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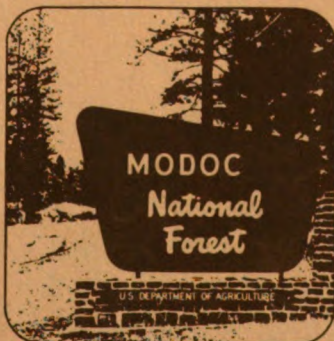
NORTHWESTERN UNIVERSITY

## Modoc National Forest

# APPENDICES

## Final Environmental Impact Statement

### Land and Resource Management Plan







# Appendices

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### Issues, Concerns and Opportunities Identification Process

The first formal public involvement effort began with the filing of a Notice of Intent in the Federal Register, October 10, 1979. To initiate the planning process, a preliminary list of issues and criteria was presented at a public meeting in Alturas, California, on November 15, 1979; 26 people attended.

The following received the list and were invited to identify issues to be addressed in the Forest Plan:

- Local governments
- Indian tribal leaders within Modoc, Siskiyou, Lassen Counties in California, and Lake and Klamath Counties in Oregon
- Adjacent landowners
- Individuals and organizations on the Forest mailing list

Thirty-eight respondents proposed additional issues, identified public demands, and suggested conflict resolutions.

In winter of 1980, the Forest and the Alturas Resource Area of the Susanville District of the Bureau of Land Management (BLM) developed a uniform firewood policy. On March 17-24, 1980, four workshops were held; 105 local residents attended one or more sessions. Numerous issues surfaced. Some were resolved by the policy; the remaining were added to the Forest issues for resolution in the Forest Plan.

The Interdisciplinary (ID) Team applied screening criteria to potential issues extracted from the public responses. Issues passing the screening criteria were addressed during the Forest planning process. The screening criteria are listed below:

- 1) The issue can be resolved with existing Forest Supervisor authority.
- 2) The issue affects or is affected by Forest Service activities.
- 3) The issue cannot be readily resolved by other parties.

- 4) The issue cannot be best resolved through Forest Service programs and actions.
- 5) Within the ten-year life of the Plan, *no action* result in irreversible effects.
- 6) State-of-the-art knowledge and technology allow complete or substantial resolution of this issue and a positive course of action for full resolution.

In January 1981, the Forest and Alturas Resource Area of the BLM (which was conducting a similar planning process) jointly released a list of Forest- and Area issues for public review. Almost 700 agencies, individuals, and organizations on Forest and BLM mailing lists were invited to review the issues in depth and check for omissions. The issues were slightly modified as a result of public comments. In April 1982, BLM issues were dropped from the Forest-wide set of issues because the Alturas Resource Area had accelerated its planning process.

Notice of a public hearing on the Big Valley Forest Sustained-Yield Unit was filed in the May 28, 1982 issue of the Federal Register, and subsequent legal notices were published in local newspapers. Nineteen organizations and people attending the Adin hearing on June 24 testified. The Forest received fourteen letters and one petition with 106 signatures during the formal public comment period. All comments were analyzed in the manner previously described.

The final set of Forest issues, as approved by the Regional Forester in November 1983, appears in Chapter 4 of this document. The planning records contain all public comments, hearing documents, and additional data on the process used to summarize public responses.

### Consultation With Others

In addition to the formal scoping activities, various agencies, Indian tribes, local officials and others were contacted individually by members of the I.D. Team and the Forest Management Staff.

The following were contacted by personal letter or telephone to explain the Forest planning process and invite comment on the issues:



Susanville District, Bureau of Land Management  
 US Fish and Wildlife Service  
 Lava Beds National Monument  
 Modoc Refuge  
 Soil Conservation Service  
 CA Dept of Forestry  
 Modoc Co. Board of Supervisors  
 Siskiyou Co. Board of Supervisors  
 Klamath Co. Board of Commissioners  
 Pit River Tribal Council  
 Modoc Co. Chamber of Commerce  
 Modoc Co. Road Dept  
 Canby 4WD  
 Modoc Co. Farm Bureau  
 Jefferson Assoc.  
 Modoc Co. Cattlemen's Assn  
 Modoc Co. Ski Club  
 Modoc Co. Gem and Minerals Society  
 Modoc Larger Parish (Blue Lake Camp)  
 Sierra Pacific Industries  
 Surprise Valley Lumber  
 NorCalNeva RCD  
 CA Dept of Fish & Game  
 CA Dept Water Resources  
 Lassen Co. Board of Supervisors  
 Lake Co. Board of Supervisors  
 Lake Co. Board of Commissioners  
 Pit River Home and Ag. Coop Assn  
 Modoc Co. Ag Commission  
 Calandor Pine Corp.  
 Edgerton Lumber  
 Modoc Co. Garden Club  
 Main Industries  
 Modoc Co. Historical Society  
 Modoc Co. Sportsmen  
 Modoc Grazing Advisory Board  
 Pacific Power & Light  
 Surprise Valley Electric  
 Modoc Co. Senior Citizens

In addition, other consultation activities occurred.

#### BLM, Alturas Resource Area of the Susanville District

*—frequent meetings and telephone contacts between 1980 and 1983 to insure close coordination throughout the planning process.*

#### California Fish and Game

*—frequent meetings to share information and data on habitat areas, forage production etc.*

Tribal communities consisting of the Ft. Bidwell Indian Community, Pit River Home & Ag Coop Association, Klamath Tribal Council, Pit River Tribal Council

*—letters and telephone contacts between January and March 1984 to seek comments on the document "Cultural Resource Overview: Modoc National Forest," which addresses the Forest cultural resources planning issues. No concern was expressed.*

Northern California County Supervisors Association (NCCSA) consisting of county representatives from nine northern counties

*—meeting June 1981 to provide status information the the Northeastern California Forest plans.*

Northeast Zone Forests consisting of the Lassen, Plumas, Mendocino, Modoc National Forests

*—frequent meetings and telephone contacts between March 1981 and 1984 to provide a consistent approach in dealing with prescriptions, standards and guidelines, etc.*

#### U.S. Air Force

*—several meetings and telephone contacts between January 1983 and 1985 to discuss the location and impacts on the installation of the Over the Horizon-Backscatter Radar System (OTH-B).*

#### U.S. Fish and Wildlife Service

*—briefing on the planning process and discussion of issues that would be addressed. At their request, we did not initiate formal consultation with the USFWS. They felt that consultation on programmatic documents such as the EIS and Plan was not appropriate.*

#### Western Timber Association (WTA)

*—meeting October 1982 to provide an overview of planning process and timber data; meeting April 1983 to review FORPLAN, benchmarks and initial alternatives; field trip to the Long Bell area to discuss sivilcultural options on low-yield timber sites.*

#### Mother Lode Chapter, Sierra Club

*—informal meetings February 1982 and May 1984 to discuss monitoring, juniper management, and Roadless Area Review and Evaluation (RARE) areas.*

#### Fremont National Forest

*—meeting April 1984 with both planning staff organizations to share similarities and differences in approaches, followed by numerous telephone contacts between resource specialists.*

Initiated with a Notice of Intent to reevaluate roadless areas, the Forest held an open house daily between July 25 and August 12, 1983, in Alturas to discuss and gather information about roadless areas; three people signed the register. A newsletter was mailed to 366 individuals, agencies, and organizations on the Forest mailing list to invite comment; eight letters were received. Issues were extracted and analyzed. Information supplied by individuals was incorporated into the Forest data base.

## The Selected Issues, Concerns, and Opportunities

Chapter 1, contains the final set of issues derived from the scoping process. They are listed below with their facets. Chapter 2, Table 2-24 displays treatment of the issues by each alternative. Chapter 2 also discusses the relationship of the issues to the benchmarks, the use of issues in formulating alternatives, and the impact of issue response on present net value (PNV) and other economic indicators. Chapter 3 gives the background necessary to understand the issues, and Chapter 4 describes the environmental consequences of responding to each issue.

All issues were addressed in the Forest planning process; none were deferred.

### Cultural Resources

What direction will be provided for the inventory, management, and interpretation of cultural resources?

#### Facets of the Issue:

- *How will Native American heritage concerns be accommodated in land use and resource allocations?*
- *Where and to what extent will other land uses be modified to protect the cultural resource base and to enhance public appreciation of its value?*

### Diversity

How will management provide for diversity of plant and animal communities so that diversity is at least as great as that which presently exists?

### Energy

How will Forest management contribute to the federal policy of achieving national energy self-sufficiency?

### Facilities

How and where will the transportation and communication system be managed and maintained?

#### Facets of the Issue:

- *How will the road network be managed to provide public access for firewood gathering while protecting against resource damages?*
- *Under what conditions will roads be rehabilitated or obliterated?*

- *How and where will borrow and aggregate sources be designated, and what provisions will be made for site restoration?*
- *How will the Forest manage existing and identify potential, electronic sites?*
- *How will the Forest manage existing and new rights-of-way (utility corridors, roads, and trails)?*
- *How can transportation system coordination with other agencies be improved?*
- *Are there opportunities to upgrade access for resource management and public use?*

### Fire Management

How will fire be managed to protect and improve Forest resources?

#### Facets of the Issue:

- *What will be the fire suppression direction in specific management areas?*
- *Where and to what extent will prescribed fire be used for fuels reduction, wildlife habitat and forage improvement, or other vegetative manipulation?*
- *What can be done to improve coordination with other federal, State, and local fire protection agencies as well as adjacent owners?*

### Firewood

How and where will firewood be managed?

#### Facets of the Issue:

- *How and where will juniper, oak, and mahogany woodlands be managed to provide firewood and other goods and services?*
- *How will wildlife and range needs and cultural resource protection be considered in firewood management?*
- *How will the firewood resource be distributed among free, commercial, and industrial users?*
- *How will the administration (including law enforcement) of firewood management be handled?*
- *What utilization standards and slash treatment requirements will be established?*

### Lands

What will be the priorities for adjustments in land ownership to meet public demand and to support resource management goals and administrative needs?

#### **Facets of the Issue:**

- Which federal lands should be transferred to State or private ownership to meet local community needs or to facilitate Forest administration?
- Which private and State lands should be transferred to federal ownership to support national or regional goals or to facilitate Forest administration?
- What methods of acquisition and disposal should be used in land adjustments?
- What will be the priority for reviewing existing withdrawals?

#### **Minerals**

How will mineral areas be managed?

#### **Facets of the Issue:**

- How will leasable and common variety minerals be managed?
- How will the surface resources associated with locatable minerals be managed?
- What priorities and guidelines will be established for supporting the exploration, development, and management of energy minerals (including geothermal, oil, and gas)?

#### **Pests**

How will Forest pests be controlled?

Under what conditions will pesticides be used?

#### **Range**

What will be the level of range use and development?

#### **Facets of the Issue:**

- How will the Forest distribute forage among livestock, wildlife, and wild horses while continuing to maintain or improve the ecological condition of the land?
- Where and to what extent will livestock graze in wilderness areas?
- What will be the direction for wild horse management?
- What criteria will be used for determining grazing seasons, range suitability for livestock, and range condition goals?

#### **Recreation**

What recreation opportunities will be provided?

#### **Facets of the Issue:**

- How will demands for future recreation development (e.g., campgrounds, trailheads, picnic grounds, etc.) be handled?
- How will public demands for winter sports opportunities be met?
- How will dispersed recreation be managed outside of wilderness areas?
- How will the Forest manage existing trails, and what new opportunities will be provided in the future?
- Where will off-road vehicles be permitted and how will their use be managed?
- What opportunities will be provided to increase public understanding of the environment and the Forest's management activities?
- How will recreation use be managed within the South Warner Wilderness?
- Are there unique areas on the Forest that should be nominated for inclusion in the National Registry of Natural Landmarks?

#### **Timber**

What amounts, methods, and locations of timber harvest and other silvicultural activities will be practiced?

#### **Facets of the Issue:**

- On which lands and to what intensity will timber be managed?
- How and where will clearcutting be applied (e.g., configuration, dispersion, size)?
- What direction will be given for reforestation (e.g., under what conditions will plantations be grazed or vegetative competition controlled; how will potential impacts on deer be considered in brush conversion; what direction will be given for maintaining tree species diversity)?
- How will the following considerations influence rotation length?
  - Vegetative diversity.
  - Tree size and its effects on wildlife, aesthetics, wood products, and energy efficiency.
  - Biological potential.
  - Socio-economics.
- Under what conditions will uneven-age management be practiced?



- *If departures from the Base Sale Schedule are necessary, how will they be implemented over time to reduce impacts on community stability?*
- *What programs will be initiated to maximize wood utilization?*
- *How will the Big Valley Federal Sustained-Yield Unit be managed?*
- *What priority will be given to salvage operations?*
- *How and where will silvicultural practices be used to maintain old growth stands for dependent wildlife species, as well as for aesthetics and habitat diversity?*

### **Socio-Economic**

How will the effects of management be considered in relation to community stability?

#### **Facets of the Issue:**

- *What are the measures of community stability, and how will they be used in evaluation?*
- *What will be the effects of management on the local economy (e.g., employment, receipts to the counties)?*
- *How will the local cultural lifestyle be considered in relation to other socio-economic factors?*

### **Visual**

How will the visual resource be managed to protect the scenic quality of the Forest?

#### **Facets of the Issue:**

- *How will special scenic areas, including major travel corridors, riparian zones, recreation sites, and areas with wilderness characteristics, be managed to preserve or enhance their visual character?*
- *How will the Forest be managed to maintain long-term visual resource quality?*
- *What opportunities exist to improve or enhance the visual quality of areas that have been adversely impacted in the past?*

### **Water and Soil**

How will watersheds be managed to maintain or enhance water quantity, water quality, and soil productivity?

#### **Facets of the Issue:**

- *How and where will water sources be developed and protected?*

- *What priority will be placed on water quality/water quantity?*

- *When managing water use, how will on- and off-site needs be prioritized for the following?*

- Stock watering.
- Road watering.
- Human consumption.
- Irrigation.
- Recreation.
- Wildlife needs (including wetlands).
- Industrial uses.
- In-stream flow.

- *What priority will be given to the restoration of degraded watersheds?*

- *How will potential water supplies for the management of the Forest be identified?*

- *What are the roles of soil, geology, and water in determining land capabilities and constraints on management activities?*

- *Can the Forest more fully implement Best Management Practices for the protection of water quality and soil productivity?*

- *To what extent will soil and water be monitored?*

### **Wetlands and Riparian Areas**

What will be the management direction for wetland and riparian habitats?

#### **Facets of the Issue:**

- *What will be the direction for future wetland improvement projects when considering livestock grazing demands, upland wildlife habitat needs, fish management, and project funding?*
- *What will be the vegetative community standards for wetland and riparian habitats, incorporating fish and wildlife needs, aesthetics, and diversity?*

## **Wildlife and Fish**

Where, what kind, and how much habitat will be provided for fish and wildlife species?

### **Facets of the Issue:**

- What will be the population goals for selected fish and wildlife species?*
- How and where will priority be given to deer habitat management relative to timber management activities (i.e., harvesting, reforestation, including brush conversion and burn rehabilitation, rotation length, and thinnings)?*
- How and where will priority be given to wildlife habitat management, particularly for deer, pronghorn, sage grouse, and waterfowl, relative to range and other management activities?*
- How and to what extent should a cooperative monitoring and information exchange program be established with the California Department of Fish and Game?*
- What are the opportunities to improve wildlife policy administration?*
- How will fisheries habitat be improved?*
- How and where will snags be managed in forest and woodlands?*
- How will habitats be maintained or improved for threatened, endangered, and sensitive plant and animal species?*







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# Appendix B

## The Modeling and Analysis Process

### 1. Introduction

This appendix presents a technical discussion of the analysis process and models used to formulate alternative Forest management plans. The information supplements the broader and less technical descriptions in the body of this EIS. The appendix describes basic assumptions, model components and inputs, modeling rules and methods, and modeling constraints along with their rationale and impacts. See Chapter 2.B. for a description of the overall process, Chapter 2.C. for the results of the benchmark analysis, and Chapter 2.E. for results of the alternatives.

Because many management activities could be applied to the various land types of the Forest, mathematical models were needed to conduct the analysis portion of the planning process. FORPLAN is the primary modeling tool which ensures that land allocations and output schedules for benchmarks and alternatives meet the objective and constraints in the most cost efficient manner. FORPLAN is also used for accounting work and generates summary reports for the tables in the EIS.

Although FORPLAN was used for most of the analysis, its functions are limited. Additional models were needed to generate input data for FORPLAN and interpret output data from FORPLAN. A timber growth and harvest (RAMPREP) model determines timber yield estimates for various timber strata. The FIREPLAN system simulates the fire management organization, activities, and estimates costs that efficiently achieve the program direction for each alternative. An economic model, IMPLAN, was used to estimate the impacts on local area employment and income associated with changes in the levels of Forest outputs. Several Wildlife and Fish Habitat Capability Models (e.g., deer, marten) were used to estimate effects on wildlife and fish populations from changes in Forest vegetation. The potential for water yield increases from vegetative manipulation was estimated with a water yield model. These models and

others used in the planning process are further described in Section 4 of this appendix.

Models serve as approximations to the "real world." They cannot be expected to predict with absolute certainty the consequences of implementing any alternative. They can provide valuable insight into the potential range of effects across a set of alternatives, and provide a means of ranking one course of action relative to another. Therefore, the modeling efforts included in the planning process are intended to provide a basis for comparison rather than a definitive set of consequences from alternative Forest management actions.

### 2. The Forest Planning Model (FORPLAN)

#### A. Overview

FORPLAN (Johnson 1982, Gilbert et al. 1984) is a specialized matrix generator and report writer for a standard linear programming algorithm (FMPS). FMPS is the acronym for functional mathematical programming subsystem, the linear programming code residing on the UNIVAC 1100 series computer at Fort Collins, Colorado. Linear programming is a standard mathematical technique for solving simultaneous linear equations subject to a set of constraints and an objective function. Linear equations are expressed mathematically as:

Maximize:  $z = c_1x_1 + c_2x_2 + \dots + c_nx_n$  (ObjectiveFunction)

Subject to: 
$$\begin{cases} a_{11}x_1 + a_{12}x_2 + \dots + a_{1n}x_n \leq b_1 \\ a_{21}x_1 + a_{22}x_2 + \dots + a_{2n}x_n \leq b_2 \\ a_{m1}x_1 + a_{m2}x_2 + \dots + a_{mn}x_n \leq b_m \\ x_1, x_2, \dots, x_n \geq 0 \end{cases} \quad \text{(Constraint Set)}$$

These mathematical expressions can also be shown in the following matrix:

	Column $j=1$	Column $j=2$	Column $j=3$	Column $j=n$	Constraint Type	Right-Hand Side Con- straint
Objective function	$C_1X_1$	$C_2X_2$	$C_3X_3$	$C_nX_n$		maximize
Row $i = 1$ (Timber)	$a_{11}x_1$	$a_{12}x_2$	$a_{13}x_3$	$a_{1n}x_n$	$\geq$	$b_1$
Row $i = 2$ (Land)	$a_{21}x_1$	$a_{22}x_2$	$a_{23}x_3$	$a_{2n}x_n$	$=$	$b_2$
Row $i = m$	$a_{m1}x_1$	$a_{m2}x_2$	$a_{m3}x_3$	$a_{mn}x_n$	$\leq$	$b_m$

In the FORPLAN formulation, the linear equations (rows) represent constraints, (limitations) such as resource production functions, costs, and acreages. For example, row 1 might represent timber production; row 2, total cost; and row M, acres burned by wildfire. The columns ( $j=1,n$ ) represent the activities (prescriptions) which can occur over time on specific units of land called analysis areas (represented by  $x_j$ ). The  $a_{ij}$ 's in the matrix are the production, cost, or resource coefficients associated with each prescription/analysis area combination. The  $b_i$ 's are the right-hand side constraints representing exact amounts ( $=$ ) or upper ( $<$ ) or lower ( $>$ ) constraint levels that must be met. In the example above, if row 1 represents timber production, then the constraint –

$$a_{11}x_1 + a_{12}x_2 + a_{13}x_3 \dots + a_{1n}x_n \geq b_1$$

requires the total amount of timber produced from all prescriptions and analysis areas to be greater than or equal to the amount  $b_1$ .

The Modoc National Forest FORPLAN Version II model represents the production functions, costs, values, and resource supplies unique to the Forest in the mathematical format described above. By altering the objective function and constraint set, the model generates estimates of costs, benefits, outputs, activities, and land allocations for each alternative or benchmark.

The Forest used two versions of the FORPLAN model to conduct the necessary analysis of alternatives. The original model (referred to as the DEIS model) was built with FORPLAN Version II Release 13 model code. After the draft Forest Plan was released, an enhanced version of the model code, Release 14, was made available. Public comments expressed concern and criticism over certain aspects of the DEIS model. Improved capabilities of the new code gave the Forest the opportunity to restructure the model in response to these comments. The revised model was used to analyze the effects of

alternatives which evolved from the period of public review.

The new FORPLAN code provided a means of incorporating the loss of growth and yield from plantation mortality into the modeling process. Plantation failures occur for a variety of reasons including marginal contract planting, inclusions of shallow rocky soils, incomplete capture of the site, occasional poor stock, and animal damage. The ten percent rate of plantation failure on the Modoc was implicitly modeled using the new code. Similarly, the high percentage of plantation burning on the Forest was also captured in the revised model. A linkage was established between the incremental costs of fire prevention and the degree of plantation loss through wildfire. This allowed the economic efficiency criteria of the model to determine the optimal level for the fire program.

Revisions to the FORPLAN code enabled the same timber management practices to be simulated with less input. The more efficient model could be solved in a much less time, which resulted in significant savings on computer processing charges.

Comparability between the two models was achieved by replicating the coefficients and constraints of the draft model during the revision process. Of course, some modifications were necessary to convert to the new code and significant differences are highlighted in this appendix. Primarily, the changes relate to the geographic scope of the model which was revised to generate Forest-wide results instead of associating outputs with individual management areas.

Interdisciplinary team input to the FORPLAN model included identifying:

- activities applicable to the Forest lands;
- activities that could be modeled in FORPLAN;
- land types to which each activity could be applied;

- costs, outputs, and benefit values which would result from applying each activity to each land type;
- compatibility of activities on the same land area.

The resulting matrices include all management activities which can be modeled, as well as their costs, outputs, and benefits.

After the models were built, test runs were made to see if solutions were reasonable, and to make calibrations. Constraint sets were developed and tested to represent minimum management requirements (MMRs), minimum implementation requirements (MIRs), and specific land allocations and output schedules for individual alternatives. An iterative process was used to formulate these constraint sets prior to making final FORPLAN runs for benchmarks and alternatives. (See Section 3.A. of this appendix.)

Depending on the objective function and constraint set for each benchmark and alternative, the FORPLAN solution represents the most cost-efficient mix of land allocations, outputs, costs, benefits and activities. Alternatives were examined and evaluated for:

- trade-offs among economic, social, and environmental effects;
- differences in costs and benefits for both priced and non-priced objectives, and the effect on present net value;
- responsiveness to public issues and management concerns; and
- net public benefit, which is a combination of PNV and qualitative Forest resource benefits.

