monitoring Team. 2003. Northern Spotted Owl Effectiveness Monitoring, Northwest Forest Plan, 2002 Annual Summary Report. 17 p.
- Odion, D.C.; Frost, E.J.; Strittholt, J.R.; Jiang, H.; DellaSalla, D.A. and Moritz, M.A. 2004. Patterns of Fire Severity and Forest Conditions in the Western Klamath Mountains, California. *Conservation Biology*, Vol. 18, No. 4, August 2004: 927-936.
- Oliver, C.D. and Larson, B.C. 1990. *Forest Stand Dynamics*. McGraw-Hill, Inc.
- Oliver, W.W. 1995. Is Self-Thinning In Ponderosa Pine Ruled By *Dendroctonus* Bark Beetles? USDA Forest Service. Gen. Tech. Rep. RM-GTR-267.
- Oliver, W.W. 2000. Ecological Research at the Blacks Mountain Experimental Forest in Northeastern California, USDA Forest Service. Gen. Tech. Rep. PSW-GTR-179.
- Omi, P.N. and Martinson, E.J. 2002. Effects Of Fuels Treatments On Wildfire Severity. Fort Collins, CO: Western Forest Fire Research Center, Colorado State University. 36 p.
- Olson, A.D. and Dix, O.J. 1993. Lower Salmon River Sub-Basin Fish Habitat Condition And Utilization Assessment 1990/1991. Klamath National Forest, Yreka, California. Final report for Interagency Agreement 14-16-0001-90532 submitted to the Klamath River Basin Fisheries Task Force.
- Pearson, R.R. and Livezey, K.B. 2003. Distribution, Numbers and Site Characteristics of Spotted Owls and Barred Owls in the Cascade Mountains of Washington. *J. Raptor Res.* 37(4): 265-276.
- Pierce, J. 1981. The Hog Fire of 1977 on the Klamath National Forest: Biological Evaluation of Declining Scorched Trees in 1981. *Forest Pest Management*. Pacific Southwest Region. 3 p.
- Regional Implementation Monitoring Team. 1997 through 2002. Results of the Implementation Monitoring Program for Management of Habitat for Late-Succession and Old-Growth Forest Related Species Within the Range of the Northern Spotted Owl: FY 1996 (Pilot Year), FY 1997, FY 1998, FY 1999, FY 2000, FY 2001, FY 2002.
- Sandberg, D.V.; Ottmar, P.D.; Peterson, J.L.; Core, J. 2002. Wildland Fires In Ecosystems: Effects Of Fire On Air. Gen. Tech. Rep. RMRS-GTR-42-Vol. 5. Ogden, UT: USDA Forest Service, Rocky Mountain Research Station. p. 24.