Post-FORPLAN analysis included the following tasks:

- determining impacts on the local economy using the IMPLAN model;
- determining whether district personnel could reasonably implement alternatives in the field; and
- selecting as the preferred alternative that which provides the greatest net public benefit.

## B. Land Units

Forest planners overlaid five maps to delineate fundamental land units for planning:

- administrative boundaries;

- vegetative classification;
- watershed boundaries;
- visual attributes; and
- soil composition.

The area intersections of these five layers provided a set of **capability areas** representing the smallest units of land for which comparable data exists on a Forest-wide basis. All land within a capability area is homogeneous in its ability to produce resource outputs and in its production limitations. The final set of capability area maps were computerized through WRIS (Wildland Resource Information System)<sup>1</sup> to calculate the individual polygon acreages and to tag each area identified for the Modoc total Forest data base. The 23,000 capability areas identified for the Modoc total 1.633 million acres. Although the Forest actually contains 1.651 million acres, the difference of 12,000 acres (0.7%) is not significant at this level of analysis.

The Forest ID Team identified 49 physical, biological and administrative attributes for each capability area to help analyze resource opportunities and public issues. These data were stored by capability area in a computerized data base (Shimamoto and Merrihew 1982, Modoc National Forest 1983). Capability area information is now easily retrieved, sorted, aggregated and analyzed by district and S.O. personnel using Oracle, a data base management system residing on the Data General MV8000.

It is not practical to use individual capability areas in FORPLAN because of their small size and immense number. The use of such a large number of land units would be cumbersome and expensive, and would exceed the matrix size limitations of the program. Therefore, the representation of land units in a FORPLAN model is accomplished by grouping many capability areas into large **analysis areas**. Analysis areas for FORPLAN were developed by selectively aggregating Forest capability areas based on physical, biological and administrative attributes.

Forest issues and concerns influenced analysis area definition. It was important to include attributes that have a significant effect on production capability and costs. For instance, the selection of timber-related attributes to include in FORPLAN was guided by such factors as forest type, condition class, site class, slope, and accessibility; these factors are the largest determinants of timber yield and cost.

<sup>1</sup> Developed at the Pacific Southwest Forest and Range Experimental Station by Robert M. Russell, David A. Sharpnack, and Elliot L. Amidon.



Level identifiers were used to characterize FORPLAN analysis areas with attribute combinations representative of the management situation on the Forest. A total of six unique categories of attributes can be defined in the FORPLAN model (TABLE B-1).

Level One, "Forest and Program Areas", was used to differentiate timber regulation in FORPLAN between the Big Valley Federal Sustained-Yield Unit and the rest of the Forest. Although the entire Forest was modeled as a whole, the Big Valley Unit presents a distinct and contrasting difference to the rest of the Forest with respect to standing timber inventory, growing stock, and growth conditions. Unique timber yield tables were developed for both areas of the Forest.

FORPLAN analysis areas generally represent actual land units on the Forest but for certain purposes "dummy" analysis areas may be included. Such analysis areas are modeling constructs only and simply provide an accounting mechanism for the costs and benefits associated with Forest-wide programs and general administration. These "dummy" analysis areas were also delineated with a Level One identifier.

The Level Two identifier, "Economic Zones", was used to represent transportation system development needs and to analyze cost-benefit questions related to development versus non-development of roadless areas on the Forest. Rangeland allotments were included in the DEIS model as a Level Two.

The Level Three identifier, "Timber Suitability", was used to determine what range of timber intensities could be applied to each analysis area based on suitability for regeneration.

The Level Four and Five identifiers, "Forest Type and Condition Class", were structured in accordance with the RAMPREP yield tables used in FORPLAN. A unique set of cost/financial tables was also used with selected combinations of these identifiers.

The Level Six identifier, "Land Class", was used to separate low productivity land (less than 20 cu. ft.) from other timberlands.

The DEIS model contained 492 Analysis Areas, 20 of which were dummy analysis areas. They relate to the Forest in the following manner:

District	Timber AA	Other AA	Total AA
WMRD	76	81	157
BVRD	60	57	117
DGRD	37	41	78
DHRD	64	56	120
<b>Total</b>	<b>237</b>	<b>235</b>	<b>472</b>
	Dummy Analysis Areas		20
			<b>492</b>

In addition to analysis areas, the DEIS model contained zones which defined portions of analysis areas contained within a geographic unit. Allotment zones were used to estimate forage yield, investment dollars for range structural improvements, and dispersed recreation capacity.

No geographic specifications were necessary as the analysis areas were stratified on Forest-wide attributes. This simplified the model structure considerably and was a key factor in reducing the cost of computer processing for the analysis.

District rangers delineated 22 geographically contiguous management areas which they could administer easily. In selecting the management areas, they used these criteria:

- similar vegetation and topography;
- similar management objectives, situations, and issues;
- undivided timber compartments;
- logical units of land large enough for projects and outputs;
- existing transportation system.

Management Areas are displayed in the Forest Plan, Chapter 4.

The desire to maintain the geographic identity of capability areas in the DEIS model limited aggregation. Capability areas were not aggregated past the management area in which they were located, thus allowing constraints and reporting at the management area level.

Although management areas were not retained in the revised FORPLAN model, they will be used as a means of disaggregating FORPLAN outputs from the Preferred Alternative to the ranger district level for Plan implementation.

**Table B-1. Level Identifiers Used in FORPLAN**

Level 1	Name	Code	Description
Issues Areas, Forest ICO & Program Areas	FOREST	NF	Forest-wide Activity outputs (Area = Forest)
	BVFSYU	SU	Big Valley Federal Sustained-Yield Unit
	FIR-PR	FP	FFP Fire Program – Forestwide
	XWILDN	XW	Existing Wilderness
	RGN-PR	RP	Range Program – Improvements
	WLF-PR	WP	Wildlife Program – Improvements
	REC-PR	RC	Recreation Program – Improvements
	DESIGN	DS	Designated-Classified Areas – Not Wilderness
	GENFOR	GF	General Forest – Open Allocation
	—	—	Not one of the above (Null)
NOTE: DEIS Model included codes for 22 management areas at this level			
Level 2	Name	Code	Description
Economic Zones & ICO Overlaps	ECN-Z1	Z1	Economic Zone #1 Unroaded
	ECN-Z2	Z2	Economic Zone #2 Partial Roaded
	ECN-Z3	Z3	Economic Zone #3 80% + Roaded
	DEVREC	DR	Developed Recreation Sites (Non-Skiing)
	—	—	Not one of the above (Null)
NOTE: DEIS Model included codes for 87 range allotments at this level.			
Level 3	Name	Code	Description
Suitability & Type of AA	REGEN2	M2	Model 2 Transfer AAs
	MILES	MI	Miles
	CAPCTY	CP	Percent Capacity Used
	PROGRAM	PR	Program – Projects, etc.
	NONSTK	NS	Conifer Sites not Stocked (Brush or Hardwood)
	CCSWTH	T1	Lands Suitable for CC-SW-TH-UE
	CCSW	T2	Lands Suitable for CC-SW-UE

**Table B-1 - continued**

	SW-UE	T3	Lands Suitable for SW-UE
	UE	T4	Lands Suitable for UE-Extensive Management Only
	SS-THN	T9	Lands Suitable for Sanitation Salvage
	—	—	Not one of the above (Null)
<b>Level 4</b>	<b>Name</b>	<b>Code</b>	<b>Description</b>
<b>Forest Type, Vegetation Type</b>	MC	MC	Mixed Conifer Type
	PPJP	PP	Ponderosa-Jeffrey Pine Type
	RF	RF	Red Fir Type
	LPP	LP	Lodgepole Pine Type
	GRASS	GR	Grass-Rangeland
	FR&T	RT	Forest Roads and Trails Management
	—	—	Not one of the above (Null)
<b>Level 5</b>	<b>Name</b>	<b>Code</b>	<b>Description</b>
<b>Condition Class or Structure</b>	RGN-PL	PL	Regeneration Plantations
	P1	P1	Plantation Less 10 Yrs – Disp Opening
	P2	P2	Plantation Greater 10 Yrs – Disp not Opening
	3P	3P	Small Sawtimber < 40% Crown Closure
	3G	3G	Small Sawtimber > 40% Crown Closure
	4P	4P	Large Sawtimber < 40% Crown Closure
	4G	4G	Large Sawtimber > 40% Crown Closure
	6G	6G	Large Sawtimber in Multi-Store Stands
	UNSTKG	NS	Nonstocked Suitable Timber Lands
	EXT-AR	EX	Existing Sites or Areas
	POT-AR	PT	Potential Sites or Areas
	—	—	Not one of the above (Null)

**Table B-1 - continued**

Level 6	Name	Code	Description
Land Classes, Slope & Site Classes	SITE-4	S4	Dunning Site Class '4'
	SITE-3	S3	Dunning Site Class '3'
	SITE-2	S2	Dunning Site Class '2'
	< 20CUFT	LS	Less than 20 Cu Ft Lands – Reg II or Less
	–	–	Not one of the above (Null)

### C. Prescriptions

A prescription consists of a set of management practices and a schedule for their application. Depending on site-specific management objectives, any one of several prescriptions could be applied to a single analysis area. Considering the number of possible combinations of prescriptions, timing, and analysis areas, finding the most efficient distribution of management practices is a complex problem. With the use of a computerized model such as FORPLAN, an optimal solution can quickly be determined. The speed of the solution allows several alternatives to be developed and analyzed, effectively increasing the scope of the planning effort.

It is important to recognize the difference between *management prescriptions* and *FORPLAN prescriptions*. Management prescriptions provide direction for managing resources to produce goods and services and meet specific goals and objectives. They outline management practices, time schedules, and standards and guidelines for specific areas of the Forest. Management prescriptions and Standards and Guidelines meet the requirements outlined in 36 CFR 219.27. Management prescriptions are listed in Chapter 4 of the Forest Plan and are summarized in Chapter 2 of the EIS.

Prescriptions used in FORPLAN were derived from management prescriptions developed by the Forest's interdisciplinary (ID) team. They are the FORPLAN model equivalent for the sets of activities which could occur on analysis areas. They are generic activities in that they are written independently of the standards and guidelines needed to fit activities to site specific conditions. Members of the ID team quantified the outputs, costs, and benefits that would result from the application of a management prescription to a given analysis area or unit of land. This process provided the information

needed to complete a set of yield and economic tables used to calculate the cost and benefit of each FORPLAN prescription/analysis area combination.

FORPLAN prescriptions were developed to allow for a full range of management activities on analysis areas. A minimum management FORPLAN prescription was included for each analysis area to allow choice of no active management. Other prescriptions represented various levels of intensity. This provided maximum flexibility in modeling the management situation in that either intensive or non-intensive management practices could be allocated to any land unit. The range of prescriptions available for each analysis area was constrained only by technical feasibility.

FORPLAN prescriptions consist of two levels: management emphasis (ME) and management intensity (MI). Many prescriptions can be represented by one management emphasis and several management intensities. For example, under the TF-FUL timber emphasis, even-aged management produces high timber yields. Openings are the largest permitted under the timber dispersion constraint and the landscape visual quality is modified. Tied to this management emphasis are management intensities which vary in silvicultural treatment and the use and timing of commercial thinning. The descriptions below summarize the FORPLAN management emphases abbreviated in Table B-2. This table shows the relationship between FORPLAN prescriptions and management prescriptions.

#### 1) Timber-Management-Unsuitable Lands (TU-UNS).

This prescription applies to all lands for which no chargeable timber volume is scheduled. Management objectives either preclude timber production or are so restrictive that silvicultural objectives cannot be met. Ex-

amples are non-capable, unavailable, and unsuitable lands; wilderness and research natural areas (RNAs); cultural and developed recreation sites; and threatened and endangered species (T&E) habitats (which includes habitat provision for the piliated woodpecker).

#### **(2) Timber Management-Marginal Yield Objectives (TM-MRG).**

This prescription includes suitable timberlands where management objectives are such that minimal timber yields are scheduled. Average rotation age is 200 years. Timber outputs are regulated as a separate, non-interchangeable component of the allowable sale quantity (ASQ). Stand maintenance and harvest on low productivity timberlands are included in this prescription. Examples of other possible applications of this prescription include management of visual retention zones and riparian areas.

#### **(3) Timber-Management-Reduced Yield Objectives (TR-PR).**

This prescription includes suitable timberlands where management objectives allow for even-aged and uneven-aged systems but not at full yields. Rotations vary from 70 to 160 years with the average rotation of 125 years. This prescription represents harvest regimes on lands designated to meet nontimber objectives. Emphasizing other resources results in a mean rotation longer than optimum from a timber production standpoint. Examples of lands included in this prescription are visual partial retention zones and semi-primitive motorized recreation areas.

#### **(4) Timber-Management-Full Yield Objectives (TF-FUL).**

This prescription includes suitable timberlands where management objectives allow for even-aged and uneven-aged systems with full timber yields. Average rotation varies from 70 to 90 years. Outputs from other resources may be generated on lands assigned to this prescription but nontimber objectives do not constrain timber production.

#### **(5) Existing Wilderness-Recreation Program (XW).**

This prescription is used to establish a dummy analysis area as a proxy for the wilderness recreation program. In

this case, the analysis area serves to track budget costs for alternative program levels as represented by a range of management intensities.

#### **(6) Existing Developed Recreation Sites (XD).**

This prescription is used in conjunction with a dummy analysis area. The analysis area was included to track costs associated with providing different levels of quality at existing developed recreation sites.

#### **(7) Potential Developed Recreation Sites (PD).**

This prescription is used in conjunction with a dummy analysis area. The analysis area was included to track costs associated with expanding the developed recreation program and constructing new sites.

#### **(8) Range-Management Maintenance (LB).**

This prescription includes rangelands where allotments are managed with minimum investments in structural improvements and administration. Permits are issued, fees collected, livestock controlled, and resource damage prevented. Existing improvements are maintained.

#### **(9) Range-Management Extensive (LC).**

This prescription includes rangelands where allotments are managed to improve ecological conditions to at least a satisfactory level. Fencing, water developments, and improved grazing systems are used to obtain relatively uniform livestock distribution and forage utilization. Approximately one-half the total desired structural improvements are implemented. Existing improvements are maintained.

#### **(10) Range-Management Intensive (LD).**

This prescription includes rangelands where allotments are managed intensively for uniform livestock distribution and high forage production. Existing structural improvements are maintained and all desired additional improvements are built.

**Table B-2. Management Prescriptions — FORPLAN Prescription Linkage**

Management Prescription		FORPLAN Management Emphasis	FORPLAN Management Intensity	
1.	Minimum Management Level	TU-UNS	M N [MAINTS]	This prescription may be applied to all suitable timberlands (both > 20 and < 20 cu. ft. lands). No timber harvest is scheduled but outputs from other resources, such as dispersed recreation and forage, are produced.
2&3.	Wilderness Management	TU-UNS	MN [MAINTS]	This prescription applies to timber management in the wilderness area. No timber harvest is scheduled.
		X-WILDN (Existing wilderness)	These prescriptions apply to recreation management in the wilderness area.	
			LS [LOWSTD]	The wilderness is managed to provide low standard service.
			SD [FULSTD]	The wilderness is managed to provide standard service.
			RH [REHABT]	Rehabilitation of wilderness recreation sites from low to high.
			XX [XX-CAP]	Excess capacity.
4.	Semi-Primitive Non-Motorized Dispersed Recreation	TU-UNS	MN [MAINTS]	This prescription applies to timber management in areas designated for semi-primitive non-motorized recreation. No timber harvest is scheduled but outputs from other resources such as dispersed recreation and forage, are produced.
5&6.	Developed Recreation	XDVREC (Existing developed recreation site)	These prescriptions apply to management of the developed recreation program.	
			SD [FULSTD]	Manage sites at full standard of service.
			LS [LOWSTD]	Manage sites at low standard of service.
			RH [REHABT]	Rehabilitation of existing sites from low to standard level of service.
			XX [XX-CAP]	Excess capacity.
		DVREC	NC [NCONST]	New site construction.



**Table B-2 - continued**

7.	Visual Retention	TM-MRG	SM [STMANT]	This co-emphasis prescription produces timber while maintaining visual retention qualities. Timber is harvested by small clearcuts (5 acres or less) or selection harvesting.
8.	Special Areas	TU-UNS	MN [MAINT]	This prescription applies to designated areas including Research Natural Areas (RNAs), Special Interest Areas (SIAs) and National Natural Landmarks (NNLs). No timber harvests are scheduled, although outputs from other resources are produced.
9.	Raptor Management	TU-UNS	MN [MAINT]	This prescription applies to bald eagle habitat in all timberlands. No timber harvest is scheduled although outputs from other resources are produced.
10 & 11.	Rangeland	LVSTGB		
		LVSTGC		
		LVSTGD		
			[-NULL-]	No options for management intensity are included in the revised FORPLAN model. Six levels of management intensity were included in the DEIS model and represented options for non-structural range improvements. Although this level of detail was not incorporated in the revised model, the Range-Forage Management Prescription explicitly provides for vegetative manipulation and is not precluded by the generalized model structure.
12.	Even-Aged Timber	TF-FUL		
			<b>Existing Stands</b>	
			CC [CC-HAR]	Timber is clear-cut to produce near optimal yields. Existing stands receive final harvest only. All merchantable commercial trees within the stand are removed.
			SW [SW-HAR]	Shelterwood cutting is used to produce near optimal yields. Shelterwood cutting involves two steps: 1) a seed step designed to open the canopy and create space for new trees, and 2) overstory removal designed to remove all merchantable trees after completing the seed step.
			4E [>40HAR]	Even-aged harvest on slopes greater than 40%. Existing stands receive final harvest only. All merchantable commercial trees within the stand are removed.

Table B-2 - continued				
			2S [2S-HAR]	Second stage (overstory removal) of a two-step shelterwood process. Existing stand condition resulted from application of seed step and all merchantable trees are removed to complete the shelterwood harvest pattern.
			EA [EA-HAR]	Even-aged harvest of existing stands after the fifth decade. This prescription represents both shelterwood and clear-cut management intensities. It serves to reduce the size of the model by limiting the columns required for the out-periods of the planning horizon. Existing plantations receive a release treatment, a precommercial thin, and a final harvest.
			ET [ET-HAR]	Within plantations, the existing stand receives a release treatment, a precommercial thin, and up to three entries for commercial thinning before final harvest.
			PF [PLFAIL]	An existing plantation fails before it reaches three decades of age. The site is prepared and replanted to establish a fully stocked stand. This prescription accounts for the loss of growth and additional expense resulting from plantation failure.
			BR [PL-BRN]	An existing plantation burns before it reaches three decades of age. The site is prepared and replanted to establish a fully stocked stand. This prescription accounts for the loss of growth and additional expenses incurred from plantations destroyed by wildfire.
			<b>Regenerated Stands</b>	
			ET [ET-HAR]	
			EA [EA-HAR]	
			PF [PLFAIL]	
			BR [PL-BRN]	
13.	Timber-Visuals	TR-PR	<b>Existing Stands</b>	
			CC [CC-HAR]	Reduced yields occur due to longer than optimal rotations from a timber management perspective. Partial retention is the visual quality objective. Management intensities are the same as described above for both existing and regenerated stands.

**Table B-2 - continued**

			SW [SW-HAR]	
			4E [ > 40-HAR]	
			EA [EA-HAR]	
			ET [ET-HAR]	
			PF [PLFAIL]	
			BR [PL-BRN]	
			<b>Regenerated Stands</b>	
			ET	
			EA	
			PF	
			BR	
14.	Timber-Forage	TF-FUL	TD [T-FORG]	This co-emphasis prescription produces timber and forage. Following a final harvest, site preparation methods are modified to maintain more browse, grasses, and forbs than would be expected under practices to optimize timber yields. Timber yields are reduced, but more forage is produced. Modification is the visual quality objective.
			TD [T-FORG]	This prescription is the same as TF-FUL/TD rotations are longer than optimal from a timber management perspective. Partial retention is the visual quality objective.
15.	Uneven-Aged Timber	TR-PR	GS [GS-HAR]	Timber is harvested in clearcuts of < 5 acres or by single tree selection. Yields are about 70% of growth, which is considerably below optimal timber yields. This prescription is a choice for existing and regenerated stands on > 20 cu. ft. timberlands.

**Table B-2 - continued**

16.	Timber Management on Low Productivity Lands (< 20 cu. ft. Timber)	TM-MRG	SM [STMANT]	Timber is harvested on lands producing < 20 cu. ft. per acres per year at the culmination of mean annual increment. Although the full range of silvicultural practices will be used to harvest 5% of the current inventory volume, the method selected for use is subject to 1) the objectives of each management area, 2) the needs of each stand, 3) the expectation that these lands will not be managed for maximum timber production or regenerated by clear-cutting.
17.	Riparian Area Management	TM-MRG	SM [STMANT]	This co-emphasis prescription produces timber while maintaining the integrity and quality of riparian areas. Timber is harvested by single-tree selection only in well-stocked stands.
			Note: The Draft model included a separate prescription for riparian areas in < 20 cu. ft. timberlands [MAINT]. The revised model collapses all riparian areas together and limits total harvest to 5% of the existing inventory. This should allow ample margin for site-specific conditions to dictate actual harvest locations and methods.	

#### D. Time Periods

A planning horizon of 160 years is used to ensure sustained yields of goods and services. For display purposes only five decades are shown. In the model, outputs are totals or averages for 10-year periods. Note that the Plan is applicable for only 10-15 years (the planning period) and is subject to revision.

Because of the discount rate, PNV is significant for only 12 time periods. Therefore, when PNV is the objective function of the run, modeling efficiency is increased by maximizing its value over only 12 of 16 decades.

#### E. Outputs

Each prescription/analysis area combination in the FORPLAN solution produces one or many outputs. From a modeling perspective, there are three ways an output may be generated:

- *Time-dependent relationship*— the output level depends on the prescription that is applied to the anal-

ysis area and the point in time relative to the beginning of the planning horizon.

- *Age-dependent relationship*— the output level depends on the age of the vegetation associated with the analysis area to which the prescription is applied.
- *Sequence-dependent relationship*— a secondary output is produced as a function of a primary output generated through the one of the methods above.

Table B-3 summarizes outputs generated within and outside the FORPLAN model and their associated unit of measure. Following is a brief discussion of how output coefficients used in the analysis process were developed. Detailed information is available in the Forest planning records.

Other information can be obtained from data files generated by FORPLAN using the FORPLAN report writer to summarize variables of interest. These items of information are not discussed below but were available to ID team members to help interpret FORPLAN results for the EIS and Plan.