- Sartwell, C. 1971. Thinning Ponderosa Pine To Prevent Outbreaks Of Mountain Pine Beetle, Proceedings On Precommercial Thinning Of Coastal And Intermountain Forests In The Pacific Northwest. Washington State University.
- Schowalter, T.D. 1995. Canopy Arthropod Communities in Relation to Forest Age and Alternative Harvest Practices in Western Oregon. *Forest Ecology and Management* 78: 115-125.
- Shields, D.J.; Martin, I.M.; Martin, W.E.; and Haefele, M.A. 2002. **Survey results of the American public's values, objectives, beliefs, and attitudes regarding forests and grasslands: A technical document supporting the 2000 USDA Forest Service RPA Assessment.** Gen. Tech. Rep. RMRS-GTR-95. Fort Collins, CO: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station. 111 p.
- Shubert, G.H. and Adams, R.S. 1971. Reforestation Practices for Conifers in California. State of California Division of Forestry, 359.p.
- Skinner, C.N. 2002a. Fire History in Riparian Reserves of the Klamath Mountains. Association for Fire Ecology Miscellaneous Publication No. 1: 164-169.
- Skinner, C.N. 2002b. Influence of Silvicultural Treatments on Fire Behavior and Effects, Cone Fire, September 2002, Blacks Mountain Experimental Forest Powerpoint Presentation. USDA Forest Service. Pacific Southwest Research Station. Redding, CA. 31 p.
- Skinner, C.N. 2003. Powerpoint Presentation to Happy Camp Ranger District, Happy Camp and Seiad Fire Safe Councils on February 12, 2003. 11 p.
- Snavely, W.P. 2004. Monitoring Wet Weather Operations on Glassups Timber Sale. 1 p.
- Spence, B.C.; Lomnický, G.A.; Hughes, R.M.; and Novitzki, R.P. 1996. An Ecosystem Approach to Salmonid Conservation. TR-4501-96-6507. p. 218, 226, 228.
- Starr, R.I.; Timm, R.W.; Doxtader, K.G.; Hurlbut, D.B.; Volz, S.A.; and Goodall, M. 1996. Sorption and Aerobic Biodegradation Of Strychnine Alkaloid In Various Soil Systems. *In J. Agric. Food Chem.* 44:1603-1608.
- Swanson, F. and Spies, T. 2001. Recent Disturbance History and Disturbance Ecology Research Studies. PNW Research Station and Cascade center for Ecosystem Management. 3 p.
- Taylor, A.H. and Skinner, C.N. 1998. Fire History and Landscape Dynamics in a Late-Successional Reserve, Klamath Mountains, California, USA. *In Forest Ecology and Management* 111: 285-301.
- Thomas, J.W.; Forsman, E.D.; Lint, J.B.; Meslow, E.C.; Noon, B.R. and Verner, J. 1990. A Conservation Strategy For The Northern Spotted Owl. Report Of The Interagency Scientific Committee To Address The Conservation Of The Northern Spotted Owl. Portland, OR. 427 p.
- Toth, R.E. 1988. Theory and Language in Landscape Analysis, Planning, and Evaluation. *Landscape Ecology*, Vol. 1, No. 4: 193-201.
- University of Minnesota. 2003. Population Ecology of the Northern Spotted Owl (*Strix occidentalis caurina*) in Northwestern California: Annual Results, 2002. 18 p.

USDA and USDI. 2000. Managing the Impact of Wildfires on Communities and the Environment, A Report to the President In Response to the Wildfires of 2000, 24 p.

USDA Forest Service. 1988. Forest Service Handbook, Chapter 30 – Economic And Social Analysis Handbook. Washington DC: U.S. Department of Agriculture, Forest Service, Washington Office.

USDA Forest Service. 1989. The Scientific Basis For Silvicultural And Management Decisions In The National Forest System. Gen. Tech. Rep. WO-55. Washington DC: U.S. Department of Agriculture, Forest Service, Washington Office.

USDA Forest Service. 1992. Forest Service Manual, Chapter 1970 – Economic And Social Analysis. Washington DC: U.S. Department of Agriculture, Forest Service, Washington Office.

USDA Forest Service, 1995a. Klamath National Forest, Land And Resource Management Plan. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service, 1995b. Klamath National Forest, Environmental Impact Statement, Land And Resource Management Plan. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service, 1995c. Klamath National Forest, Record Of Decision, Final Environmental Impact Statement And Land And Resource Management Plan. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service. 1995d. Forest Service Manual, Chapter 2670 - Wildlife, Fish, And Sensitive Plant Management. Washington DC: U.S. Department of Agriculture, Forest Service, Washington Office.

USDA Forest Service. 1996. Horse Creek/Dry Lake Allotments, Horse Creek/Beaver Creek/Haystack Watershed Analysis Area. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service. 1998a. Final Environmental Impact Statement, Vegetation Management For Reforestation. Appendix A. San Francisco, CA: U.S. Department of Agriculture, Forest Service, Region 5.

USDA Forest Service. 1998b. Granite Gopher Baiting Environmental Assessment. U.S. Department of Agriculture, Forest Service, Klamath National Forest, Salmon River Ranger District.

USDA Forest Service, 1998c. Evaluation of Cumulative Watershed Conditions in Indian Creek – Validation of Areas with Watershed Concerns, Executive Summary. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest. 14 p.

USDA Forest Service. 1999a. Klamath National Forest, Forest-Wide Late Successional Reserve Assessment. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service. 1999b. Biological Assessment/Evaluation Gopher Baiting Projects. U.S. Department of Agriculture, Forest Service, Klamath National Forest, Scott River Ranger District.

---

USDA Forest Service. 2000a. Letter to Mr. John Talberth regarding his report entitled “The Economic Case Against National Forest Logging.” U.S. Department of Agriculture, Forest Service, Washington Office.

USDA Forest Service. 2000b. Salmon River Knapweed Project Environmental Assessment. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest, Salmon River Ranger District.

USDA Forest Service. 2000c. Scott River Ranger District Gopher Control Environmental Assessment. U.S. Department of Agriculture, Forest Service, Klamath National Forest, Scott River Ranger District.

USDA Forest Service. 2000d. Klamath National Forest Best Management Practices, Region 5 Evaluation Program, Water Quality Monitoring Report, During 2000. Klamath National Forest, Natural Resources Staff. 23 p.

USDA Forest Service. 2001a. Biological Assessment and Evaluation for Pre-commercial Thin and Release Action and Fuel Hazard Reduction Actions on the Klamath National Forest. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service. 2001b. Klamath National Forest Fiscal Year 2000 Monitoring and Evaluation Report And Five-Year Review for Years 1996 to 2000. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service. 2001c. Klamath National Forest Best Management Practices, Region 5 Evaluation Program, Water Quality Monitoring Report, During 2001. Klamath National Forest, Natural Resources Staff. 9 p.

USDA Forest Service. 2001d. Klamath Hazard Tree Guidance. U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service. 2002a. Forest Service Handbook 2409.18, Section 13 – Financial and Economic Analyses, Section 32 – Economic And Financial Analysis at Gate 2. Washington DC: U.S. Department of Agriculture, Forest Service, Washington Office.

USDA Forest Service. 2002b. Klamath National Forest Forestwide Roads Analysis. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service. 2002c. Klamath National Forest Fiscal Year 2001 Monitoring and Evaluation Report. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service. 2002d. Road Sediment Source Inventory and Risk Assessment, North Fork Salmon River Watersheds. U.S. Department of Agriculture, Forest Service, Klamath National Forest, Yreka, CA. California Department of Fish and Game contract P9985084.

USDA Forest Service. 2002e. Klamath National Forest Best Management Practices, Region 5 Evaluation Program, Water Quality Monitoring Report, During 2002. Klamath National Forest, Natural Resources Staff. 12 p.

USDA Forest Service. 2003a. Klamath National Forest Fiscal Year 2002 Monitoring and Evaluation Report. Yreka, CA: U.S. Department of Agriculture, Forest Service, Klamath National Forest.

USDA Forest Service. 2003b. Klamath National Forest Best Management Practices Water Quality Monitoring Report 2003. Klamath National Forest, Natural Resources Staff. 23 p.

USDA Forest Service. FOFEM (5.0), First Order Fire Effects Model, Joint Fire Science Program, Missoula, MT: U.S. Department of Agriculture, Forest Service, Rocky Mountain Research Station.

USDA Forest Service; USDI, Bureau of Land Management. 1994a. Final Supplemental Environmental Impact Statement On Management Of Habitat For Late-Successional And Old-Growth Forest Related Species Within The Range Of The Northern Spotted Owl. Portland, OR. 2 vols. 1 map.

USDA Forest Service; USDI, Bureau of Land Management. 1994b. Record Of Decision For Amendments To Forest Service And Bureau Of Land Management Planning Documents Within The Range Of The Northern Spotted Owl, Standards And Guidelines For Management Of Habitat For Late-Successional And Old-Growth Forest Related Species Within The Range Of The Northern Spotted Owl. Portland, OR.

USDA Forest Service; USDI, Bureau of Land Management. 2000. Final Supplemental Environmental Impact Statement For Amendments To The Survey & Manage, Protection Buffer, And Other Mitigation Measures Standards And Guidelines. Portland, OR.