**Table B-3. Outputs.**

<b>Outputs generated by the FORPLAN model:</b>	
<b>Outputs</b>	<b>Units</b>
Developed Recreation	RVD <sup>a</sup>
Recreation Opportunity Spectrum <sup>1</sup>	Acre by Class
Dispersed Recreation	RVD
Hunting Related RVDS	RVD
Wilderness Recreation	RVD
Visual Quality Objectives <sup>1</sup>	Acre
Visual Alteration	Acres Effectively Altered
Available Forage	AUM <sup>b</sup>
Big Game Forage <sup>2</sup>	AUM
Livestock Forage <sup>2</sup>	AUM
Wildlife Habitat Seral Stages	Acre by Type
Bald Eagle Habitat <sup>1</sup>	Acre
Wildlife and Fish Use	WFUD <sup>c</sup>
Deer Habitat Improvement <sup>2</sup>	Acre
Wetland Habitat Improvement <sup>2</sup>	Acre
Sawtimber	MCF <sup>d</sup> /MBF <sup>e</sup>
Long-Term Sustained Yield	MCF
Average Standing Volume	MCF
Timber Inventory	MCF
Reforestation	Acre
Timber Stand Improvement	Acre
Silvicultural Practices	Acre by Type
Water Quantity	Acre-feet
Cumulative Watershed Disturbance	Acres Disturbed
Wildfire	Acres Burned
Plantation Mortality <sup>3</sup>	Acres Failed/Burned
Road Construction/Reconstruction	Mile
Road Maintenance	Mile

<b>Outputs generated outside the FORPLAN model:</b>	
<b>Outputs</b>	<b>Units</b>
Recreation Opportunity Spectrum	RVD and PAOT <sup>f</sup> by Class
Off-road Vehicle Areas	Acre and Mile
Visual Quality Index	Index number
Other Threatened and Endangered Species	Animal numbers/Acre/Mile
Other Fish and Wildlife Populations	Animal numbers/Pounds
Snags	Number per Acre
Habitat Improvement	Acre/Mile
Firewood	Cord
Water Quality	Acre-feet
Watershed Improvement	Acre
Minerals	Operating Plans
Withdrawn From Mineral Entry	Acre
Land Acquisition	Acre
Property Line Location	Miles
Research Natural Areas	Number/Acre
Human Resources	Enrollees
Fuels Treatment	Acre by Type
Roads Obliterated	Mile
Trail Construction/Reconstruction	Mile
Dams and Reservoirs	Number by Type
Administrative Sites	Number

<sup>1</sup> After revision, these acreages were modeled as land allocations rather than FORPLAN outputs.

<sup>2</sup> Acres of habitat improvement and forage allocation have been estimated outside the revised model using a process similar to that incorporated in the DEIS model.

<sup>3</sup> Revised model capability only.

<sup>a</sup> Recreation Visitor Day

<sup>b</sup> Animal Unit Month

<sup>c</sup> Wildlife and Fish User-Day

<sup>d</sup> Thousand Cubic Feet

<sup>e</sup> Thousand Board Feet

<sup>f</sup> Persons At One Time



## Outputs Generated Within the FORPLAN Model

### Developed Recreation

Recreation Visitor Days (RVDs) for each developed recreation site are based on:

- persons-at-one-time (PAOT) capacity,
- season of use,
- pattern of weekday to weekend use, and
- average length of time in site.

The following formula is used to calculate RVDs:

$$\text{RVD} = \text{PAOT} \times \text{Season Days} \times \text{Pattern of Use} \times \text{Length of Time in Site}$$

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where PAOT	=	number of individuals who can physically occupy the site at one time
Season Days	=	number of days the site is open
Pattern of Use	=	a factor to account for differences in weekday and weekend use
Length of Time	=	number of hours in site (assumed to be 24 hours)

Forecasts of recreation use through the year 2030 were used to project the Forest's developed recreation use. Forecasts are based on population growth, past recreation use trends, disposable income, leisure time, and available energy supplies. The Analysis of the Management Situation For Recreation in the Forest planning records provides more details.

### Recreation Opportunity Spectrum

Recreation Opportunity Spectrum (ROS) is a land classification system describing a continuum of outdoor recreation activities available within various environmental settings. The five classes on the Forest are:

- semi-primitive non-motorized – wilderness
- semi-primitive non-motorized
- semi-primitive motorized
- roaded natural
- rural

Because few acres are in the rural ROS class, it was combined with roaded natural.

The number of ROS acres in each class depends on the theme of the alternative and the desired management objective for different parts of the Forest. The area managed for semi-primitive non-motorized–wilderness is assigned to the wilderness prescription; semi-primitive

non-motorized recreation areas are assigned to a prescription designed for this management; semi-primitive motorized areas may be assigned to any one of several prescriptions which meet partial retention visual objectives; and roaded natural and rural areas may be assigned any one of numerous prescriptions. Procedures are based on the Forest Service "ROS User's Guide", FSM 2331.47 and 2353.4, R-5 Supplement #122, 10/80.

### Dispersed Recreation

RVDs for dispersed recreation are based on ROS classifications. Each ROS class has a unique per acre PAOT coefficient. The more developed and accessible the category is, the larger its PAOT coefficient. RVDs are derived from PAOT figures as are RVDs for developed recreation. The Forest has excess capacity in each ROS class compared to existing use.

Projections for dispersed recreation use were derived from the same source as developed recreation. By 2030, overall projected use probably will not exceed 25% of capacity. Because supply exceeds demand, no value is given to excess RVD capacity.

### Hunting-Related Recreation

Outputs for hunting-related RVDs are directly related to outputs generated for big game hunting WFUDs. They are separate from dispersed recreation RVDs discussed above. According to Forest recreation information, for every Wildlife and Fish User-Day (WFUD) spent big game hunting, the recreationist spends twice that time camping (2 RVDs).

### Wilderness Recreation

Physical carrying capacity in the South Warner Wilderness is principally determined by campsite availability and proximity to sensitive resource areas. Other elements such as water quality and trails often influence carrying capacity, but are currently non-limiting factors. Campsite solitude is one of the major components affecting social carrying capacity and is the limiting factor in most of the Wilderness.

As population growth occurs, Wilderness use is projected to increase steadily and reach full capacity by 2030.

To calculate overnight capacity, the maximum number of campsites is multiplied by 3.6 PAOT per campsite. Total PAOTs are converted to RVDs using the same methodology described for developed and dispersed recreation. To calculate day-use capacity, PAOTs for various day-use areas are converted to RVDs.

## Visual Quality Objectives

Visual quality objectives (VQOs) represent the suitability of various parts of the Forest to be managed for a range of visual quality. The five objectives used on the Forest are: preservation, retention, partial retention, modification, and maximum modification. The South Warner Wilderness and Special Areas are always managed for a VQO of preservation. Other areas are assigned different objectives. Acceptable levels of disturbance depend on the theme of the alternative.

## Visual Alteration

Coefficients were developed to depict the number of regenerated harvest acres that could be treated in any one decade before violating visual resource objectives. These coefficients were derived from the EFFALT (effective alteration) concept. This approach is based on the assumption that what was once a visually homogeneous background will appear altered to the casual observer. After a timber harvest, the alteration remains until the trees grow to a height and color which blends in with surrounding vegetation. A decay function reflects the decline in the severity of visual impacts over time.

For each visual quality objective, a constraint was included in FORPLAN to limit the number of acres that would appear to be visually altered. In the DEIS model, the timber policy dispersion constraint was modeled in conjunction with VQOs and linked to the EFFALT decay function. This joint constraint limited the acres harvested in each management area.

The close association between dispersion and VQO requirements was retained in the revised model, and a similar decay function was used. Because management areas are not delineated in the revised model, VQO and dispersion constraints apply to total Forest regulated acres and inventory. Regional coefficients were derived from a perspective plot analysis conducted in Region 5 and used to develop a new decay function during the FORPLAN revision process. Coefficients were linked to constraints in the revised model to simulate management of Forest-wide visual resources.

Timber harvest in areas managed for marginal yields (TM-MRG) was limited to 5% of inventory per decade (Retention VQO). In areas managed for reduced timber yields (TR-PR), harvest was limited to 15% of inventory with average effective alteration not to exceed 15% over a two-decade period (Partial Retention VQO). Under a timber emphasis of TF-FUL (full yields), harvest was limited to 20% of inventory with average effective alteration not to exceed 30% over a two-decade period (Modification VQO). (See section 4 for more information

about the EFFALT model and the coefficients used in the DEIS model.)

## Available Forage

The amount of forage eaten by livestock, wildlife, and wild horses is expressed in animal unit months (AUMs). Available forage is determined for permanent rangelands, seedings, and timberlands on each allotment. Estimates of forage production on permanent rangelands are based on local Soil Conservation Service (SCS) range sites, which represents common combinations of vegetation and soils. Potential range site forage production is used with site-specific condition data to determine the average useable amount of forage for each allotment. District range conservationists determined forage production from non-native seedings for each allotment. They estimated timberland forage based on their experience in managing grazing activities and on timberland plantation sampling.

Forage production on permanent rangelands improves over time if ecological condition improves. Improved ecological condition is built into yield tables for each prescription.

In contrast to permanent rangeland, timberlands (transitory range) provide palatable forage for a limited time. Transitory range can exist for several years or several decades, depending on the harvest method and the cultural practices applied when establishing a new stand of trees. Eventually the forest canopy closes enough to either prevent growth or reduce the palatability of herbaceous species. Forest range and wildlife specialists estimated forage production for transitory range after an extensive literature review.

The DEIS model included a set of constraints to allocate forage for production of big game AUMs or livestock AUMs. Big game AUMs were estimated to have a benefit value equivalent to that of big game wildlife user-days. Livestock AUMs were evaluated at the average amount that ranchers would be willing to pay for Forest grazing permits. Considering the large differential in benefit values, the economically efficient FORPLAN solution resulted in allocation of forage to big game AUMs until the capacity of wildlife user-days was exceeded. Forage allocation constraints were not incorporated into the revised model. Allocation of available forage between livestock and wildlife AUMs is conducted subsequent to the FORPLAN analysis in compliance with range allotment strategies and deer herd management goals.

## Wildlife Habitat Seral Stage

Wildlife habitat seral stages were modeled to estimate the effects of harvest patterns on habitat diversity. Diversity insures viable wildlife populations over time. Seral stage changes for eastside pine and mixed conifer follow

the habitat successional time line shown below. Successional changes for red fir occur one decade earlier in all seral stages except 1X. Lodgepole pine seral stage 2X is 20-50 years; seral stage 3C is 60 years; and seral stage 4C is 70 years and older.

Seral Stage Code	Definition	Ages (Years) (Periods)
1X	Grass/forb/seedling stage consists of annual and perennial grasses and forbs with or without scattered shrubs. It may also be a conifer plantation in which the trees are < 1 inch at DBH.	10 (1)
2X	Shrub/sapling/pole stage consists of mixed or pure stands in the 1-10.9 inch DBH range.	50 (2 to 5)
3A	Medium tree size (small sawtimber) of mixed or pure stands in the 11 to 24.9 inch range. Total tree canopy cover is from 0 to 39%. Stands commonly support a substantial shrub layer.	130 (6 to 13)
3B&C	Medium tree size (small sawtimber) of mixed or pure stands in the 11- to 24.9-inch range. Total tree canopy cover is 40% or greater. Shrub layer density is variable.	130 (6 to 13)
4A	Large tree (medium and large sawtimber) corresponding roughly to the mature and overmature classification. DBH is generally greater than 24 inches. Total tree canopy cover is 0-39%. Stands 180 commonly support a substantial shrub layer.	180 (14 to 18)
4B&C	Large tree (medium and large sawtimber) corresponding roughly to the mature and overmature classification. DBH is generally greater than 24 inches. Total tree canopy cover is 40% or greater. Shrub 180 layer density is variable.	180 (14 to 18)
4A-older <sup>1</sup>	This is the specific component of the large tree stage that is older and overmature with a total tree canopy cover of 40% or less. The stands should show evidence of decadence.	190 (19 +)
4C-older <sup>1</sup>	This is the specific component of the large tree stage that is older and overmature with a total tree canopy cover of 70% or greater. The stands should show evidence of decadence.	190 (19 +)
<sup>1</sup> 6G was divided between 4A and 5C in the revised model. No distinction was made between overstory and understory.		
<i>In existing stands the stratum label is used to determine seral stages:</i>		
M3P small sawtimber with > 40% crown closure		= 3A
M3G small sawtimber with > 40% crown closure		= 3C
M4G medium sawtimber with > 40% crown closure		= 4C
<i>Strata label 6G is called 4A based on the overstory. When the overstory is removed, the habitat type changes to 2X and eventually grows to 3C and 4C.</i>		

### **Bald Eagle Habitat**

The output for bald eagle habitat is an acre counter for timberlands allocated to the raptor management prescription in FORPLAN. Rangeland acres are not assigned in the model but are later identified through the Forest data base. Bald eagle habitat was a fixed acreage allocation in the revised model.

### **Wildlife and Fish Use**

One wildlife and fish user-day (WFUD) equals 12 hours of recreation activities associated with fishing, hunting, or wildlife enjoyment. The number of WFUDs generated by the Forest is correlated with 1) population of local communities, 2) habitat capability to support populations of fish and wildlife species, and 3) California Department of Fish and Game harvest strategies, particularly quotas which may limit participation. Changes in numbers of WFUDs relative to human population changes are based on published recreation participation studies. Habitat capability changes as a result of direct habitat improvements and induced habitat improvements from other resource activities. We assumed that State harvest regulations would follow the wildlife population trends.

Estimates of big game hunting WFUDs were based on State and US Fish and Wildlife Service statistics for number of hunting tags issued, hunter success, and time spent afield. Forest Service Recreation Information Management (RIM) data were also used.

Estimates of small and upland game hunting WFUDs and nongame/nonconsumptive use WFUDs were also based on State and US Fish and Wildlife Service statistics, as well as RIM data. WFUDs increase over time based on human population change and the amount of direct habitat improvement initiated.

Estimates of Waterfowl hunting WFUDs were based on the supply of habitat from Forest wetlands. State, US Fish and Wildlife Service, and Forest Service RIM data were again used.

Estimates of cold- and warm-water fishing WFUDs were based on the ability of available habitat to support various numbers of fish. WFUDs change over time in relation to human population change and direct and induced habitat improvements.

### **Deer Habitat Improvement**

This output is another acre counter for FORPLAN for the number of direct habitat improvements selected for deer. When wildlife rejuvenation prescriptions are se-

lected in the model, this output tracks the number of acres allocated.

Wildlife management plans for habitat improvements will be adhered to although such improvements have not been included in the revised model.

### **Wetland Habitat Improvement**

As with deer habitat improvement, this output is an acre counter in FORPLAN for the acres allocated to the wetland prescription.

Wildlife management plans for habitat improvements will be adhered to although such improvements have not been included in the revised model.

### **Sawtimber**

Sawtimber outputs were derived from timber yield tables. These tables are based on existing volume, age and basal area information collected from 15 strata during the 1980 timber inventory. Data concerning basal area growth and volume yield equations, Dunning site classes, maximum basal area for each site index, and indices for height were used as input to RAMPREP (Resource Allocation Method-Preparation), a computer program. RAMPREP calculates potential yields from a stand under various thinning and clearcut harvest regimes for both existing and regenerated stands. (See Section 4 for more information about RAMPREP.)

### **Long-Term Sustained Yield**

Long-term sustained yield (LTSY) is based on timber volume from regenerated stands. LTSY is the sum of timber volume by prescription, divided by the age of final harvest (rotation age).

### **Average Standing Volume**

Average standing volume is based on the average uncut volume during the planning horizon from lands managed for timber production.

### **Timber Inventory**

Timber inventory is the sum of the average volume per acre of each strata and prescription multiplied by the strata acres. The calculation occurs each decade.

### **Reforestation**

The reforestation output is an acre counter in FORPLAN used to add the number of acres from harvest prescriptions requiring regeneration.

### Timber Stand Improvement

Timber stand improvement (TSI) is an acre counter in FORPLAN used for tracking acres of release and precommercial thinning. In the same decade when regeneration harvest occurs, release TSI is counted. In the following decade precommercial thinning TSI is counted.

### Silvicultural Practices

Silvicultural practices are calculated by summing the acres of each analysis area/prescription combination used in the solution of the alternative.

### Water Quantity

Current water yields were determined from data collected at gaging stations operated by the California Department of Water Resources and the US Geological Survey located on or near the Forest. Estimates for increased water yield were based on a series of water balance equations using HYSED, a water resource analysis model. Depending on location, elevation, and the method of timber harvest, new runoff from these areas is added to the background level. (See Section 4 of this appendix for more information.)

### Cumulative Watershed Disturbance (Equivalent Roaded Acres)

Impacts from timber harvesting and road construction, and unsatisfactory range condition are factors used to determine equivalent roaded acres, a measure of the relative amount of disturbance in the watershed. The maximum allowable disturbance for each watershed is estimated from soil sensitivity information that includes soil depth, slope stability, erosion hazard rating, and water runoff potential.

The goal is to prevent disturbance to a watershed beyond its threshold. Threshold is the level of disturbance (measured in percent of equivalent roaded acres) beyond which irreversible cumulative watershed impacts occur.

### Wildfire

Burned acres, costs, and net value change for each fire program option are based on output from the FIREPLAN Initial Attack Assessment Model, version 2. FORPLAN adjusts these outputs based on the scheduling of other activities that affect fire hazard. Coefficients used to adjust outputs are developed by testing the effects of fuel model changes in the FIREPLAN model. Activities that trigger changes are timber harvests that result in

plantations and prescribed burning for range and wildlife habitat improvement. (See Section 4 for more information on FIREPLAN.)

### Road Construction/Reconstruction

Miles of road construction and reconstruction are based on the historical relationship of roads constructed or reconstructed to the volume of timber harvested. With road access essentially intact, approximately two-thirds of the road work will be reconstruction. Road construction and reconstruction are divided between appropriated dollars and purchaser road credit.

### Road Maintenance

Forest Service road maintenance miles are the result of the miles of road currently on the Forest Development Road (FDR) System, plus miles of new roads constructed, minus obliterated roads.

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## Outputs Generated Outside the FORPLAN Model

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### Recreation Opportunity Spectrum

Distribution of RVDs for each ROS class is based on historic use. Recreation RVDs and hunter-related RVDs are included in the distribution among ROS classes.

Distribution of PAOTs is based on acres in each ROS class multiplied by capacity coefficients. Capacity coefficients are based on a formula in the ROS handbook and include such factors as ratio of weekday to weekend use, length of stay, and length of managed season.

### Off-highway Vehicle Areas (Acres and Miles)

Areas open to off-highway vehicles vary by the theme of the alternative. Some areas are closed to OHVs for other resource management, or because terrain and vegetation do not accommodate OHVs, or both. Closed areas include Wilderness, special interest areas, SPNM areas, riparian areas, and bald eagle nesting or roosting areas. Because most of the Forest is relatively flat, about 70% of the unrestricted acres are useable by OHVs. Ground conditions that functionally exclude OHVs include steep slopes, boulder fields, lava reefs, and thick vegetation.

The number of miles of roads and trails open or closed to OHVs does not change between alternatives. Although no roads and trails are specifically designated for OHV use, over 2,000 miles of low-standard roads are suitable for OHV use.



### Visual Quality Index

The visual quality index is a quantified rating of the future visual condition of the Forest. It is an index of acres disturbed by various management activities, taking into account visual condition class and variety class.

### Other Threatened and Endangered Species

The number of active peregrine falcon nests is derived from the Peregrine Falcon Recovery Plan. Each Forest is assigned a recovery target by the Region.

Habitat for Modoc suckers represents the miles of stream in high and medium habitat capability. Habitat assessment is based on the habitat capability model for this species.

Population numbers for bighorn sheep represent the amount of available habitat allocated to sheep under each alternative. Populations are based on estimated carrying capacities of various habitat.

### Other Fish and Wildlife Populations

Animal numbers and habitat capability coefficients for management indicator species are based on the habitat suitability of various vegetative types or stream conditions. Other factors such as cover and habitat needs were also considered in deriving numbers. Descriptive habitat capability models were used and are described in Section 4.

After forage allocations were made, deer population estimates were calculated using a simple conversion factor for each herd. Each herd has a specific AUM need per deer based on the amount of seasonal range and seasonal forage requirements (Appendix L).

A deer habitat capability model was used to assess deer populations. This model and deer numbers helped determine improvements needed and biological carrying capacity.

### Pine Marten Modeling

Older wildlife habitat seral stages are assumed to provide the minimum habitat necessary to maintain viable populations of pine marten. However, additional information about marten indicated that solely reserving older seral stages, without providing larger areas and a spatial linkage, might not be adequate management. The Forest identified an alternate approach to be used for some alternatives based on developing a distribution of territories. Tentative territories were established based on the Region 5 furbearer literature review. The purpose of establishing territories was three-fold:

- to determine approximate locations of territories;
- to determine the effects of these territories on timber management objectives; and
- to develop recommendations for pine marten habitat distribution on the Forest.

The Forest's Land Management Planning data base was used as a level for establishing territories. In this way, specific polygons could be identified and used to develop FORPLAN runs.

The following assumptions were made in delineating territories at this level:

- Habitat would be managed at the moderate habitat capability level, per the R5 literature review for pine marten.
- All components of the habitat would be met within an area of at least 1,900 acres.
- Territories would be distributed so that adjacent territories would be within three miles of each other. If habitat suitability precluded territory distribution at this level, then territories would be placed in accordance with available habitat.
- Within each territory, 35% of the territory would be managed as 4G stands, and 45% would be managed as 3G stands. If sufficient 4G stands were not available, then 3G stands would be substituted for 4G stands.
- Red fir, white fir, mixed conifer and lodgepole pine were all considered suitable vegetation communities for pine marten.
- Suitable habitats that were withdrawn for other purposes (e.g., designated raptor habitats) were used where feasible to meet marten habitat requirements. Likewise, where lodgepole pine was available, it was also used as a component of marten habitats.
- Travel corridors were not modeled. Sufficient habitat should exist along riparian areas and unmanaged stands to provide travel corridor opportunities.

A total of 18 territories were identified on the Forest: 4 on the Doublehead Ranger District, 5 on the Big Valley Ranger District, and 9 on the Warner Mountain Ranger District. An additional 3 territories were considered: 1 on the Doublehead Ranger District, and 2 on the Warner Mountain Ranger District. But they were tentatively dropped because of their close proximity to other territories, or marginal characteristics of the habitat.

The Forest recommended managing pine marten territories on the Big Valley Ranger District for pileated woodpeckers for the following reasons:

- Most of the territories on the Big Valley District are at lower elevations and may not be important for martens.
- These territories are isolated from other marten territories by large acreages of unsuitable habitat.
- Most of the area has been rendered unsuitable for marten by past logging practices.

### Snags

Snag numbers are based on a model using snag mortality and recruitment to calculate changing snag densities. (See Section 4 for more information on the snag habitat capability model.)

### Habitat Improvement

With the exception of deer and wetland habitat improvements which were generated from within the DEIS FORPLAN model, other habitat improvements vary by alternative.

### Firewood

Cordwood output is based on the historic use of firewood projected over time according to Modoc County population trends.

### Water Quality

Total acre-feet currently meeting State water quality objectives is based on a watershed and stream analysis, Table 3-18. Water quality improvement over the next three to five decades will be related to the following:

- watershed improvements occurring in the first two decades;
- structural range improvements occurring in allotments with streams that currently do not meet State water quality objectives;
- the amount of grazing occurring in the first decade in each alternative; and
- recovery time for riparian vegetation after proper grazing is established.

### Watershed Improvement

At a minimum, watershed improvements are made on areas with water quality problems or loss in soil productivity. The rate of watershed improvement depends on the theme of the alternative.

### Minerals

Operating plan outputs are estimated from the number of plans reviewed in the past.

### Withdrawn From Mineral Entry

Acres withdrawn are based on acres in Wilderness, Research Natural Areas, Special Interest Areas, and other mineral withdrawals.

### Land Acquisition

Total acreage is based on historical levels. The number of acres is the same for all alternatives, except the Reduced Budget Alternative.

### Research Natural Areas (RNA)

The number of RNAs is determined from the theme of the alternative.

### Human Resources

Numbers of human resource program enrollees are estimated from historical levels.

### Fuels Treatment

Three kinds of fuel treatment are reported: fire-related, timber-related, and treatment for other resources. Fire-related treatment is based on the theme of the alternative. Timbered-related treatment is based on the timber harvest acres requiring fuel hazard reduction or site preparation. The other resource category includes prescribed burning to meet other resource objectives.

### Road Obliteration

Road obliteration varies from decade to decade and does not depend on the theme of the alternative (Table B-4).

**Table B-4. Miles of Obliterated Roads by Decade.**

	Decade				
	1	2	3	4	5
Miles per Decade	111	93	52	52	52
Average per Year	11.1	9.3	5.2	5.2	5.2
Total Miles for Fifty Years = 360					

### **Trail Construction/Reconstruction**

Trail construction or reconstruction varies with the theme of the alternative.

### **Dams and Reservoirs**

Numbers of dams and reservoirs are based on historical levels with no change between alternatives.

### **Administrative Sites**

Numbers of administrative sites are based on historical levels with no change between alternatives.

## **F. Economics in FORPLAN**

Economic-efficiency is central to the Forest planning process in general and FORPLAN in particular. In this document, economic factors are discussed in:

**Chapter 2**    Alternative Development Process Comparison of Alternatives

**Chapter 3**    Economic and Social Environment Various sections of the Resource Environment – Firewood, Range, Recreation, Timber, Wilderness, and Wildlife and Fish

**Chapter 4**    Economic Consequences

**Appendix C**   Economic Efficiency Analysis

Most of the economic-efficiency analysis is conducted using the FORPLAN model. For a discussion of the impacts of alternatives on PNV and a discussion of the trade-offs and opportunity costs, see Chapter 2, Comparison of Alternatives.

### **Demand Cut-Offs**

Demand cut-offs for valuing RVDs and WFUDs are based on historical use and population growth in the area serviced by the Forest. Benefit values are applied only when Forest users create a demand for the output. When outputs exceed demand, no value is given.

Cut-offs for Wilderness recreation and recreation associated with wildlife and fish are determined separately from other dispersed recreation. More specific information is available for these categories, thus providing a better estimate of the demand cut-off (Table B-5).

**Table B-5. Demand Cut-offs.**

	Decade				
	1	2	3	4	5
	(MRVD)				
Dispersed Recreation	122.4	142.92	163.44	183.96	204.48
Public Developed Recreation	92.9	106.7	120.5	134.3	149.0
Private Developed Recreation	8.1	9.3	10.5	11.7	13.0
Wilderness Recreation	9.44	12.39	14.75	17.11	20.06
	(MWFUD)				
Big Game Hunting	57.18	64.05	69.43	74.84	77.76
Small and Upland Game Hunting	15.15	17.42	18.57	19.3	19.1
Waterfowl Hunting	3.64	4.11	4.68	5.11	5.38
Fishing	29.33	35.48	40.45	45.31	49.61
Nonconsumptive Use	9.98	11.31	13.06	14.80	17.10

**Dollar Values**

All dollar values are in 1982 dollars. Factors, based on rates of inflation, are used to adjust values from other years to 1982 (Table B-6).

A discount rate of 4% is used to determine the present net value (PNV) of future benefits and costs. This rate approximates the long-term cost of capital in the private sector as measured by the return on AAA corporate bonds after adjustment for inflation.

**Table B-6. Dollar Value Adjustment Factors.**

Year	Factor
1978	1.39
1979	1.28
1980	1.18
1981	1.08

**Table B-7. Price Trends for Activities and Outputs.**

	Decade				
	1	2	3	4	5
	(Average Annual Percent)				
<b>Timber Price Increase</b>	1.00	1.00	1.00	1.00	1.00
<b>Range Price</b>	.60	.60	.60	.60	.60
<b>Recreation, Wildlife, Fish</b>	.80	.80	.80	.80	.80

Price trends for all activities were derived from evaluations and studies contained in the Final Environmental Impact Statement prepared for the 1985 RPA Program Plan (Table B-27A of that document).

#### **Costs**

All costs are estimates from accounting records and the experience of project managers. Costs for applying multiple resource prescriptions are built into economic tables in FORPLAN. Costs associated with timber, grazing, roads, wildlife, fish, dispersed recreation, developed recreation, fire, soils and watershed, and general administration are included.

Costs are checked for reasonableness by comparing the 1st decade budget for the CUR alternative against actual expenditures for FY 1982. Costs deviated less than 5%. This deviation is within acceptable standards of reliability for Forest planning. All costs are analyzed in the FORPLAN model. Specific cost data are in the Forest planning records.

Fixed costs, which represent 30% (\$3.8 million) of current budget costs, are minimum level costs associated with the minimum level benchmark. All costs above minimum level are treated as variable costs. (See Chapter 2,

Economic and Tradeoff Analysis, for more information on fixed, capital investment, and operation and maintenance costs.)

#### **Benefits**

Priced outputs are divided into categories. The first category includes outputs with an established market price. These outputs are livestock range forage, timber, and developed recreation. The second category includes outputs with an assigned price, based on travel cost and contingent value studies. These outputs are wildlife and fish-related recreation, other dispersed recreation opportunities, and water. Although livestock forage and developed recreation have market prices, assigned values have also been determined for these outputs and are used in FORPLAN.

The dollar values for outputs used to calculate PNV in the FORPLAN model are the assigned values that consumers would be willing to pay for Forest outputs, whether or not such prices are actually collected by the Federal government. At present, the Forest Service provides most Forest outputs either at no charge to consumers or less than the willingness-to-pay price (Table B-8).

**Table B-8. Output Benefit Values (1982 Dollars)**

Output		Unit of Measure	Average Actual Cash Receipts Per Unit of Output	Average Willingness To Pay Value
<b>Recreation</b>				
Dispersed (std)		RVD	0	10.40
Dispersed (low)		RVD	0	5.51
Hunting-related (low)		RVD	0	5.51
Developed (std)		RVD	0.14	10.30
Developed (low)		RVD	0.14	5.46
Wilderness (std)		RVD	0	12.65
Wilderness (low)		RVD	0	6.71
<b>Range</b>				
Livestock		AUM	1.37	5.39
<b>Wildlife &amp; Fish</b>				
Big Game		WFUD	0	27.60
Small & Upland Game		WFUD	0	16.56
Waterfowl		WFUD	0	16.56
Non-game		WFUD	0	23.00
Fishing		WFUD	0	11.04
Big Game		AUM	0	27.60
<b>Timber (1st decade)</b>				
<b>Existing Timber</b>				
<i>Mixed Conifer</i>				
Strata	3G	MCF	558	558
	3P	MCF	553	553
	4G	MCF	594	594
	4P	MCF	592	592
	6G	MCF	609	609



**Table B-8. Output Benefit Values (1982 Dollars) (cont'd.)**

Output		Unit of Measure	Average Actual Cash Receipts Per Unit of Output	Average Willingness To Pay Value
<i>Ponderosa Pine</i>				
Strata	3G	MCF	857	857
	3P	MCF	652	652
	4G	MCF	798	798
	4P	MCF	889	889
	6G	MCF	833	833
	PL	MCF	889	889 <sup>1</sup>
Non-stocked		MCF	889	889 <sup>1</sup>
<i>Red Fir</i>				
Strata	3G	MCF	533	533
	3P	MCF	588	588
	4G	MCF	526	526
	4P	MCF	482	482
<i>Lodgepole</i>		MCF	442	442
< 20 cu.ft timber		MCF	652	652
<b>Regenerated Timber</b>				
<i>Mixed Conifer</i>				
Diameter	< 15"	MCF	475	475
	15-17"	MCF	517	517
	17-19"	MCF	546	546
	19-21"	MCF	564	564
	21-23"	MCF	582	582
	23-25"	MCF	588	588
	25-27"	MCF	594	594
	27-29"	MCF	582	582
	29-36"	MCF	575	575

**Table B-8. Output Benefit Values (1982 Dollars) (cont'd.)**

Output		Unit of Measure	Average Actual Cash Receipts Per Unit of Output	Average Willingness To Pay Value
<i>Ponderosa Pine</i>				
Diameter	< 15"	MCF	684	684
	15-17"	MCF	735	735
	17-19"	MCF	770	770
	19-21"	MCF	819	819
	21-23"	MCF	847	847
	23-25"	MCF	861	861
	25-27"	MCF	882	882
	27-29"	MCF	889	889
	29-36"	MCF	882	882
<i>Red Fir</i>				
Diameter	< 15"	MCF	421	421
	15-17"	MCF	457	457
	17-19"	MCF	484	484
	19-21"	MCF	499	499
	21-23"	MCF	515	515
	23-25"	MCF	520	520
	25-27"	MCF	525	525
	27-29"	MCF	515	515
	29-36"	MCF	510	510
<i>Lodgepole</i>				
Diameter	< 15"	MCF	354	354
	15-17"	MCF	384	384
	17-19"	MCF	406	406
	19-21"	MCF	419	419
	21-23"	MCF	432	432

**Table B-8. Output Benefit Values (1982 Dollars) (cont'd.)**

Output	Unit of Measure	Average Actual Cash Receipts Per Unit of Output	Average Willingness To Pay Value
23-25"	MCF	438	438
25-27"	MCF	442	442
27-29"	MCF	433	433
29-36"	MCF	428	428
<b>Water</b>			
	Acre-feet	0	59

<sup>1</sup> Harvest at culmination of mean annual increment.

Benefit values of outputs are computed by multiplying the amount by the willingness-to-pay price. Outputs above estimated demand are not valued. All benefits are calculated in the FORPLAN model.

For outputs used off-site, benefits are based on the value of the outputs as they leave the land or production site. For outputs used on-site, benefits are valued when use takes place. However, in cases where it is easier to derive values after the output leaves the production site, costs incurred and profits earned after the output leaves the site are deducted from the values at later production stages.

RVD and WFUD values are the estimated average amount that recreationists are willing to pay at the site. These values are based on a survey of travel cost and contingent value recreation studies conducted by the Forest Service for the 1985 Resource Planning Act evaluations.

Big game forage value is based on the relationship of recreational hunting, deer numbers, and deer forage needs. Recreation reports for the 1984 season, information from the California Department of Fish and Game, and literature on forage requirements were used to estimate the value.

Livestock forage value is the average amount that Modoc National Forest permittees are willing to pay for grazing on the Forest as estimated from ranch livestock

budgets developed by the USDA Economic Research Service.

Timber values are average timber receipts per MBF harvested for 1984-1988, expressed in constant 1982 dollars. Receipts for 1984-1986 are from the annual collection statement. Receipts for 1987-1988 are from the timber sale program information reporting system (TSPIRS).

Water value is the estimated amount that water users are willing to pay for water at the point of use, less storage and delivery costs incurred to get the water from National Forest streams and rivers to the user. The value is based on the marginal value of water for irrigation.

Those resources most sensitive to average willingness-to-pay values are range AUMs, big game WFUDs, and MCF of ponderosa pine and mixed conifer. Sensitivity is based on the production of one resource over another due to differences in the average willingness to pay.

Most of the forage produced in FORPLAN can be allocated to range or wildlife. Allocation of this common pool of forage is based on the value of a big game WFUD and that of a range AUM. One AUM allocated to deer produces one big game WFUD. Because a big game WFUD has a higher average willingness-to-pay value, FORPLAN will allocate forage to deer until the demand capacity for big game WFUDs is met or another constraint on deer numbers becomes binding. At this point,

the model allocates forage to livestock. Consequently, FORPLAN is very sensitive to the average willingness-to-pay values for a range AUM and a big game WFUD in the allocation of forage.

FORPLAN is less sensitive to the average willingness-to-pay value of ponderosa pine and mixed conifer because of differences in volume per acre of the two species. Although mixed conifer has a lower value than ponderosa pine, FORPLAN harvests more mixed conifer because

the volume per acre is higher than pine. In order to attain the same volume as one acre of mixed conifer, more than one acre of pine must be harvested. The cost of harvesting pine on a per volume basis increases. When costs of harvest are considered, the net value of mixed conifer is higher than ponderosa pine. The interaction of volume per acre and price of a species lessens the sensitivity of the model to the price of mixed conifer and ponderosa pine.

### 3. Constraints Used in FORPLAN

Constraints are quantifiable limits placed on the FORPLAN model to assure that only reasonable amounts of resources are used, outputs are produced, and prescription allocations are made. In linear programming analysis, constraints override the objective function. Therefore, where a predetermined level of output, minimum physical condition, or allocation is entered as a constraint, it is always achieved (or no feasible solution is found). Output levels and other desired effects entered as constraints are implicitly assumed to contribute more to public benefits than their cost of production plus the foregone public benefits of any outputs or other effects they replace in the solution. For this reason, the interdisciplinary team tried to formulate constraints that meet objectives with the lowest cost and least effect on other outputs. In most cases this meant formulating and testing several sets of constraints to determine the most cost effective set (in terms of PNV) that would meet the objectives. Six categories of constraints are available:

**Technological Constraints**—needed to ensure technical implementability of the results. They are applied to all benchmarks and alternatives.

**Minimum Management Requirements (MMRs)**—constraints used to meet minimum management requirements or management standards. Procedures for defining the MMRs are specified by the Pacific Southwest Region. MMRs are applied to all benchmarks and alternatives, but are not applied to the FLW (unconstrained maximum PNV assigned with flow/LTSY constraints) or the MLV (minimum level of management) FORPLAN runs.

MMRs come from 36 CFR 219.27 and generally represent requirements beyond the Forest Service's authority to change. They are based on statutes and regulations, in contrast to manual direction or agency policy. MMRs are absolute minimum constraints and are needed for consistency of analysis between Forests.

**Timber Policy Constraints**—constraints which ensure that timber harvest meets sustained yield, culmination of mean annual increment, and dispersion requirements. Some examples of timber policy constraints are: rotation length and culmination of mean annual increment (CMAI); and requirements for timber harvest scheduling, sustained yield, harvest flow, and dispersion.

**Minimum Implementation Requirements (MIRs)**—constraints which ensure that alternatives are minimally

acceptable and implementable on the ground. Procedures for defining MIRs are specified by the Region. They are within agency control; but little discretionary control exists regarding their application at the Forest level. MIRs do not apply to benchmarks, but are applied to all alternatives.

**Forest Constraints Common To All Alternatives**—constraints which assure that alternatives can be implemented at the local level. They are based on local (rather than Regional) conditions. Forest constraints are not applied to benchmarks, but are applied to all alternatives except the constrained economically efficient (CEE) alternative. On the Modoc, none are used.

**Forest Constraints That Vary Between Alternatives**—constraints unique to individual alternatives. They are applied to meet the themes of alternatives.

The following is a discussion of modeling rules and impacts associated with the various constraints introduced above.

#### A. Technological Constraints

##### Lodgepole Thinning

Thinning in lodgepole pine is limited to 1,000 acres per decade (15,620 acres of lodgepole pine grow on two ranger districts).

RAM-PREP yield tables project thinning volume from lodgepole before mortality occurs. On this Forest, bark beetles are killing many lodgepole stands; timber is no longer available as thinning volume. A limit of 1,000 acres per decade is an estimate of thinning volume available.

This constraint was not needed in the revised model. The lower value of lodgepole pine was sufficient for limiting thinning in this species.

##### Fixed Acreages

Acres designated as wilderness, special interest areas (SIAs), or research natural areas (RNAs) are constant throughout all benchmarks and alternatives. Areas suitable for raptor or riparian management are pre-allocated and constant for all alternatives and all benchmarks meeting MMRs. These areas are allocated to prescriptions which protect and manage their special attributes.

The following are fixed acreages in FORPLAN:

Prescription	Acreage
Wilderness	70,385
Special Areas (SIAs and RNA)	14,588
Raptor Management	52,111
Riparian Area Management	9,274

#### Maximum Deer Forage

Potential deer population estimates for the Forest are based on the long-term biological capability of the land to produce optimum habitat conditions. A deer habitat capability computer program modeled optimal vegetation conditions. The model assumes other factors which lower habitat suitability (such as water, roads, and forage competition) are not a problem. After forage needs were determined, reflecting the use on the Forest by potential deer numbers, they were used as ceilings in the DEIS model for purposes of forage allocation. This function was not included in the revised model so these constraint values were unnecessary.

Deer Herd	Population	Forage (AUMs)
Interstate	13,800	16,560
Glass Mountain	9,600	15,360
Warner Mountain	12,800	19,200
Adin	9,900	13,860
<b>Total</b>	<b>46,100</b>	<b>64,980</b>

#### Recreation Demand Cut-offs

These constraints prevent valuation of RVDs and WFUDs exceeding projected demand. Limits are set for each time period for dispersed recreation and WFUDs. Ceilings also limit new recreation site construction until demand exceeds present capacity.

## B. Minimum Management Requirements

Quantitative and linear attributes of FORPLAN preclude the modeling of selected MMRs. Some are not modeled because their size and effects are small and

local, rendering them immeasurable. We assumed they would have little effect on the FORPLAN solution. Regardless of whether they are modeled, all MMRs are incorporated into the standards and guidelines of the Forest Plan and will be applied in the implementation of any alternative.

#### Suitable Timberlands

National forest lands are stratified into: (1) lands suitable for timber production; and (2) lands not suitable for timber production.

Suitable lands:

- are forested and currently producing or capable of producing industrial wood;
- are not withdrawn by Congress, the Secretary of Agriculture, or the Chief;
- are capable of timber production without irreversible damage to soils, productivity, or watershed conditions;
- are capable of meeting Regional stocking levels within 5 years after final harvest; and
- offer adequate information to project responses to timber management activities.

Timberlands producing more than 20 cubic feet per acre (> 20 timberlands) are included in one group of analysis areas for which several appropriate prescriptions are available. The prescriptions include various regeneration methods, including group selection, clear-cutting, and shelterwood methods. The last two methods may use intermediate harvests and have rotation options beginning with culmination of mean annual increment (generally 70 years). Some timber prescriptions have been modified to enhance threatened and endangered species habitat, to protect riparian areas, and to improve transitory forage production. Approximately 435,000 acres of suitable timberlands fall into the category of > 20 timberlands.

Less productive but suitable timberlands, growing < 20 cubic feet per acre (< 20 timberlands), are grouped in separate analysis areas totalling 184,000 acres and are given a limited range of prescriptions. Only one timber management prescription is used in FORPLAN, although a full range of silvicultural practices will be used on the ground. The associated yield for this FORPLAN prescription is assumed to be 5% of the existing inventory volume per decade, and is treated as a separate, non-interchangeable component of the allowable sale quantity. Actual harvest implementation is subject to the objectives of the management area, the needs of each stand, and the expectation that these lands cannot and will not be managed for full timber production.

Lands unsuitable for timber management are not provided with timber prescriptions options. Appendix O discusses timber suitability criteria.

Limiting the land base to those acres now available, and which have a reasonable chance of successful reforestation, defines the acres that are available for scheduling harvesting, reforestation, and thinning. Approximately 619,000 acres are available for sustained yields of timber.

### **Threatened and Endangered Species**

The Forest provides habitat for three threatened and endangered (T & E) species: bald eagle, peregrine falcon, and Modoc sucker. Objectives for the species are:

- to protect and improve habitat in resource management and fire suppression activities;
- to prevent the destruction or degradation of habitat considered critical for T & E species.
- to provide high and medium capability habitat as defined in habitat capability models, sufficient for recovery of T & E species.

#### **Bald Eagle**

About 52,100 acres are allocated to raptor management as habitat for bald eagle nesting and winter roosting. Of this total, 11,900 acres are > 20 timberlands and 6,800 acres are < 20 timberlands. The remaining area includes permanent rangeland, wetlands, and water. Approximately 600 acres overlap with riparian areas discussed below.

In the DEIS model, the Raptor Management Prescription provides for a continual supply of large trees in stands with open canopies. An additional 1,000 acres of wetlands are managed to maintain or enhance waterfowl habitat. Waterfowl are prey for eagles.

Areas designated for raptor management have been assigned the TU-UNS prescription in the revised model. No timber harvest is scheduled for these areas. Wetland habitat management strategies are developed without the use of FORPLAN.

The Forest provides habitat for 7 active and 14 potential nest territories, and three winter roost areas. The 14 potential nest territories meet the established level for the Modoc National Forest (RO letter 2/85) pending approval of the Pacific States Bald Eagle Recovery Plan.

#### **Peregrine Falcon**

The population recovery level established for the Modoc in September 1980 is 3 pairs. Although potential

habitat for reintroduction is known, no acres are identified in FORPLAN. This MMR is included in the Forest-wide Standards and Guidelines in the Forest Plan (Chapter 4).

#### **Modoc Sucker**

The current population of the Modoc sucker is estimated at less than 5,000 fish in drainages on the Forest. Forest objectives for the species are (1) to protect populations and habitat in the five streams designated as critical habitat; (2) to reintroduce Modoc suckers into two other drainages within their historical range; and (3) to enhance habitat in the five current and two potential streams to achieve medium to high habitat capability.

### **Viable Populations of Fish and Wildlife**

This MMR provides fish and wildlife habitat to maintain viable populations. A viable population has enough appropriately distributed reproductive individuals to ensure its continued existence.

#### **Goshawks**

The minimum number of goshawk pairs needed to maintain population viability is 73. The territory for each pair must contain at least 50 acres of habitat to provide suitable conditions for the nest stand and an alternate nest stand. In high capability habitat, 50 acres is a suitable nest grove; in medium capability habitat, 80 acres is the minimum size. An average of 65 acres per pair provides habitat for 67 pairs outside of the South Warner Wilderness area.

Distribution is provided by assigning each district a minimum number of pairs (Warner Mountain – 26, Big Valley – 21, Devil's Garden – 15, and Doublehead – 11) based on habitat capability. Distribution is not directly modeled in FORPLAN. The diversity requirement for old growth and the minimum viable population requirement for distribution of habitat overlapped the goshawk habitat requirement.