USDA Forest Service; USDI, Bureau of Land Management. 2001. Record Of Decision And Standards And Guidelines For Amendments To The Survey & Manage, Protection Buffer, And Other Mitigation Measures Standards And Guidelines. Portland, OR.

USDA Forest Service; USDI, Bureau of Land Management. 2003. Final Supplemental Environmental Impact Statement: Clarification of Language in the 1994 Record of Decision for the Northwest Forest Plan National Forests and Bureau of Land Management Districts Within the Range of the Northern Spotted Owl Proposal To Amend Wording About The Aquatic Conservation Strategy, Portland, OR. 100 p.

USDA Forest Service; USDI, Bureau of Land Management. 2004a. Final Supplemental Environmental Impact Statement To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines. Portland, OR. 359 p.

USDA Forest Service; USDI, Bureau of Land Management. 2004b. Record of Decision Amending Resource Management Plans for Seven Bureau of Land Management Districts and Land and Resource Management Plans for Nineteen National Forests Within the Range of the Northern Spotted Owl. Portland, OR. 21 p.

USDA Forest Service; USDI, Bureau of Land Management. 2004c. Record of Decision To Remove or Modify the Survey and Manage Mitigation Measure Standards and Guidelines in Forest Service and Bureau of Land Management Planning Documents Within the Range of the Northern Spotted Owl. 52 p.

USDA Forest Service; USDI, Fish and Wildlife Service. 2000. Draft Klamath Level 1 Team Assessment And Interim Recommendations For Critical Habitat In The Matrix On The Klamath National Forest. Yreka, CA. 17 p.

USDC NMFS. 1996. Conference Opinion, Implementation of Land and Resource Management Plans.

USDC NMFS. 1997a. Biological and Conference Opinion on Implementation of Land and Resource Management Plans (USFS) and Land Use Planning Documents (BLM).

- 
- USDC NMFS. 1997b. Biological Opinion and Conference Opinion, Road Maintenance, Trail Maintenance, Watershed Restoration, and January 1997 Flood Damage Response Actions. Long Beach, CA.
- USDC NMFS. 1997c. NMFS Letter of Concurrence Regarding Hazard Tree Removal. August 1, 1997. 5 p.
- USDC NMFS. 2001. Water Drafting Specifications, August 2001. National Marine Fisheries Service, Santa Rosa, California.
- USDI Fish and Wildlife Service. 2002. Revised Biological Opinion On The Proposed Knob Timber Sale, Salmon River Ranger District, Klamath National Forest. Yreka, CA. 40 p.
- Waring, R.H. and Schlesinger, W.H. 1985. Forest Ecosystems, Concepts and Management. Academic Press. San Diego.
- Weatherspoon, C.P. and Skinner, C.N. 1995. An Assessment of Factors Associated with Damage to Tree Crowns from the 1987 Wildfires in Northern California. *In* Forest Science, Vol. 41, No. 3. pp. 430-451.
- West, J.R. 1991. A Proposed Strategy To Recover Endemic Spring-Run Chinook Salmon Populations And Their Habitats In The Klamath River Basin. USDA Forest Service. Klamath National Forest, Yreka, California.
- Whitaker, A.; Alila, Y.; Bechers, J. and Toews, D. 2002. Evaluating Peak Flow Sensitivity to Clear-cutting in different Elevation Bands of a Snowmelt-dominated Mountainous Catchment, in Water Resources Research, 38(9), 1172. 17 p.
- Zabel, C.J.; Dunk, J.R.; Stauffer, H.B.; Roberts, L.M.; Mulder, B.S. and Wright, A. 2003. Northern Spotted Owl Habitat Models For Research And Management Application In California. Ecological Applications, 13(4):1027-1040.
- Ziemer, R.R. 1981. The Role of Vegetation in the Stability of Forested Slopes. *In* XVII Proceedings of International Union of Forest Research Organizations World Congress, Japan. p. 297-308.