#### **Snag-Dependent Wildlife Species**

To sustain snag-dependent wildlife species on > 20 timberlands, the Forest maintains and manages an average of 1.5 snags per acre with the following specifications:

- 1.2 snags per acre 15-24 inches dbh and > 20 feet high;
- 0.3 snags per acre > 24 inches dbh and > 20 feet high.

Snag requirements are modeled in FORPLAN and also included in the Forest-wide Standards and Guidelines in the Plan (Chapter 4). Salvage and sanitation



harvests do not occur in existing stands on a regular basis. Timber yields in existing eastside pine stands are reduced to accommodate snag requirements. Stands are thinned every other decade instead of each decade.

On < 20 timberlands, the Forest provides, maintains, and manages for an average of 0.5 snags per acre, all snags at > 24 inches dbh and > 20 feet high. This is not modeled in FORPLAN; but we assumed adequate volume is available to meet this snag requirement and provide a yield equal to 5% of the existing inventory volume.

#### Wildlife Species Dependent on Dead and Down Material

To maintain habitat for wildlife species dependent on dead and down material, a minimum average of 1 down log per acre (at least 20 inches in diameter at the large end and 10 feet long or longer) is left after timber harvest operations. This is not modeled in FORPLAN but is included in Forest-wide Standards and Guidelines in the Plan (Chapter 4).

#### Other Wildlife and Fish Species

To maintain viable populations for all other fish and wildlife populations, habitat must be provided to support at least a minimum number of reproductive individuals. That habitat must be well distributed so that individuals can interact with others.

Vegetative types and seral stages were included in the model to ensure that the necessary acreage of suitable habitat is provided. See MMRs for Diversity.

#### Diversity

The following timber types and seral stages are used to measure and monitor plant and animal community diversity:

Timber Types:	
Eastside pine Mixed Conifer Red Fir Hardwoods	
Seral Stages (> 20 timberlands)	
1	Grass/forb/seedling stage (plantation)
2	Shrub/sapling/pole stage, 1-11" dbh
3a <sup>1</sup>	Small/medium trees, 11-24" dbh with < 40% canopy cover
3bc	Small/medium trees, 11-24" dbh with > 40% canopy cover
4a <sup>1,2</sup>	Large trees, > 24" dbh with < 40% canopy cover
4bc	Large trees, > 24" dbh with > 40% canopy cover
4bc-older <sup>2</sup>	The specific component of the large tree stage that is older and overmature with > 24" dbh and a canopy cover > 40%. The stands should show evidence of decadence.
<sup>1</sup> After 20 years this seral stage is not monitored.	
<sup>2</sup> 4a and 4bc-older are combined as 5c in revised model.	
Seral Stages (< 20 timberlands):	
1	Grass/forb/seedling stage (plantations)
2	Shrub/sapling/pole stage, 1-11" dbh
3a	Small/medium trees, 11-24" dbh with < 40% canopy cover
4a	Large trees, > 24" dbh with < 40% canopy cover
4a-older	The specific component of the large tree stage that is older and overmature with > 24" dbh and a canopy cover < 40%. The stands should show evidence of decadence.

Hardwoods (black oak and aspen) are not modeled in FORPLAN but direction for their management are included in the Forest-wide Standards and Guidelines in the Plan (Chapter 4).

Five percent of each timber type/seral stage combination is maintained. The following acres are required for each seral stage within the respective timber type:

	> 20 Cu.Ft.	< 20 Cu.Ft.
Eastside Pine	13,400 ac	7,300 ac
Mixed Conifer	6,900 ac	1,800 ac
Red Fir	700 ac	—

If a timber type/seral stage combination is below 5%, the required amounts are met within the planning horizon.

Distribution of timber types and seral stages provides an appropriate distribution of habitat to support viable populations of all other wildlife and fish species not specifically discussed in MMRs.

Management of old growth is a significant issue on the Forest. In accordance with diversity requirements, a minimum of 5% old growth in each forest type must be provided within each management area. During the original data base development period, selected capability areas displaying old-growth characteristics were identified. For the DEIS model, acres of old growth on the Forest were determined by a query of the Land Management Planning data base to identify and sort these capability areas by forest type and management area. Harvest of existing old growth was permitted in management areas determined to be in excess of the 5% requirement. As a consequence, FORPLAN results showed a decline in the total level of old growth on the Forest for the first four decades of the planning horizon. The seral stage requirement of 5% old growth was met by the fifth decade in each management area.

A more conservative estimate of existing old-growth acreage was used as a starting point in the revised model. An average old-growth percentage for each strata type was estimated by examination of sample plot data. Application of this percentage to the corresponding Forest-wide acreages indicated that the Forest as a whole was deficit in the old-growth seral stage component for east-

side pine. (Acres of old growth computed in this manner resulted in the following estimates: 29,850 acres mixed conifer, 42,000 acres eastside pine, and 4,450 acres red fir). Consequently, the revised model was structured to retain the existing old-growth component in eastside pine and reserve additional acres of this species as they grew into the older seral stages. Modeled in this way, the old-growth component of eastside pine is depicted at a starting level of 2% and remains constant until the fifth decade when additional reserves meet the seral stage criteria and the 5% requirement is met Forestwide.

The target number of acres for each forest type was calculated as the sum of the required percentages for each management area exclusive of the wilderness. In the revised model, the target acreage for the old-growth requirement was assigned to the TU-UNS FORPLAN prescription and reserved from timber management. All timberlands of the appropriate strata type were considered eligible for purposes of meeting diversity requirements. Thus, old-growth requirements were met in part by regulated timberlands, raptor management areas, marten habitat provision, and non-CAS timberland.

#### Riparian Areas

Riparian areas are managed under the principles of multiple-use sustained yield while emphasizing protection of riparian-dependent resources. As a minimum, riparian areas are (a) areas within 100 feet horizontal distance from the edge of standing bodies of water; (b) areas a horizontal distance of 100 feet on each side of perennial stream channels; and (c) all wetlands.

No practices or prescriptions are applied to riparian areas that cause detrimental changes to water quality, aquatic flora and fauna, hydrophytic vegetation, and riparian-dependent wildlife species. On suitable timberlands, timber management is permitted, but timber yields are treated as a separate, non-interchangeable component of the allowable sale quantity. On other lands, removing or altering vegetation is restricted to no more than a 30% reduction in the potential ground cover that would naturally occur.

The Forest has 19,000 acres of riparian areas. Of these 9,300 acres are modeled in FORPLAN and assigned to the Riparian Area prescription. The remaining 9,700 acres are other riparian areas such as springs, seeps, meadows and wetlands where Forest-wide Standards and Guidelines direct management.

## Water and Soil Productivity

To conserve soil and water resources and prevent significant or permanent impairment of soil productivity, we use established cumulative watershed thresholds to limit disturbance in individual watersheds. Threshold is the level of disturbance (i.e., compaction of the watershed soils and removal of vegetation) beyond which irreversible cumulative watershed impacts may occur (see Analysis of the Management Situation for Water).

Cumulative watershed thresholds (in% of equivalent roaded acres) from 42 watersheds are used to proportionately weight thresholds for each management area. Thresholds are potentially limiting on six management areas shown in Table B-9. After adjusting the thresholds for fixed disturbances (e.g., roads), equivalent roaded acres are calculated for each management area. The constraint affects only timberlands.

**Table B-9. Cumulative Watershed Thresholds.**

Management Area	Equivalent Roaded Acres				Percent of Timberlands			
	1st Dec	2nd Dec	3rd Dec	4th Dec	1st Dec	2nd Dec	3rd Dec	4th Dec
31	984	948	912	894 <sup>1</sup>	5.8	5.7	5.4	5.3
32		2,991				8.2		
33		4,444				6.6		
34		2,012				7.1		
36		1,831				8.4		
44		3,349				7.7		

<sup>1</sup> These are decadal constraints which become more binding over time due to major road construction.

## C. Timber Policy Constraints

### Rotation Length and Culmination of Mean Annual Increment

Generally, all even-aged stands scheduled for harvest reach culmination of mean annual increment (CMAI) in utilized cubic feet of merchantable size trees (13-inch dbh and 50 feet high). Regenerated timber stands are regarded as generally culminated in growth at the age corresponding to 95% of the apparent culmination cal-

culated from the managed yield projections used in FORPLAN.

Minimum ages are established for merchantability, CMAI, and 95% of CMAI based on RAMPREP yield tables for the major commercial timber types (Table B-10).

The rotations included in the FORPLAN matrix represent the range from CMAI to the end of the planning horizon. This means stands have all possible rotation ages from 70 years (CMAI) and greater.

**Table B-10. Rotation Lengths.**

	Ages in Periods (10 years)		
	Merchantable	CMAI	95% CMAI
<b>Eastside pine (Site 4)</b>			
without thinning	7	7	6
with thinning	7	11	9
<b>Mixed conifer (Site 4)</b>			
without thinning	7	7	5
with thinning	7	13	9
<b>Red fir (Site 3)</b>			
without thinning	6	12	8
with thinning	6	13	9
<b>Lodgepole pine (Site 4)</b>			
without thinning	7	4	4
with thinning	7	11	9

### **Sustained Yield Requirements**

Forests will ensure a perpetual timber harvest at the long-term sustained yield level by the end of the planning horizon. That portion of the Forest managed under even-aged regimes should be generally regulated.

To meet this requirement, the sustained yield link and the ending inventory constraint are used in FORPLAN. The sustained yield link ensures that the allowable sale quantity is at or below the long-term sustained yield of timber in the last decade of the planning horizon. The ending inventory constraint (the perpetual timber harvest constraint) ensures the Forest contains as much timber volume inventory in the last period as the Forest would have on the average. Both constraints are based on the FORPLAN prescriptions selected in the run.

### **Harvest Flow Requirements**

A harvest flow constraint is included to maintain community stability. It prevents wide fluctuations of timber outputs from one decade to another. It is applied only in alternatives that depart from nondeclining, even-flow policy. Timber output after the first decade is not allowed to fluctuate more than 15% from the previous decade.

### **Dispersion**

The intent of the dispersion rule is to prevent regeneration units which are still openings from being adjacent to each other. Dispersion also strives to leave logical harvest units between openings for future management.

An opening created by timber harvesting using even-aged harvesting methods will no longer be considered an opening when the trees (determined by forest type and site class) are 4.5 feet high and are free to grow. Based on the Forest's average site class, in 10 years the timber dispersion standards are met. VQOs are met in an additional five years. Section 4.B. of this appendix elaborates on the discussion. For each management area in FORPLAN, no more than 16% of the suitable timberlands regenerated with even-aged management will be disturbed in any one decade.

For dispersion, and to meet the 90% growth goal by 2030, a minimum of 10,000 acres per decade of poorly stocked stands must be harvested during the 1st and 2nd decades.

## **D. Minimum Implementation Requirements**

Because of quantitative and linear assumptions of the Forest model, not all MIRs are included. Some are not modeled because their size and effects are small and local, rendering them immeasurable. We assumed they would have little effect on the FORPLAN solution. Regardless of whether they are modeled, all MIRs are incorporated into the standards and guidelines of the Forest Plan and will be applied in the implementation of any alternative.

### **Sensitive Plants**

Sensitive plant species are managed to ensure that they are not threatened or endangered by Forest activities.

This MIR is not modeled in FORPLAN because acreages are small (< 500 acres). It is included in the Forest-wide Standards and Guidelines in the Forest Plan (Chapter 4).

### **Visual Resource**

Requirements are placed on lands viewed from officially designated California State and County scenic highways, as identified in the 1970 State Scenic Highway Master Plan. This is achieved by maintaining foregrounds

and middlegrounds of the scenic corridors in partial retention visual quality.

The highways involved on the Modoc include approximately 50 miles of State Highways 299 and 139. The constraint affects 33,500 acres of > 20 cubic feet timberlands and affects a total of 140,000 acres.

To model this MIR in FORPLAN, the effective alteration (EFFALT) constraint is used to limit the amount of regeneration harvest to a cumulative impact of 15% at one time. This cumulative impact uses a decay function which models the amount of visual disturbance associated with regeneration harvesting over time. EFFALT is described in section 4B of this appendix.

### **Operational Constraint**

The limit reflects maximum technical and operational capability to clearcut and reforest. A planting constraint of 3,600 acres per year was included in the revised model.

## **E. Forest Constraints Common to all Alternatives**

Beyond constraints needed to meet MMRs, MIRs, and timber policies, no other constraints are common to all alternatives.

## 4. The Analysis Process Using FORPLAN

Table B-11 illustrates the five phases of the analysis process. FORPLAN runs are grouped by their phases in the analysis process:

- Base analysis
- Benchmarks
- Sensitivity analysis
- Alternatives not considered in detail
- Alternatives considered in detail

Each phase, its purpose, and modelling specifications used for each run within that phase are described below.

**Table B-11. Five Phases of the FORPLAN Analysis Process.**

1. Base Analysis	FLW, MMR, CEE
2. Benchmarks	MLV, FLW, MMR, MKV, TBR, TBD, RNG H20, GAM, MMU
3. Sensitivity Analysis	SNG, DSP, VPD, TES, PSK, RIP, WSD, NDY, VQO
4. Alternatives not Considered in Detail	CEE, LBU, PRO, RPA, MKT, TMB, SLV, IND1, RSP, MIX, PFD
5. Alternatives Considered in Detail	PRF, CUR, RPD, IND, RBU, AMN

### A. Base Analysis

Three FORPLAN runs are the foundation of the analysis process. These base runs incrementally add management objectives required in all Forest alternatives and thereby determine the opportunity costs of those objectives (Table B-12). The runs are FLW (Unconstrained with Flow and Long-Term Sustained Yield Constraints), MMR (Minimum Management Requirements), and CEE (Constrained Economic Efficiency). FLW depicts the most economically efficient Forest management without consideration of minimum management requirements. MMR complies with minimum management and timber policy requirements. CEE is similar to MMR, but also complies with minimum implementation requirements. Some of these runs are repeated in the discussion of other phases of the analysis because they play roles in several aspects of the process.



**Table B-12. Summary of the Base Analysis Runs.**

Run Name			
Description	FLW	MMR	CEE
Role in Analysis	Unconstrained Economic Efficiency	Add to FLW run Minimum Management and Timber Policy Requirements	Add to MMR run Minimum Implementation Requirements
Timber Land Base	All suitable lands	All suitable lands	All suitable lands
<b>Modeling Specifications</b>			
Objective Function	Maximize PNV With Assigned Values	Maximize PNV With Assigned Values	Maximize PNV With Assigned Values
<b>Timber Policy Constraints</b>			
CMAI		X	X
Harvest Flow	X		
NDY		X	X
Sustained Yield	X	X	X
Dispersion		X	X
<b>MMRs</b>			
T & E Species		X	X
Snags		X	X
Diversity		X	X
Riparian Areas		X	X
Water & Soil		X	X
<b>MIRs</b>			
Scenic Highways			X

## B. Benchmarks

Benchmarks display physical, biological, and technical capabilities. They are not limited by Forest Service policy or budget, discretionary constraints, spatial feasibility, or program and staffing requirements. They are physically and technically, but not necessarily operationally, implementable.

Benchmarks are used as reference points for comparing alternatives. They explore resource potentials and the decision space within which change can or must occur. Chapter 2 carries a complete discussion of benchmarks and results.

### (MLV) Minimum Level of Management (Backgrounds)

#### Description and Purpose:

MLV estimates outputs and costs of the backgrounds or residuals. MLV is an accounting analysis which determines background outputs and fixed costs associated with maintaining the Modoc. It is used as a base to compare other benchmarks and alternatives. It is not stewardship or custodial management. Because MLV is only an accounting tool, the phase-in period that would be needed if minimum level were actually implemented is ignored.

#### Specifications:

- |   |                            |   |
|---|----------------------------|---|
| 1 | Objective Function:        | Minimize cost for 12 decades.   |
| 2 | Technological Constraints: | Maximum deer forage is used.  |
| 3 | MMR Constraints:           | They are not used.  |
| 4 | Timber Policy Constraints: | They are not used.  |
| 5 | MIR Constraints:           | They are not used.  |
| 6 | Output Constraints:        | Only background or incidental outputs are allowed.<br>Timber, range and developed recreation outputs are set or valued at zero. |

#### Assumptions:

- 1 Vegetation follows natural succession. Habitat capability for fish and wildlife management indicator species (MIS) requiring late seral stage habitat increase over time. Habitat capability for MIS requiring early seral stage habitat decrease over time.
- 2 Facilities supporting ownership activities are maintained. All other facilities deteriorate.  
  
State and County roads remain open, but most Forest roads are closed.  
  
All public and private sector recreation facilities on the Forest are closed with no provisions for maintaining them.
- 3 The fire organization is reduced. The Forest uses the actual FY 82 fire budget to determine the percentage of detection (P03) and initial attack (P04) dollars. These costs are included in the total cost for this management level.
- 4 Dispersed recreation use that cannot be discouraged or controlled occurs.  
  
Dispersed recreation use management is limited to controlling excessive soil and water damage.  
  
The overall dispersed recreation use, including incidental use of wilderness, is approximately 45% of the 1982 level.

RVDs cost 3 cents each.

- 5 Minimal time is allotted to FERC coordination.
- 6 Cultural resources are managed primarily for protection (especially in conjunction with mineral management or unauthorized recreation activities).

#### **(FLW) Unconstrained MAX PNV Assigned with FLOW/LTSY Constraints**

##### **Description and Purpose:**

FLW provides the economically efficient level of valued resources with the least constraints. Without MMRs, FLW estimates the mix of resource uses and a schedule of outputs and costs that maximize PNV. It forms a base run for evaluating MMRs. The appropriateness of harvest flow constraints is also tested.

##### **Specifications:**

- 1 Objective Function: Maximize PNV for 12 decades.
- 2 Technological Constraints: All apply.
- 3 MMR Constraints: All suitable timberlands are included. Other MMRs do not apply.
- 4 Timber Policy Constraints: Minimum rotation is age at merchantability; sustained yield and harvest flow requirements are used; the dispersion constraint is not used.
- 5 MIR Constraints: They are not used.
- 6 Economic Assumptions: Use assigned values, price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.

#### **(MMR) MAX PNV Assigned with MMR-NDY-CMAI**

##### **Description and Purpose:**

MMR shows the opportunity cost of MMRs taken collectively, and forms the base for evaluating constraints. This benchmark estimates the mix of resource uses and a schedule of outputs and costs which will maximize PNV of those outputs that are assigned a monetary value. Dollar values are based on actual or simulated market prices (willingness to pay) for timber, recreation, range, water, fish and wildlife.

##### **Specifications:**

- 1 Objective Function: Maximize PNV for 12 decades.
- 2 Technological Constraints: All apply.
- 3 MMR Constraints: All apply.
- 4 Timber Policy Constraints: Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of culmination of mean annual increment (CMAI). Sustained yield, non-declining yield (NDY), and dispersion requirements apply.
- 5 MIR Constraints: They are not used.

6	Economic Assumptions:	Use assigned values, price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.
<b>(MKV) MAX PNV Market Values Only with MMR-NDY-CMAI</b>		
<b>Description and Purpose:</b>  MKV estimates the mix of resource uses and a schedule of outputs and costs which will maximize the PNV of those outputs that have an established market price. Dollar values are based on actual or simulated market prices (willingness to pay) for timber, range, and developed recreation. The same dollar values are used for market outputs as in other runs. The values are removed for non-market resources.		
<b>Specifications:</b>  1    Objective Function                      Maximize PNV for 12 decades. Only market values for timber, range, and developed recreation are used.  2    Other Specifications:                      Same as for MMR run.  3    Although the objective function is to maximize PNV for market values, the FORPLAN report includes all assigned values.		
<b>(TBR) MAX Timber for 1 DECADE with NDY-CMAI-MMR</b>		
<b>Description and Purpose:</b>  TBR defines the maximum timber output possible for the 1st decade under current policy and MMRs.		
<b>Specifications:</b>  1    Objective Function:                      Maximize timber output for the 1st decade. A rollover is required to determine the most economically efficient allocation and schedule which corresponds to the harvest levels for each of 5 decades in this run; maximize PNV for 12 decades.  2    Technological Constraints:                      All apply. 3    MMR Constraints:                      All apply. 4    Timber Policy Constraints:                      Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply. By using the non-declining yield constraint, the 1st decade timber output is maintained for 12 decades.  5    MIR Constraints:                      They are not used.  6    Economic Assumptions:                      Use assigned values with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.		

**(TBD) MAX Timber for 1 Decade with CMAI-MMR Departure**

**Description and Purpose:**

Define the maximum timber output possible for the 1st decade under current policy and MMRs, but without non-declining yield.

**Specifications:**

- |   |                                   |  |
|---|-----------------------------------|--|
| 1 | <b>Objective Function:</b>        | Maximize timber output for the 1st decade. A rollover is required to determine the most economically efficient allocation and schedule corresponding to timber harvest levels; maximize PNV for 12 decades.  |
| 2 | <b>Technological Constraints:</b> | All apply.   |
| 3 | <b>MMR Constraints:</b>           | All apply.   |
| 4 | <b>Timber Policy Constraints:</b> | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield and dispersion requirements apply. The non-decline constraint is removed for two decades to allow for an increase in timber in the 1st decade, followed by a drop in the 2nd decade. Non-declining yield is applied after the 2nd decade. |
| 5 | <b>MIR Constraints:</b>           | They are not used.   |
| 6 | <b>Economic Assumptions:</b>      | Use assigned values with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.   |

**(RNG) MAX Range – Grazing for 5 Decades**

**Description and Purpose:**

RNG defines the maximum capability of the Forest to provide commercial livestock grazing over the RPA planning horizon, subject to MMRs.

**Specifications:**

- |   |                                   |   |
|---|-----------------------------------|---|
| 1 | <b>Objective Function:</b>        | Maximize livestock forage for 5 decades. A rollover is required to determine the most economically efficient allocation and schedule which corresponds to the livestock forage levels for each of 5 decades in this run; maximize PNV for 12 decades. |
| 2 | <b>Technological Constraints:</b> | All apply.  |
| 3 | <b>MMR Constraints:</b>           | All apply.  |
| 4 | <b>Timber Policy Constraints:</b> | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield, non-declining yield, and dispersion requirements apply.   |
| 5 | <b>MIR Constraints:</b>           | They are not used.  |
| 6 | <b>Economic Assumptions:</b>      | Use assigned values with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.  |

### (H2O) MAX Water Yield for 5 Decades

#### Description and Purpose:

H2O defines the maximum capability of the Forest to provide water over the RPA planning horizon subject to minimum management requirements.

#### Specifications:

- |   |                                   |   |
|---|-----------------------------------|---|
| 1 | <b>Objective Function:</b>        | Maximize water yield for 5 decades. A rollover is required to determine the most economically efficient allocation and schedule corresponding to the water yields for each of the 5 decades in this run; maximize PNV for 12 decades. |
| 2 | <b>Technological Constraints:</b> | All apply.  |
| 3 | <b>MMR Constraints:</b>           | All apply.  |
| 4 | <b>Timber Policy Constraints:</b> | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield, non-declining yield, and dispersion requirements apply.   |
| 5 | <b>MIR Constraints:</b>           | They are not used.  |
| 6 | <b>Economic Assumptions:</b>      | Use assigned values with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.  |

### (GAM) MAX Deer Forage for 5 Decades

#### Description and Purpose:

GAM defines the maximum capability of the Forest to provide deer forage over the RPA planning horizon, subject to minimum management requirements.

#### Specifications:

- |   |                                   |   |
|---|-----------------------------------|---|
| 1 | <b>Objective Function:</b>        | Maximize deer forage for 5 decades. A rollover is required to determine the most economically efficient allocation and schedule corresponding to the deer forage levels for each of the 5 decades in this run; maximize PNV for 12 decades. |
| 2 | <b>Technological Constraints:</b> | All apply.  |
| 3 | <b>MMR Constraints:</b>           | All apply.  |
| 4 | <b>Timber Policy Constraints:</b> | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield, non-declining yield, and dispersion requirements apply.   |
| 5 | <b>MIR Constraints:</b>           | They are not used.  |
| 6 | <b>Economic Assumptions:</b>      | Use assigned values with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.  |

**(MMU) Maximize PNV Assigned with MMR-NDY-CMAI Forestwide  
and in the Big Valley Federal Sustained-Yield Unit**

**Description and Purpose:**

MMU is the same as MMR, but non-declining sustained yield is imposed on both the Forest as a whole and on the Big Valley Federal Sustained-Yield Unit (BVFSYU).

**Specifications:**

1	Objective Function:	Maximize PNV with assigned values for 12 decades.
2	Technological Constraints:	All apply.
3	MMR Constraints:	All apply.
4	Timber Policy Constraints:	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply Forestwide and to the BVFSYU.
5	MIR Constraints:	They are not used.
6	Economic Assumptions:	Use assigned values, price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.

### C. Sensitivity Analysis

Eleven FORPLAN runs were made to examine the tradeoffs caused by each MMR and MIR. In each run a single requirement was removed. When compared with the run involving the full set of requirements, the difference in present net value (PNV) reflects the opportunity cost of achieving that management requirement. Tradeoffs are revealed as changes in various commodity outputs and in PNV.

A FORPLAN run (MMR) meeting MMRs served as the basis for six runs. The SNG run shows the cost of providing snags for viable populations of snag-dependent wildlife species. DSP shows the cost of dispersing timber regeneration units. VPD shows the cost of providing habitat diversity for wildlife populations as approximated by habitat for old-growth dependent species. TES shows the cost of providing habitat for Threatened and Endangered species. RIP shows the cost of protecting perennial stream riparian areas. WSD shows the cost of protecting water and soils.

A FORPLAN run (CEE) meeting both MMRs and MIRs served as the basis for evaluating the cost of managing State scenic highways at a visual quality objective of partial retention.

For a detailed presentation of the marginal costs for each major constraint on PNV, refer to Chapter 2, Section E, Present Net Value: Marginal Cost of Constraints.

Snags, dispersion, and old-growth habitat are the most significant constraints affecting PNV. The snag constraint accounts for 33% of the change in PNV. The old-growth habitat constraint has the next most significant impact, accounting for 14% of the difference in PNV. Releasing the dispersion constraint changes PNV by 12%. The significance of these three constraints on PNV verifies the understocked conditions of many of our Forest's timber stands.

Of less significance are the constraints for threatened and endangered species (5%), protection of riparian areas (<1%), and watershed protection (<1%). The effect of releasing the non-declining yield constraint does not change PNV. Protecting visual quality along scenic highways is also insignificant (<1%) to PNV.

### D. Alternatives Not Considered in Detail

Based on the benchmark results and the Forest's planning issues (Appendix A), alternatives are defined, formulated and run. An alternative is eliminated from further study because it does not respond well to the issues, or because its results are similar to another alternative considered in detail (Section E). For a more complete display of outputs and costs for these alternatives, refer to Chapter 2, Alternatives Considered But Eliminated From Detailed Study.



**(CEE) Constrained Economic Efficiency**

**Description and Purpose:**

This alternative is the most economically efficient mix of goods and services the Forest can provide while meeting MMRs and MIRs. It shows the collective opportunity cost of MIRs and is a base run for evaluating constraints and alternatives.

**Specifications:**

- |   |                            |   |
|---|----------------------------|---|
| 1 | Objective Function:        | Maximize PNV for 12 periods.  |
| 2 | Technological Constraints: | All apply.  |
| 3 | MMR Constraints:           | All apply.  |
| 4 | Timber Policy Constraints: | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield, non-declining yield, and dispersion requirements apply. |
| 5 | MIR Constraints:           | All apply.  |
| 6 | Economic Assumptions:      | Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.   |

**(LBU) Low Budget**

**Description and Purpose**

LBU estimates future outputs and services if the 1982 budget were reduced by 25%.

**Specifications:**

- |   |  |   |
|---|--|---|
| 1 | Objective Function:                    | Maximize PNV for 12 decades.  |
| 2 | Technological Constraints:             | All apply.  |
| 3 | MMR Constraints:                       | All apply.  |
| 4 | Timber Policy Constraints:             | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield, non-declining yield, and dispersion requirements apply.   |
| 5 | MIR Constraints:                       | All apply.  |
| 6 | Economic Assumptions:                  | Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs. To obtain a feasible solution, the model is solved without the trends. The results, however, are presented with trends to allow for real cost increases to timber-related activities. |
| 7 | Constraints Unique to the Alternative: | Budget is constrained for five decades to \$7.2 million per year, 25% less than the 1982 budget.  |

<b>(PRO) High Productivity</b>	
<b>Description and Purpose:</b>  PRO determines the effects of meeting a high timber target. It produces other market outputs at the highest possible level while meeting the assigned timber target. Non-market outputs are produced only at economically efficient levels, consistent with the production of the market resources.	
<b>Specifications:</b>	
1 Objective Function:	Maximize PNV for 12 decades.
2 Technological Constraints:	All apply.
3 MMR Constraints:	Only threatened and endangered species, and soil and water are protected.
4 Timber Policy Constraints:	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield applies. Non-declining yield is applied after the 6th decade. The harvest flow constraint is used in decades 1-6 in order to meet a timber target of 95 MMBF in the 2nd decade. The dispersion requirement is not used.
5 MIR Constraints:	They are not used.
6 Economic Assumptions:	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.
7 Constraints Unique To The Alternative:	The timber target for this alternative is to meet or exceed 95 MMBF by the 2nd decade and 85 MMBF by the 5th decade. Given the timber production levels in TBR and TBD benchmarks, the Forest cannot meet 95 MMBF without modifying the specifications. All MMRs, except those meeting statutory requirements (i.e., threatened and endangered species and soil and water productivity), are released. MIRs also are not used.
<b>(RPA) RPA Base Sale Schedule</b>	
<b>Description and Purpose:</b>  RPA alternative attempts to respond to targets from the 1980 RPA Program by providing commodity and amenity outputs established for the Modoc. Emphasis is placed on meeting range and timber targets set by the Program; completing cultural resource inventories by 1995; maintaining recommended VQOs; managing for semi-primitive recreation; and improving habitat for RPA wildlife and fish species. RPA directs the Forest to harvest 75 MMBF in the 1st decade and 80 MMBF in the 5th. Given the results of TBR, the Forest cannot meet 75 MMBF in the 1st decade without a departure. RPA is run to develop a base sale schedule for a departure alternative, RPD.	
<b>Specifications:</b>	
1 Objective Function:	Maximize PNV for 12 periods.
2 Technological Constraints:	All apply.

3	<b>MMR Constraints:</b>	All apply.
4	<b>Timber Policy Constraints:</b>	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply.
5	<b>MIR Constraints:</b>	All apply.
6	<b>Economic Assumptions:</b>	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.
7	<b>Constraints Unique to the Alternative:</b>	In conformance with the Big Valley Federal Sustained-Yield Unit policy, timber harvest on the Unit must meet or exceed 11 MMBF in the 1st decade under non-declining yield. To meet RPA goals, range production must meet or exceed 117 MAUMs in the 1st decade and 124 MAUMs in the 5th decade. To maintain recommended VQOs and semi-primitive experiences, visual quality and semi-primitive recreation are managed at medium levels (Appendix Q). Visual retention or semi-primitive non-motorized prescriptions are used on 33,000 acres of > 20 lands. Partial retention VQO constrains 110,000 acres of > 20 lands. Because of RPA emphasis on wildlife habitat improvements, wetlands are managed at a high level; 8,500 acres are developed and maintained.

**(MKT) High Market Emphasis**

**Description and Purpose:**

MKT emphasizes high output levels of market resources — timber, range, and developed recreation — with non-market outputs at economically efficient levels.

**Specifications:**

1	<b>Objective Function:</b>	Maximize PNV for 12 decades.
2	<b>Technological Constraints:</b>	All apply.
3	<b>MMR Constraints:</b>	All apply.
4	<b>Timber Policy Constraints:</b>	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield and dispersion requirements apply. Non-declining yield is applied after the 2nd decade.
5	<b>MIR Constraints:</b>	All apply.
6	<b>Economic Assumptions:</b>	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.

<p>7 Constraints Unique to the Alternative:</p>	<p>To ensure spatial feasibility during timber sale layout, timber harvest is limited by strata to a maximum of 15% disturbance for each decade. To meet a timber goal of 70 MMBF in the 1st decade, harvest is allowed to decline in the 2nd decade. The timber target to meet 80 MMBF in the 5th decade is dropped. Meet or exceed 131,600 AUMs for five decades to help support local livestock industries.</p>														
<p align="center"><b>(TMB) Timber Emphasis</b></p>															
<p><b>Description and Purpose:</b></p> <p>TMB emphasizes a moderate timber harvest level using only intensive regeneration methods. It produces the highest yields possible on the acreage treated. Production of other resources in conjunction with timber is at low levels commensurate with a timber-oriented theme.</p> <p><b>Specifications:</b></p> <table border="0"> <tr> <td>1 Objective Function:</td><td>Maximize PNV for 12 periods.</td></tr> <tr> <td>2 Technological Constraints:</td><td>All apply.</td></tr> <tr> <td>3 MMR Constraints:</td><td>All apply.</td></tr> <tr> <td>4 Timber Policy Constraints:</td><td>Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply.</td></tr> <tr> <td>5 MIR Constraints:</td><td>All apply.</td></tr> <tr> <td>6 Economic Assumptions:</td><td>Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.</td></tr> <tr> <td>7 Constraints Unique to the Alternative:</td><td>Meet or exceed the 1982 timber output of 50 MMBF per year in the 1st decade. Yields for the BVFSYU must meet or exceed 11 MMBF per year with non-declining yield for the planning horizon. Commercial thinning in P4G is limited to 13,000 acres in the first and 2nd decades to facilitate operational feasibility. To emphasize full yield timber and reduce risk of regeneration failure, the timber-forage prescription is limited to management areas (MAs) 53, 63, and 64. Harvest under this prescription is limited to 2,500 acres per decade for 12 decades. Group selection harvest is not allowed due to an emphasis on full timber yield prescriptions. To ensure spatial feasibility during timber sale layout, timber harvest is limited by strata to a maximum of 15% disturbance each decade. Because timber production is emphasized, visual quality and semi-primitive recreation are managed at low levels (Appendix Q). Visual retention is assigned to 14,000 acres of &gt; 20 lands; and 106,000 acres of &gt; 20 lands are managed for partial retention or semi-primitive motorized recreation. In keeping with the theme of this alternative, wetlands are managed at a low level; 6,100 acres are developed and maintained.</td></tr> </table>		1 Objective Function:	Maximize PNV for 12 periods.	2 Technological Constraints:	All apply.	3 MMR Constraints:	All apply.	4 Timber Policy Constraints:	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply.	5 MIR Constraints:	All apply.	6 Economic Assumptions:	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.	7 Constraints Unique to the Alternative:	Meet or exceed the 1982 timber output of 50 MMBF per year in the 1st decade. Yields for the BVFSYU must meet or exceed 11 MMBF per year with non-declining yield for the planning horizon. Commercial thinning in P4G is limited to 13,000 acres in the first and 2nd decades to facilitate operational feasibility. To emphasize full yield timber and reduce risk of regeneration failure, the timber-forage prescription is limited to management areas (MAs) 53, 63, and 64. Harvest under this prescription is limited to 2,500 acres per decade for 12 decades. Group selection harvest is not allowed due to an emphasis on full timber yield prescriptions. To ensure spatial feasibility during timber sale layout, timber harvest is limited by strata to a maximum of 15% disturbance each decade. Because timber production is emphasized, visual quality and semi-primitive recreation are managed at low levels (Appendix Q). Visual retention is assigned to 14,000 acres of > 20 lands; and 106,000 acres of > 20 lands are managed for partial retention or semi-primitive motorized recreation. In keeping with the theme of this alternative, wetlands are managed at a low level; 6,100 acres are developed and maintained.
1 Objective Function:	Maximize PNV for 12 periods.														
2 Technological Constraints:	All apply.														
3 MMR Constraints:	All apply.														
4 Timber Policy Constraints:	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply.														
5 MIR Constraints:	All apply.														
6 Economic Assumptions:	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.														
7 Constraints Unique to the Alternative:	Meet or exceed the 1982 timber output of 50 MMBF per year in the 1st decade. Yields for the BVFSYU must meet or exceed 11 MMBF per year with non-declining yield for the planning horizon. Commercial thinning in P4G is limited to 13,000 acres in the first and 2nd decades to facilitate operational feasibility. To emphasize full yield timber and reduce risk of regeneration failure, the timber-forage prescription is limited to management areas (MAs) 53, 63, and 64. Harvest under this prescription is limited to 2,500 acres per decade for 12 decades. Group selection harvest is not allowed due to an emphasis on full timber yield prescriptions. To ensure spatial feasibility during timber sale layout, timber harvest is limited by strata to a maximum of 15% disturbance each decade. Because timber production is emphasized, visual quality and semi-primitive recreation are managed at low levels (Appendix Q). Visual retention is assigned to 14,000 acres of > 20 lands; and 106,000 acres of > 20 lands are managed for partial retention or semi-primitive motorized recreation. In keeping with the theme of this alternative, wetlands are managed at a low level; 6,100 acres are developed and maintained.														

**(SLV) Silvicultural**

**Description and Purpose:**

SLV implements highly intensive silvicultural systems, emphasizing thinning. As under TMB, production of other resources in conjunction with timber are at low levels.

**Specifications:**

- |   |   |  |
|---|---|--|
| 1 | <b>Objective Function:</b>                    | Maximize PNV for 12 periods.   |
| 2 | <b>Technological Constraints:</b>             | All apply.   |
| 3 | <b>MMR Constraints:</b>                       | All apply.   |
| 4 | <b>Timber Policy Constraints:</b>             | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield, non-declining yield, and dispersion requirements apply.  |
| 5 | <b>MIR Constraints:</b>                       | All apply.   |
| 6 | <b>Economic Assumptions:</b>                  | Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.  |
| 7 | <b>Constraints Unique to the Alternative:</b> | As in TMB, SLV emphasizes full yield timber prescriptions and lowering regeneration failure. The timber-forage prescription is limited to MAs 53, 63, and 64. Harvest under this prescription is limited to 2,500 acres per decade for 12 decades.<br>Thin 3G stands to promote growth.<br>Because thinning is emphasized, additional thinning outside of FORPLAN is added to the costs and outputs generated.<br>To ensure spatial feasibility during timber sale layout, timber harvest is limited by strata to a maximum of 15% disturbance each decade.<br>Because timber production is emphasized, visual quality and semi-primitive recreation are managed at low levels (Appendix Q). Visual retention is assigned to 14,000 acres of >20 lands; and 106,000 acres of >20 lands are managed for partial retention or semi-primitive motorized recreation.<br>In keeping with the theme of the alternative, wetlands are managed at a low level; 6,100 acres are developed and maintained. |

**(IND1) High Timber Industry**

**Description and Purpose:**

IND1 emphasizes high production of marketable timber. Like TMB and SLV, other resources are managed at low levels compatible with timber production.

**Specifications:**

- |   |                                   |                              |
|---|-----------------------------------|------------------------------|
| 1 | <b>Objective Function:</b>        | Maximize PNV for 12 periods. |
| 2 | <b>Technological Constraints:</b> | All apply.                   |
| 3 | <b>MMR Constraints:</b>           | All apply.                   |

4	<b>Timber Policy Constraints:</b>	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply.
5	<b>MIR Constraints:</b>	All apply.
6	<b>Economic Assumptions:</b>	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.
7	<b>Constraints Unique to the Alternative:</b>	At least 40% of the timber harvest must come from eastside and lodgepole pine 1) to minimize reductions from the base year sale offering, and 2) to provide marketable timber. Because timber production is emphasized, meet or exceed the highest volume possible with a species mix of at least 40% pine. Meet or exceed 11 MMBF on the BVFSYU with non-declining yield, in compliance with the BVFSYU policy. To ensure spatial feasibility during timber sale layout, timber harvest is limited by strata to a maximum of 15% disturbance each decade. Because timber production is emphasized, visual quality and semi-primitive recreation are managed at low levels (Appendix Q). Visual retention is assigned to 14,000 acres of > 20 lands; and 106,000 acres of > 20 lands are managed for partial retention or semi-primitive motorized recreation. In keeping with the theme of the alternative, wetlands are managed at a low level; 6,100 acres are developed and maintained.

**(RSP) Ranger Special**

**Description and Purpose:**

After examining the results of several alternatives, each district ranger responded to as many issues as possible. RSP incorporates both commodity and amenity outputs.

**Specifications:**

1	<b>Objective Function:</b>	Maximize PNV for 12 periods.
2	<b>Technological Constraints:</b>	All apply.
3	<b>MMR Constraints:</b>	All apply.
4	<b>Timber Policy Constraints:</b>	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply.
5	<b>MIR Constraints:</b>	All apply.
6	<b>Economic Assumptions:</b>	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.

- 7 Constraints Unique to the Alternative:**
- Harvest on the BVFSYU must meet or exceed 8.5 MMBF in the 1st decade with non-declining yield, in compliance with BVFSYU policy. To spread the timber harvest over more of the Forest, harvest on the Warner Mountain Ranger District must not exceed 15 MMBF in the 1st decade. To comply with district rangers' management desires, the following Management Area (MA) Prescriptions were limited as follows:
- MA 53 and 64 – only timber-forage prescription applies to provide for higher deer numbers.
  - MA 52, 61, and 62 – only even-aged prescription applies.
  - MA 63, 65, 66, and 67 – only uneven-aged prescription applies because of scattered timber stands.
  - All other MAs are open to any prescription with allocation based on economic efficiency.
- To generate as much thinning as possible, additional thinning outside of FORPLAN is added to costs and outputs generated.
- To ensure spatial feasibility during timber sale layout, timber harvest is limited by strata to a maximum of 15% disturbance each decade.
- State deer herd goals are met for Interstate and Glass Mountain deer herds. Warner Mountain and Adin deer herds are maintained at current populations.
- To maintain visual quality and recreation opportunities, visual quality and semi-primitive recreation are managed at medium levels (Appendix Q). Visual retention or semi-primitive non-motorized prescriptions are used on 33,000 acres of > 20 lands. Partial retention VQO constrains 110,000 acres of > 20 lands.
- In keeping with the theme of the alternative, wetlands are managed at a high level; 8,500 acres are developed and maintained.
- Because amenities are emphasized, specified allotments are managed to improve water quality and riparian areas faster than under MMRs.

#### (MIX) Mixture of Commodity and Amenity Outputs

##### **Description and Purpose:**

MIX is the first attempt at the preferred alternative. It emphasizes a wide range of commodity and amenity outputs, subject to a budget constraint. MIX draws from all alternatives, particularly RSP and CUR.

##### **Specifications:**

- |   |                                   |   |
|---|-----------------------------------|---|
| 1 | <b>Objective Function:</b>        | Maximize PNV for 12 periods.  |
| 2 | <b>Technological Constraints:</b> | All apply.  |
| 3 | <b>MMR Constraints:</b>           | All apply.  |
| 4 | <b>Timber Policy Constraints:</b> | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield, non-declining yield, and dispersion requirements apply. |

5	<b>MIR Constraints:</b>	All apply.
6	<b>Economic Assumptions:</b>	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.
7	<b>Constraints Unique to the Alternative:</b>	<p>To reflect a realistic budget, it is limited to \$11.5 million (1982 dollars) in the 1st decade.</p> <p>To improve timber harvest distribution, harvest from the Warner Mountain District is limited to 20 MMBF in the 1st decade.</p> <p>To comply with BVFSYU policy, timber harvest from the BVFSYU must meet or exceed 11 MMBF in the 1st decade and non-declining yield applies.</p> <p>To avoid environmental damage from excessive vegetation alteration, range non-structural improvements are limited to less than 500 acres per year.</p> <p>Wildlife AUMs meet State deer herd goals, as agreed by the Forest Service and CDFG.</p> <p>Because amenities are emphasized, specified allotments are managed to improve water quality and riparian areas faster than under MMRs.</p> <p>In keeping with the theme of the alternative, visual quality and semi-primitive recreation are managed at medium levels (Appendix Q). Visual retention or semi-primitive non-motorized prescriptions are prescribed on 33,000 acres of &gt; 20 lands. Partial retention VQO constrains 110,000 acres of &gt; 20 lands.</p> <p>Because amenity resources are emphasized, wetlands are managed at a high level; 8,500 acres are developed and maintained.</p>

**(PFD) Preferred with Departure**

**Description and Purpose:**

PFD analyzes the effect on the Preferred Alternative (PRF) of a departure from non-declining yields in the decades 1 through 5. As in PRF, it emphasizes a mixture of commodity and amenity resources.

**Specifications:**

1	<b>Objective Function:</b>	Maximize PNV for 12 periods.
2	<b>Technological Constraints:</b>	All apply.
3	<b>MMR Constraints:</b>	All apply.
4	<b>Timber Policy Constraints:</b>	<p>Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.</p> <p>Sustained yield and dispersion requirements apply.</p> <p>Harvest is allowed to flow in decade 1 through 5 but cannot fall more than 15% below the base sale schedule. Harvest must meet or exceed base sale schedule by the 5th decade and non-declining yield applies till the end of the planning horizon.</p>
5	<b>MIR Constraints:</b>	All apply.
6	<b>Economic Assumptions:</b>	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.



**7 Constraints Unique to the Alternative:**

In compliance with BVFSYU policy, timber harvest on the BVFSYU must meet or exceed 11 MMBF in the 1st decade and non-declining yield applies.

To minimize reductions from the base year sale offering, at least 30% of the timber harvest must be eastside pine.

To avoid environmental damage from excessive vegetation alteration, non-structural range improvements are limited to 500 acres per year or less.

To balance forage allocation between livestock and wildlife, non-structural deer habitat improvements must meet or exceed 400 acres per year.

To reduce risk of regeneration failure, timber harvest of mixed conifer under the timber-forage prescription is limited to 250 acres per year for the 1st decade.

To reduce risk of regeneration failure while ensuring adequate deer forage, no more than 60% of the eastside pine acres harvested are allocated to the timber-forage prescription.

As agreed by Forest Service and CDFG, wildlife AUMs meet State deer herd goals.

Because amenity resources are emphasized, specified allotments are managed to improve water quality and riparian areas faster than under MMRs.

To improve the visual resource and recreation opportunities, visual quality and semi-primitive recreation are managed at medium levels (Appendix Q).

Visual retention or semi-primitive non-motorized prescriptions are allocated on 33,000 acres of > 20 lands. Partial retention VQO constrains 110,000 acres of > 20 lands.

In keeping with the theme of the alternative and to improve wildlife habitat above MMR levels, wetlands are managed at a high level; 8,500 acres are developed and maintained.

To maintain marten habitat, 7% old growth is retained in red fir and mixed conifer in MA 61.

## **E. Alternatives Considered in Detail**

This section describes FORPLAN modeling strategies used in developing alternatives. The information presented here lists only those constraints that are modeled in FORPLAN and describes how they are modeled.

For a more complete discussion of the resource program direction, the environment to be created, and displays of outputs and costs for each alternative, refer to Chapter 2. Chapter 4 discusses the environmental consequences of the alternatives.

**(PRF) Preferred**

**Description and Purpose:**

PRF responds to many resource demands by emphasizing a wide range of commodity and amenity outputs. Emphasis is placed on:

- maintaining as high a sustainable level of timber sale offerings as possible commensurate with other resource emphases;
- harvesting timber using a mix of silvicultural practices, including uneven-aged management and even-aged management with retention of viable advance regeneration.
- implementing a fire program at the most cost efficient level;
- achieving an upward trend in snag numbers for eastside pine; and concentrating snag treatments on acres entered for timber harvest;
- maintaining recommended levels of visual quality;
- managing desired areas for semi-primitive recreation;
- protecting and enhancing habitat for various wildlife species that depend on early and late successional stages;
- meeting objectives for deer herd plans, providing livestock grazing for community stability, and producing forage in a cost-efficient manner;
- continuing Forest wetland development; and
- restoring degraded riparian habitat in high priority areas.

Other resources will be managed to complement these emphases.

**Specifications:**

- |   |                            |   |
|---|----------------------------|---|
| 1 | Objective Function:        | Maximize TBR for 1 period followed by max PNV for 12 periods.   |
| 2 | Technological Constraints: | All apply.  |
| 3 | MMR Constraints:           | All apply.  |
| 4 | Timber Policy Constraints: | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield, non-declining yield, and dispersion requirements apply. |
| 5 | MIR Constraints:           | All apply.  |
| 6 | Economic Assumptions:      | Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.   |

7 Constraints Unique to the Alternative:	<p>Timber yields from the BVFSYU are non-declining and must meet or exceed 9 MMBF in the 1st decade.</p> <p>To facilitate better management of pine marten, 18 territories are included in this alternative and reserved from timber harvest prescriptions.</p> <p>To represent advanced regeneration in existing stands, 10% less planting is required after a regeneration harvest.</p> <p>Twelve percent of suitable timberlands on slopes greater than 40% must be harvested annually for the first five decades. Ten percent of suitable lodgepole pine stands must be harvested annually for the first three decades. These requirements ensure that less economic timberlands will be regenerated in proportion to the share of suitable inventory they represent.</p> <p>To test uneven-aged silvicultural methods, test compartments were identified for each District. These timberlands are assigned a group selection prescription.</p> <p>To ensure regeneration of poorly stocked stands, a minimum of 10,000 acres must be treated annually for the first three decades.</p> <p>Timber harvest under the timber-forage prescription is limited to areas identified as suitable for this prescription by the Management Team. Appropriate locations were identified in Mgt. Areas 51, 53, 64 and throughout the Warner Mountain Ranger District.</p> <p>To comply with agreements between the Forest Service and CDFG, sufficient AUMs are provided to meet State deer herd goals.</p> <p>In keeping with the theme of the alternative, visual quality and semi-primitive recreation are managed at medium levels (Appendix Q). Visual retention or semi-primitive non-motorized prescriptions are allocated on 33,000 acres of &gt; 20 lands. Partial retention VQO constrains 110,000 acres of &gt; 20 lands.</p> <p>To enhance the distribution of wildlife habitat, old growth retention in red fir and mixed conifer was increased to 7% in MA 61.</p> <p>At a minimum, the current level of fire budget is needed for adequate plantation protection.</p> <p>Regenerated acres are limited to 3,600 per year in the first five decades to reduce negative impacts on recreation and wildlife and to improve water quality standards at a faster rate than with MMRs alone.</p>
--	--

**(CUR) Current Management – No Action**

**Description and Purpose:**

**CUR continues current management policies and practices subject to maintaining expenses at the current level. Emphasis is placed on:**

- maintaining the current timber harvest level;
- maintaining forage for livestock as close to current level as possible;
- maintaining desired and acceptable levels of visual quality;
- managing desired areas for semi-primitive recreation;
- continuing Forest wetland development; and
- restoring degraded riparian habitat in high priority areas.

**Other resources will be managed to complement these emphases.**

**Specifications:**

- 1     **Objective Function:**                    Maximize PNV for 12 decades.
- 2     **Technological Constraints:**        All apply.
- 3     **MMR Constraints:**                    All apply.
- 4     **Timber Policy Constraints:**        Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.  
Sustained yield, non-declining yield, and dispersion requirements apply.
- 5     **MIR Constraints:**                    All apply.
- 6     **Economic Assumptions:**        Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs. To obtain a feasible solution, the model is solved without the trends; but the results are presented with the trends to allow for real cost increases to timber-related activities.
- 7     **Constraints Unique to the Alternative:**        The budget is constrained to the FY 1982 level of \$9.6 million per year for all periods.  
To comply with BVFSYU policy, timber yields must meet or exceed the base year level of 50.4 MMBF. Harvest from the Unit must meet or exceed 11 MMBF under non-declining yield.  
Livestock AUMs must meet or exceed 120 MAUMs to meet current permit obligations.  
To reflect current practices and to operate within a constrained budget, non-structural range improvements are limited to 250 acres per year.  
Because the budget is constrained, non-structural deer habitat improvements are limited to 200 acres per year.  
To reduce risk of regeneration failure and to reflect current practices, the timber-forage prescription is limited to MAs 41, 53, 63, and 64. Timber harvest from this prescription is limited to 2,500 acres for the 1st decade.  
Specified allotments are managed to improve water quality and riparian areas faster than under MMRs.  
To reflect current practices, visual quality and semi-primitive recreation are managed at medium levels (Appendix Q). Visual retention or semi-primitive non-motorized prescriptions are allocated on 33,000 acres of > 20 lands. Partial retention VQO constrains 110,000 acres of > 20 lands.  
In keeping with current practices, wetlands are managed at a low level; 6,100 acres are developed and maintained.

**(RPD) RPA with Departure****Description and Purpose:**

RPD attempts to meet targets from the 1980 RPA Program by providing commodity and amenity outputs established for the Modoc. The departure alternative approaches as closely as possible the RPA timber target in the 1st decade. The timber target in the 5th decade is not met. Emphasis is placed on:

- increasing timber outputs above the current level by allowing a departure from the base sale schedule in the 1st decade;
- allowing a reduction in timber outputs in the 2nd decade to no more than 15% below the base sale schedule;
- meeting range targets established by the RPA Program;
- completing cultural resource inventories by 1995;
- maintaining desired and acceptable levels of visual quality;
- managing desired areas for semi-primitive recreation;
- increasing habitat for wildlife, specifically mule deer and trout; and
- continuing Forest wetland developments.

Other resources will be managed to complement these emphases.

#### Specifications:

- |   |  |   |
|---|--|---|
| 1 | Objective Function:                    | Maximize PNV for 12 periods.  |
| 2 | Technological Constraints:             | All apply.  |
| 3 | MMR Constraints:                       | All apply.  |
| 4 | Timber Policy Constraints:             | <p>Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.</p> <p>Sustained yield and dispersion requirements apply.</p> <p>Harvest is allowed to flow in decades 1 through 5 but cannot fall more than 15% below the base sale schedule. Harvest must meet or exceed base sale schedule by the 5th decade and non-declining yield applies until the end of the planning horizon.</p>   |
| 5 | MIR Constraints:                       | All apply.  |
| 6 | Economic Assumptions:                  | Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.   |
| 7 | Constraints Unique to the Alternative: | <p>To achieve RPA timber goals, timber yields must meet or exceed 75 MMBF in the 1st decade. On the BVFSYU, harvest must meet or exceed 11 MMBF in the 1st decade and non-declining yield applies.</p> <p>To meet current obligations and RPA goals, livestock AUMs must meet or exceed 122.5 MAUMs in each of the first 4 decades, and 124 MAUMs in the 5th decade.</p> <p>To maintain recommended VQOs and semi-primitive recreation opportunities, visual quality and semi-primitive recreation are managed at medium levels (Appendix Q). Visual retention or semi-primitive non-motorized prescriptions are used on 33,000 acres of &gt; 20 lands. Partial retention VQO constrains 110,000 acres of &gt; 20 lands.</p> <p>Because wildlife is emphasized under the RPA, wetlands are managed at a high level; 8,500 acres are developed and maintained.</p> |

## (IND) Industry

### Description and Purpose:

IND provides high levels of timber and range outputs while preserving other resource values at low levels. Emphasis is placed on:

- increasing timber outputs;
- minimizing the reduction in pine volume offered for sale in the 1st decade;
- maintaining or increasing forage for livestock at the current level for at least another decade;
- allowing reductions in recommended VQOs and semi-primitive recreation opportunities and from recommended visual quality objectives;
- achieving an upward trend in snag numbers for eastside pine and concentrating snag treatments on acres entered for timber harvest;
- continuing Forest wetland development; and
- restoring degraded riparian habitat in high priority areas.

Other resources will be managed to complement these emphases.

### Specifications:

- |   |                            |   |
|---|----------------------------|---|
| 1 | Objective Function:        | Maximize TBR for 1 period followed by max PNV for 12 periods.   |
| 2 | Technological Constraints: | All apply.  |
| 3 | MMR Constraints:           | All apply.  |
| 4 | Timber Policy Constraints: | Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.<br>Sustained yield, non-declining yield, and dispersion requirements apply. |
| 5 | MIR Constraints:           | All apply.  |
| 6 | Economic Assumptions:      | Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.   |

7	<b>Constraints Unique to the Alternative:</b>	<p>To comply with the BVFSYU policy, timber harvest from the BVFSYU must meet or exceed 11 MMBF with non-declining yield.</p> <p>To minimize reductions from the base year sales offering and to provide marketable timber, at least 25% of the timber harvest must be eastside pine. The timber-forage prescription is limited to MAs 41, 53, 63, and 64. Timber harvest from this prescription is limited to 2,500 acres for the 1st decade. This constraint reduces the risk of regeneration failure and promotes full timber yields.</p> <p>Twelve percent of suitable timberlands on slopes greater than 40% must be harvested annually for the first five decades. Ten percent of suitable lodgepole pine stands must be harvested annually for the first three decades. These requirements ensure that less economic timberlands will be regenerated in proportion to the share of suitable inventory they represent.</p> <p>To represent advanced regeneration in existing stands, 10% less planting is required after a regeneration harvest.</p> <p>Because commodity resources are emphasized, visual quality and semi-primitive recreation are managed at low levels (Appendix Q). Visual retention is assigned to 14,000 acres of &gt;20 lands; and 106,000 acres of &gt;20 lands are managed for partial retention or semi-primitive motorized recreation.</p>															
<b>(RBU) Reduced Budget</b>																	
<p><b>Description and Purpose:</b></p> <p>RBU produces commodity and amenity outputs subject to a budget reduced to 75% of the current level. Emphasis is placed on:</p> <ul style="list-style-type: none"> <li>– providing timber outputs at the highest level permitted by the budget;</li> <li>– providing timber outputs from the BVFSYU needed for community stability;</li> <li>– providing livestock forage at a moderate level;</li> <li>– allowing reductions in recommended visual quality objectives and semi-primitive recreation opportunities; and</li> <li>– managing the Forest wetland program at a minimum level.</li> </ul> <p>Other resources are managed to complement these emphases.</p> <p><b>Specifications:</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 5%; vertical-align: top;">1</td><td style="width: 30%; vertical-align: top;"><b>Objective Function:</b></td><td style="vertical-align: top;">Maximize PNV for 12 periods.</td></tr> <tr> <td style="vertical-align: top;">2</td><td style="vertical-align: top;"><b>Technological Constraints:</b></td><td style="vertical-align: top;">All apply.</td></tr> <tr> <td style="vertical-align: top;">3</td><td style="vertical-align: top;"><b>MMR Constraints:</b></td><td style="vertical-align: top;">All apply.</td></tr> <tr> <td style="vertical-align: top;">4</td><td style="vertical-align: top;"><b>Timber Policy Constraints:</b></td><td style="vertical-align: top;">Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply.</td></tr> <tr> <td style="vertical-align: top;">5</td><td style="vertical-align: top;"><b>MIR Constraints:</b></td><td style="vertical-align: top;">All apply.</td></tr> </table>			1	<b>Objective Function:</b>	Maximize PNV for 12 periods.	2	<b>Technological Constraints:</b>	All apply.	3	<b>MMR Constraints:</b>	All apply.	4	<b>Timber Policy Constraints:</b>	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply.	5	<b>MIR Constraints:</b>	All apply.
1	<b>Objective Function:</b>	Maximize PNV for 12 periods.															
2	<b>Technological Constraints:</b>	All apply.															
3	<b>MMR Constraints:</b>	All apply.															
4	<b>Timber Policy Constraints:</b>	Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI. Sustained yield, non-declining yield, and dispersion requirements apply.															
5	<b>MIR Constraints:</b>	All apply.															

6	<b>Economic Assumptions:</b>	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.									
7	<b>Constraints Unique to the Alternative:</b>	<p>To show effects of operating with a reduced budget, it is limited to \$7.2 million for 5 decades.</p> <p>Because reduced timber yields would negatively impact community stability, harvest levels are as high as possible with the reduced budget. Timber yields must meet or exceed 37 MMBF in the 1st decade. Yields from the BVFSYU must meet or exceed 8.5 MMBF in the 1st decade with non-declining yield.</p> <p>To fulfill local livestock grazing obligations as much as possible under a reduced budget, livestock forage must meet or exceed 100 MAUMs in the 1st decade.</p> <p>Except for maintenance of old seedings, range non-structural improvements are not done because the budget is limited.</p> <p>Non-structural improvements for deer habitat are not done because the budget is limited.</p> <p>Recreation is managed at low standard levels because of the reduced budget. Because the budget is reduced, visual quality and semi-primitive recreation are managed at low levels (Appendix Q). Visual retention is assigned to 14,000 acres of &gt; 20 lands; and 106,000 acres of &gt; 20 lands are managed for partial retention or semi-primitive motorized recreation.</p>									
<b>(AMN) Amenity</b>											
<p><b>Description and Purpose:</b></p> <p>AMN responds to amenity demands while providing for commodity outputs at cost-efficient levels. Emphasis is placed on:</p> <ul style="list-style-type: none"> <li>- maintaining a high level of visual quality;</li> <li>- managing for extensive semi-primitive recreation;</li> <li>- protecting and enhancing habitat for wildlife species dependent on late seral stages;</li> <li>- achieving an upward trend in snag numbers for eastside pine; and concentrating snag treatments on acres entered for timber harvest;</li> <li>- continuing Forest wetland development; and</li> <li>- restoring degraded riparian habitat.</li> </ul> <p>Other resources will be managed to complement these emphases.</p> <p><b>Specifications:</b></p> <table> <tr> <td>1</td><td><b>Objective Function:</b></td><td>Maximize PNV for 12 periods.</td></tr> <tr> <td>2</td><td><b>Technological Constraints:</b></td><td>All apply.</td></tr> <tr> <td>3</td><td><b>MMR Constraints:</b></td><td>All apply.</td></tr> </table>			1	<b>Objective Function:</b>	Maximize PNV for 12 periods.	2	<b>Technological Constraints:</b>	All apply.	3	<b>MMR Constraints:</b>	All apply.
1	<b>Objective Function:</b>	Maximize PNV for 12 periods.									
2	<b>Technological Constraints:</b>	All apply.									
3	<b>MMR Constraints:</b>	All apply.									



<b>4</b>	<b>Timber Policy Constraints:</b>	<p>Minimum rotation: Use the full set of rotation ages greater than or equal to 95% of CMAI.</p> <p>Sustained yield, non-declining yield, and dispersion requirements apply.</p>
<b>5</b>	<b>MIR Constraints:</b>	All apply.
<b>6</b>	<b>Economic Assumptions:</b>	Use assigned values, with price and cost trends for timber, and demand cut-offs for RVDs and WFUDs.
<b>7</b>	<b>Constraints Unique to the Alternative:</b>	<p>Because wildlife habitat is emphasized, the amount of existing old growth reserved for wildlife species increases to 10% in mixed conifer and red fir. Old growth in eastside pine is insufficient to apply the constraint to that species. Timber yields from the BVFSYU are non-declining.</p> <p>To facilitate better management of pine marten, 18 territories are included in this alternative and reserved from timber harvest prescriptions.</p> <p>In keeping with the amenity emphasis of the alternative, 65% of the regulated harvest in the first decade must be obtained by uneven-aged silvicultural methods.</p> <p>To represent advanced regeneration in existing stands, 10% less planting is required after a regeneration harvest.</p> <p>Regenerated acres are limited to 3,600 per year in the first five decades to reduce negative impacts on recreation and wildlife and to improve water quality standards at a faster rate than with MMRs alone.</p> <p>Twelve percent of suitable timberlands on slopes greater than 40% must be harvested annually for the first five decades. Ten percent of suitable lodgepole pine stands must be harvested annually for the first three decades. These requirements ensure that less economic timberlands will be regenerated in proportion to the share of suitable inventory they represent.</p> <p>To enhance visual quality and increase semi-primitive recreation opportunities, visual quality and semi-primitive recreation are managed at high levels (Appendix Q). Visual retention or semi-primitive non-motorized prescriptions are allocated to 76,000 acres of &gt; 20 lands. Partial retention VQO constrains 118,000 acres of &gt; 20 lands for either partial retention timber management or semi-primitive motorized recreation.</p>

**Table B-13. FORPLAN Specifications for Alternatives.**

Alternatives						
FORPLAN Specifications	PRF	CUR	RPD	IND	RBU	AMN
Objective Function	max TBR-1	max PNV	max PNV	max TBR-1	max PNV	max PNV
<b>Timber Policy:</b>						
CMAI	yes	yes	yes	yes	yes	yes
NDY <sup>1</sup> on Forest	yes	yes	yes	yes	yes	yes
NDY on BVFSYU	yes	yes	yes	yes	yes	yes
Departure	no	no	yes	no	no	no
Dispersion	yes	yes	yes	yes	yes	yes
MMRs	yes	yes	yes	yes	yes	yes
MIRs	yes	yes	yes	yes	yes	yes
Budget (millions of \$)	none	<9.6	none	none	<7.2	none
<b>Timber (1st Decade)</b>						
Forest (MMBF)	—	—	> 75	—	> 37	—
BVFSYU (MMBF)	> 9	> 11	> 11	> 11	> 8.5	—
% Pine	—	—	—	25%	—	—
Regeneration Acres	< 3600/yr	—	—	—	—	< 3600/yr
Visual Quality and Semi-Primitive Rec. <sup>2</sup>	medium	medium	medium	low	low	high
Wetlands Management (Acres)	—	6,100	8,500	—	2,800	—
<b>Range:</b>						
MAUMs (1st decade)	—	> 120	> 117	—	> 100	—
MAUMs (5th decade)	—	—	> 124	—	—	—
Non-structural improvements (acres/year)	—	< 250	—	—	= 0	—
<b>Deer:</b>						
Non-structural improvements (acres/year)	—	< 200	—	—	= 0	—

**Table B-13. FORPLAN Specifications for Alternatives. (continued)**

FORPLAN Specifications	Alternatives					
	PRF	CUR	RPD	IND	RBU	AMN
Timber-forage Rx (1st decade)	limit to MAs 51, 53, 64	limit to MAs 41, 53, 63, 64 with < 250 acres/yr harvest	no limit	limit to MAs 41, 53, 63, 64 with < 250 acres/yr harvest	no limit	no limit
Forage (MAUMs) <sup>3</sup>	yes <sup>4</sup>	no	no	no	no	no
Additional allotments managed at high level for water quality & riparian improvements	17	17	—	—	—	27
Recreation	—	—	—	—	low std.	—
Close Allotments for Bighorn Sheep	no	no	no	no	no	yes
Old Growth above MMR	7% in MA 61; mixed conifer & red fir	no	no	no	no	10% in mixed conifer & red fir
<sup>1</sup> non-declining yield <sup>2</sup> See Appendix Q for acres <sup>3</sup> See Appendix L for deer forage requirements. <sup>4</sup> Deer Herds: Interstate deer herd: 9,840-12,000 AUMs (decades 1-5) Glass Mtn. deer herd: 8,800-15,360 AUMs (decades 1-5) Warner Mtn. deer herd: 10,800-13,500 AUMs (decade 1); 13,500-18,000 AUMs (decades 2-5) Adin deer herd: 4,480-5,600 AUMs (decade 1); 5,600-8,400 AUMs (decades 2-5)						

## 5. Other Models

In addition to FORPLAN, other systematic models were used in planning: FIREPLAN, EFFALT, RAMPREP, a water yield model, IMPLAN, Wildlife Habitat Relationships, and a snag habitat model. They are described below.

### A. Fire Management Analysis Process (FIREPLAN)

The fire management analysis process includes four levels of analysis and a series of eight computer programs. Of the four levels of analysis, only two (described below) are used in the Forest planning process; the others affect implementation and evaluation. The eight computer programs are simulators and report writers used to define the historical and current fire management situations and to evaluate alternative fire management fuels, prevention, detection, and suppression programs. For a complete description of the fire management analysis process, see FSH 5109.19 (National Fire Management Planning and Analysis Handbook).

Fire Management Analysis Level I is an analysis of the historical and current fire management situation using fire and weather information, records of fire occurrences, and fire behavior (number of fires, acres burned by fire size and intensity). Some uses of Level I analysis are:

- To display the general effectiveness and cost, including fire fighting funds (FFF), of the current fire management program. This program cost may be used to predict costs of a fire program that will not vary significantly between prescriptions on a Forest-wide basis;
- To develop organizations in response to alternatives and prescriptions; and
- To identify areas for further analysis regarding prevention, suppression, and fuels management.

Fire Management Analysis Level II is an analysis of various fire management program options (e.g., a suppression mix versus prevention), budget levels (costs), and their effectiveness. This analysis is based on various fuel models, suppression resources, and historical occurrence patterns. Some uses of Level II analysis are:

- To evaluate fire program options appropriate for alternatives;
- To provide resource outputs, value change, and program cost data to select the most efficient program level; and,

- To evaluate the effectiveness of fire program options on a fixed budget.

Fire Management Analysis Levels I and II provide the following input for each alternative:

- Probable acres burned;
- Program costs reflecting various fire management organizations; and
- Suppression costs reflecting organizational efficiency.

FORPLAN determines:

- Acres burned;
- Suppression costs;
- Net value change for resources; and,
- Optimum organization and budget level by period.

### B. Effective Alteration (EFFALT)

The EFFALT cumulative impact thresholds are used in FORPLAN to limit timber harvesting activities and to ensure landscape alterations do not exceed the levels associated with desired visual quality objectives (VQOs). Perspective plot computer simulations are the primary tools for establishing these thresholds in the effective alteration approach. These simulations were developed by Northern California Forest Service Landscape Architects.

The most critical and common situations modeled are middleground landscapes with partial retention VQOs. (Partial retention is the primary application of EFFALT on the Modoc National Forest.) Topographic and timber stand data are entered into the computer to simulate current conditions. Varying rotation lengths and harvest entry rates are tested by modeling all units into the perspective plots. Simulations of altered landscapes are examined to determine maximum limits of alteration permissible under the individual VQOs.

Thus, the actual correlations of harvesting rates and total effective alteration to VQOs are based on the professional judgement of Forest Service landscape architects. For similar situations, these judgements are highly consistent. They are further corroborated by field inspection and aerial photos compared to existing visual condition (EVC) mapping.

Coefficients are developed to measure the visual impact of harvesting activities based on the amount of time needed for a harvested area to visually recover. The Forest silviculturist and landscape architect determine the recovery period for timberlands. The average recovery period is 15 years for all timber types managed for

modification VQO, while the average recovery is 21 years (metered over a 30-year period) for all timber types managed for partial retention VQO. Existing plantations are assumed to have a 10-year impact in the 1st decade of all alternatives.

VQOs for each alternative are developed and identified in FORPLAN by the portion of each analysis area to be managed under each VQO. Maximum modification is not modeled in FORPLAN, because we assume that other minimum management and implementation requirements are more binding and the model is insensitive to this visual quality objective.

The timber policy dispersion constraint is modeled through EFFALT to determine when a harvested area is no longer considered an opening. The modification VQO is modeled in conjunction with the dispersion constraint. This joint constraint is approximated by limiting the harvest of a management area to an average of 20% per decade.

A decay function is also used, which means the severity of the harvest opening decreases over time. The decay function in this case is 100% in the 1st decade and 50% in the 2nd decade following a harvest. This means that for 10 years following timber harvest, 100% of the harvest area is considered an opening. Then, for 11-20 years following harvest, only 50% of the harvest area is considered an opening. The dispersion constraint is effectively met 10 years after harvest. However, in order to meet modification VQOs, 50% of the area requires an additional 10 years.

Partial retention is similarly modeled with the following exceptions: a limit of 15% of a management area is harvested per decade; and a decay function of 100% is used in the 1st decade, 80% in the 2nd, and 30% in the 3rd following harvest.

Retention acres are not effectively altered because less than 5% of growth is harvested per decade.

### C. RAMPREP

RAMPREP (Resource Allocation Method-Preparation) is a PSW Region Timber management model that calculates projected timber yields for a stand under various thinning and harvest regimes. Coefficients are based on the Modoc National Forest 1980 timber inventory data. For a detailed discussion of RAMPREP see *The Region Five Timber Inventory Process*, July 1981.

### D. Water Yields

Potential to increase existing water yields from the Forest through manipulation of vegetation is determined using a method from Silvey and Rosgen's (1980) HYSED model. The model uses a series of water balance equations considering precipitation and evapo-transpiration to compute potential water yield increase. Through the model we determined that only those areas receiving more than 25 inches had potential to increase water yield. Data from the analysis are in the Forest Planning Records.

### E. IMPLAN

IMPLAN is a system for developing local input-output models from the U.S. Department of Commerce's 1977 national input-output model and 1982 regional economic data. Dollar impacts estimated with the system are adjusted to real values using the Commerce Department's implicit price deflators for the gross national product.

The IMPLAN system is used to develop an input-output model of Modoc and Lassen Counties. Estimates of historical expenditures by sector associated with Forest outputs and Forest purchases from the local economy are then used with IMPLAN to develop impact multipliers and estimated income and employment impacts for each alternative.

The theory and limitations of input-output analysis are discussed in detail in EIS Chapter 4. Some basic assumptions include:

- Historical transaction patterns associated with Forest outputs and purchases are sustained in the future.
- Transaction patterns (production functions) for industries in the local economy are similar to those in the national economy and are sustained in the future.
- Income and employment impacts occur in the same time period as the underlying changes in Forest outputs and purchases (no lagged effects are assumed).

In light of these assumptions, the estimated impacts on employment and income by alternative have relatively low reliability in absolute terms in future time periods. However, estimates are reasonably accurate indicators of relative changes between the alternatives in decade 1.

## F. Wildlife Habitat Relationships

The Wildlife Habitat Relationships (WHR) Program describes vegetation types, successional stages of vegetation types, and stand densities. It rates the value of the habitat for all vertebrate species that occur on the Forest. The WHR Program consists of three levels of data and analysis:

- Published materials or computerized data bases that document vertebrate species status, life history, and habitat preference and matrices of vegetation types, successional stages, and their use by vertebrate species.
- Narrative habitat capability models which describe detailed habitat requirements and rate vegetation types, successional stages and other habitat factors by high, medium and low habitat capability for each individual species.
- Computer models which assign habitat capability values for vegetation and other habitat factors and compute the relative value of various habitat mixes and/or estimated species populations resulting from resource management or other activities.

WHR is used for preparing and analyzing the Forest Plan in several ways:

**Management Indicator Species (MIS)** – a list of all vertebrate species which occur on the Forest is compiled using the WHR data base. The WHR habitat matrix for seasonal habitat preference for the Northeast Interior Zone is used to determine if habitat requirements for all Forest wildlife species are covered by a MIS. Some species, such as deer or pronghorn, are selected because of public issues. If special habitat requirements for one group of species are not represented by a MIS, the matrix is used to develop a list of these species and a selection is made. (The Wildlife Analysis of the Management Situation in the Forest Planning records further documents this process.)

**Diversity** – categories that measure changes in diversity are based on WHR successional stages. Decadal timber outputs are converted to WHR successional types. This conversion is done in the FORPLAN model and WHR successional stage outputs are derived directly from FORPLAN. A minimum management requirement to maintain 5% of each seral stage in each vegetation type is a constraint in the FORPLAN model.

**Analysis of the Management Situation (AMS) and Prescription Development** – narrative models which express the quality of habitat at three levels (high, medium, and low) for each MIS are used to document current Forest conditions and future opportunities in the AMSs.

Current and potential population estimates are also derived using data from these models and through the aid of computer models.

These models are used as the basis for Forest-wide Standards and Guidelines to insure that viable populations are maintained under the resource management alternatives. The models are also used to develop prescriptions which ensure maintenance of viable populations or, based on the theme of the prescription, enhance habitat and improve populations of MIS.

**Outputs and Environmental Consequences** – outputs which show fish and wildlife populations or changes in habitat capability are based on both narrative and computer models. These models are used outside FORPLAN to assess effects of and measure differences between alternatives. Habitat capability changes are used as direct comparisons or converted to relative populations before comparisons are made.

The following is a brief description of models used in the planning process.

**Fish And Wildlife Habitat Capability Models And Special Habitat Criteria For The Northeast Zone National Forests** – models in Shimamoto and Airola (1982) describe habitat conditions associated with various population levels of each species based on existing research, studies and personal field knowledge. The models describe in quantitative and qualitative terms the habitat conditions for evaluating existing and projected habitat resources. Vegetation types, successional stages, and other habitat factors are used to describe desired conditions by ratings of high (highest species densities), medium (moderate densities and required for species viability) and low (lowest species densities and not capable of supporting a viable population).

**Trout Habitat Capability Model** – based on modifications made by Camilleri and Shimamoto (1981) to a model used by the Shasta-Trinity National Forest. Current habitat capability is determined for stream, lake and reservoir conditions. Stream surveys completed in 1979 document habitat factors (pool/riffle ratios, instream cover, and erosion) for each stream reach. Values (0.0 to 1.0) are assigned to each habitat parameter for individual reaches, and an arithmetic mean or habitat capability index calculated. The indices are used to categorize streams as high, medium and low habitat capability. With the assistance of the CDFG, standing crop of trout are assigned to each capability class, and total biomass for the Forest is calculated. A similar process is used to evaluate lakes and reservoirs.

**Modoc National Forest Deer Habitat Capability Model**—this computer model (Ross 1982) uses habitat information (vegetation type, seral stage, soil type) from the Forest data base to calculate current and potential habitat capability for any portion of the Forest. Each vegetation type (dominant and understory species and seral stage) is rated on a scale of 0 to 1 based on its relative value (1 = highest value and 0 = no value) as forage and cover for deer. Existing vegetation and expected changes in vegetation are used to calculate forage and cover indices. The cover index is used to adjust the forage index because cover regulates the use and value for forage within an area. The result is the habitat capability index (HCI) for an area based on known or predicted vegetation conditions. Other factors, such as roads, water, and livestock, are used to adjust the HCI. They increase, decrease or have no effect on the index. Potential habitat capability (PHCI) for deer is based on soil type and the highest value forage that a soil type can produce for deer. Effects of a proposed resource management action can be established from a change in the HCI from current. The capability of an area to support deer can be measured against PHCI to predict changes in deer populations. Long-term carrying capacity of a range can be predicted by assuming that peak historical deer population occurred when habitat is near PHCI, and then fitting a curve to that population/PHCI point and the current population HCI point. Deer herd ranges can be assessed to determine which ones limit herd growth and where habitat improvements should occur.

**Pine Marten Model**—a computer model based on Spencer's work (1982) is used to calculate habitat capability indices and project marten populations for the Forest. The model is based on habitat preference and use determined through field studies. Winter habitat capability ratings are developed for each vegetation type based on food, cover and den site requirements. The size of cover and forage stands are used to assess juxtaposition of forest and meadow habitats. The Forest data base is the source for vegetation types, successional stages and acres used by the model. The user supplies the percentage of xeric versus mesic lodgepole pine stands; that information determines the value of lodgepole stands as marten habitat. Dead and down woody material could not be used in the model because Forest-wide data is unavailable for this habitat component.

The model calculated habitat capability indices and the number of marten pairs for each management area (MA) with potential marten habitat.

**Region 5 Model**—this model is based on the DY-NAST model which simulates vegetation management and natural succession. It calculates habitat capability indices for MIS. The current model is a fourth generation version with refinements made by Region 2, Region 5, and the Modoc National Forest. Any number or combination of vegetation types can be simulated. The user supplies the number of timber harvest or management periods and the acres of each vegetation type to be treated per decade. The model harvests and regrows these acres and simulates the composition of vegetation and seral stages within the analyzed area. Each vegetation type and seral stage has a value (0 to 1) for each MIS. The model calculates habitat capability for each MIS selected and lists these by species for each decade simulated. The effect of an alternative on a MIS can then be compared over time to assess the cumulative effects of vegetation management on the species.

## G. Snag Model

The number of snags and timber volumes needed to meet the MMR of 1.5 snags per acre is determined through a snag model. The model is developed in two stages: a snag life table, and volume projections. The first stage models snag recruitment with and without salvage using natural means, and topping and girdling green trees. The model uses snag falling rates (life expectancy) for each type of management, existing snag densities and predicted natural mortality (snag recruitment) to determine whether the MMR can be met under various management options. Volumes of green trees needed to meet the 1.5 snag density are also determined.

The second phase of the modeling process uses existing acres of vegetation types and strata in each management area to calculate the total number of snags needed to meet the MMR Forest-wide and within each MA. Volume is estimated using a weighted average for the two size classes of snags needed—1.2 snags 15-24" dbh and 0.3 snags 24+" dbh. Volumes needed under the preferred method of topping green trees to meet numbers by three decades are used. Volume reductions were calculated first by management area. When this proved too difficult to use for yield table reductions, volumes were recalculated by strata.

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## Appendix C

### Economic Efficiency Analysis

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#### Conceptual Background

**Present net value (PNV)** is the criterion used to maximize net benefits in planning benchmarks and alternatives for the Modoc National Forest. For each alternative, PNV is the difference between the discounted value of all priced outputs and all Forest Service management and investment cost over the analysis period. The priced outputs are those that are or can be exchanged in the market place. They include the value of forage, the stumpage value of timber, the value of commercial fish in the stream, fur animals and other harvested miscellaneous products, the value of any increased water flow quantities, the in-the-ground value of minerals, and all recreation visitor days including those for wildlife, fishing and wilderness experiences.

The alternatives are designed and analyzed to achieve their goals and objectives for priced outputs in a manner that achieves the greatest excess in the value of priced outputs in relation to their cost while meeting all specified constraints and objectives for non-priced outputs. The alternatives are also designed to achieve the specified non-priced outputs and to meet constraints at the least cost. Thus, the PNV of each alternative estimates the value of the maximum attainable net benefits of priced outputs. It is the value of priced benefits realized in excess of all the Forest Service costs of producing priced outputs and non-priced outputs and meeting management constraints. PNV therefore is an estimate of the market value of the current forest resources after all costs of producing outputs and meeting constraints have been subtracted from the value of the expected flow of priced outputs.

**Net public benefit** is defined as the overall value to the nation of all outputs and positive effects (benefits) less all the associated Forest Service inputs and negative effects (costs) for producing those primary benefits whether they can be quantitatively valued or not. Thus, net public benefits conceptually are the sum of PNV plus the full value of non-priced outputs. The full value of non-priced

benefits is used because their cost of production has been accounted for in PNV. The non-priced benefits here included are outputs such as threatened and endangered species maintenance or enhancement, natural and scientific areas, cultural site reservations such as Indian religious sites, and historical or anthropological sites, visual quality in excess of full service day standards, diversity objectives or air quality in excess of minimum management requirements. Minimum management requirements in this context are standards that must be met in the production of any or all outputs from the forest. The minimum level therefore, is a cost of production in the multiple use context.

There are also second level benefits or effects that are also the concern of national forest policy and management. These include local income and job effects on economic development of communities, net cost impacts on taxpayers, price effects on consumers of forest products and other producers of those products, payments to communities in lieu of taxes, benefits to specific users of national forest outputs who pay no fees or fees less than the price of the valued outputs. All these are distributive welfare effects of national forest production. All the foregoing distributive effects and impacts have been the object of national policy issues and discussions in both the Administration and the Congress. Because they are distributive effects, they are essentially questions of equity rather than efficiency and they involve questions of who should get benefits and who pays the costs. They cannot be assessed in the context of the efficiency criteria associated with the PNV and the net public benefit concepts.

#### EIS Presentation

The methodology, background, and results of the economic efficiency analysis that was conducted during the planning process is presented throughout the EIS. As a result, all of the major sections of the EIS including those listed below must be read in order to get a complete picture of the analysis that was conducted.

Context	Reference
<p>Discussion of how economic efficiency analysis was used in the process of developing alternatives.</p> <p>Outputs, total cost, and PNV for each of the benchmarks.</p> <p>Results of the constraints analysis and a comparison of the alternatives in terms of PNV. This is the most comprehensive summary of the analysis results in the DEIS.</p> <p>Background information on economic conditions and the resource supply-demand situation for the Forest.</p> <p>How and why PNV of the alternatives differs.</p> <p>Technical details of the modeling and analysis process including a description of basic estimates and assumptions on benefits, costs, and interest rates.</p>	<p>Chapter 2, Alternative Development Process</p> <p>Chapter 2, Benchmarks</p> <p>Chapter 2, Economic and Tradeoff Analysis</p> <p>Chapter 3, The Economic Environment</p> <p>Chapter 2, Economic and Tradeoff Analysis, particularly Table 2-18, Summary Comparison of Economic Effects</p> <p>Appendix B, Modeling and Analysis Process</p>







## Appendix D

### **Acreage Allocations by Management Prescriptions and Management Areas**

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PRF - Preferred Alternative													
Mgt. Rx	Prescription Description		Mgt. Area 31	Mgt. Area 32	Mgt. Area 33	Mgt. Area 34	Mgt. Area 35	Mgt. Area 36	Mgt. Area 41	Mgt. Area 42	Mgt. Area 43	Mgt. Area 44	Mgt. Area 45
1	Minimum Level	> 20	1,628	1,762	2,078	1,621	0	3,646	4,239	935	938	3,853	4,445
		< 20	1,022	81	0	1,905	0	3,459	0	338	0	5,156	0
		Range	103	332	50	0	0	61	560	1,578	20	204	1,910
2	Wilderness - Standard		0	0	0	0	70,385	0	0	0	0	0	0
3	Wilderness - Low Standard		0	0	0	0	0	0	0	0	0	0	0
4	Semi-Primitive Non-Motorized §	> 20	1,666	1,041	1,577	1,896	0	422	0	228	0	1,150	0
		< 20	1,519	589	2,123	4,201	0	0	1,839	0	392	0	1,042
5	Dev. Recreation - Standard		0	0	0	0	0	0	0	0	0	0	0
6	Dev. Recreation - Low Standard		0	0	0	0	0	0	0	0	0	0	0
7	Visual Retention †	> 20	3,325	1,908	1,216	5,769	0	5,356	0	234	22	337	313
		< 20	913	1,516	619	1,777	0	2,187	0	54	0	506	476
8	Special Areas		0	0	0	0	0	0	0	0	0	0	0
9	Raptor Management	> 20	196	0	0	245	0	278	112	1,717	424	404	958
		< 20	121	0	0	349	0	65	430	952	17	757	999
		Range	103	0	0	1,081	0	646	289	1,860	314	200	1,278
10	Rangeland		4,369	17,382	4,053	28,108	0	21,572	14,113	7,834	7,667	28,522	35,917
11	Range-Forage		11,241	2,464	7,336	0	0	2,782	3,218	7,922	11,042	0	0
12	Even-Aged Timber		1,320	8,120	125	1,872	0	855	9,447	5,172	4,680	20,843	19,431
13	Timber-Visuals		2,798	6,783	108	7,924	0	1,752	2,000	3,452	1,146	12,490	5,493
14	Timber-Forage	PR †	1,489	7,153	277	1,848	0	789	0	0	0	0	0
		MOD ‡	3,789	9,430	924	7,044	0	5,539	0	0	0	0	0
15	Uneven-Aged Timber		0	0	0	0	0	3,151	0	0	0	4,034	0
16	<20 Cu. Ft. Timber		1,654	9,009	1,909	9,549	0	2,905	28,023	3,472	2,900	9,799	17,663
17	Riparian Area	> 20	684	473	310	1,340	0	73	0	147	0	270	159
		< 20	181	164	60	556	0	341	0	44	0	83	89
		Range	329	228	114	271	0	391	0	47	0	32	53

§ Timber Acres only; range acres are in Prescriptions 10 and 11.

† PR = Partial Retention

‡ MOD = Modification



# PRF - Preferred Alternative (continued)

Mgt. Area 51	Mgt. Area 52	Mgt. Area 54	Mgt. Area 5	Mgt. Area 61	Mgt. Area 62	Mgt. Area 64	Mgt. Area 6	Mgt. Area 65	Mgt. Area 66	Mgt. Area 67	TOTAL	Prescription Description		Mgt. Rx
876	1,346	4,347	453	4,139	3,654	3,912	1,336	123	439	32	45,802	MinimumLevel	> 20	1
0	0	0	499	59	263	0	0	0	0	0	12,782		< 20	
433	157	82	0	1,628	1,081	1,283	0	0	0	2,087	11,569		Range	
0	0	0	0	0	0	0	0	0	0	0	70,385	Wilderness - Standard		2
0	0	0	0	0	0	0	0	0	0	0	0	Wild.- Low Standard		3
0	0	0	484	1,934	438	77	0	0	0	0	10,913	SPNM §	> 20	4
90	0	0	251	0	40	14	0	0	0	0	12,100		< 20	
0	0	0	0	0	0	0	0	0	0	0	198	Dev. Rec. - Standard		5
0	0	0	0	0	0	0	0	0	0	0	0	Dev. Rec. - Low Std.		6
0	0	78	159	1,658	1,309	546	292	0	0	0	22,522	Visual Retention §	> 20	7
187	0	0	89	0	32	14	235	0	0	0	8,605		< 20	
800	0	0	0	570	13,218	0	0	0	0	0	14,588	Special Areas		8
818	1,946	14	152	1,579	310	2,665	0	22	0	45	11,885	Raptor Management	> 20	9
915	1,224	40	448	0	51	6	0	115	0	307	6,796		< 20	
9,959	3,430	254	2,056	472	0	760	0	1,615	4,186	4,927	33,430		Range	
310,675	20,863	20,119	15,411	0	0	5,960	12,438	59	55,433	8,717	619,212	Rangeland		10
12,423	0	0	0	0	0	5,474	14,750	45,229	144,695	22,789	291,365	Range-Forage		11
5,118	23,823	0	6,424	5,683	15,130	11,548	0	6,193	75	0	145,859	Even-Aged Timber		12
0	1,585	0	1,073	2,480	9,024	8,727	0	0	0	0	66,835	Timber-Visuals		13
0	0	31,489	3,702	0	0	0	3,433	0	0	0	50,180	Timber-Forage	PR †	14
0	0	24,492	5,416	0	1,119	0	2,358	0	0	0	60,111		MOD ‡	
0	0	3,605	0	6,324	0	0	0	0	0	0	17,114	Uneven-Aged Timber		15
5,922	7,201	7,200	4,388	0	446	15,260	10,507	3,453	794	63	142,117	<20 Cu. Ft. Timber		16
0	203	0	179	19	0	0	0	25	0	0	3,882	Riparian Area	> 20	17
34	92	0	50	0	0	0	0	61	0	0	1,755		< 20	
580	245	0	46	4	0	0	0	712	585	0	3,637		Range	

## CUR - Current Alternative

Mgt. Rx	Prescription Description		Mgt. Area 41	Mgt. Area 42	Mgt. Area 44	Mgt. Area 4	Mgt. Area 45	Mgt. Area 46	Mgt. Area 1	Mgt. Area 2	Mgt. Area 4	Mgt. Area	Mgt. Area 5
1	Minimum Level	> 20	14	589	669	0	0	49	875	409	885	1,552	2,181
		< 20	2,676	3,257	504	7,942	0	4,525	2,432	0	0	10,233	340
		Range	103	332	50	0	0	61	560	1,175	20	204	1,910
2	Wilderness - Standard		0	0	0	0	70,385	0	0	0	0	0	0
3	Wilderness - Low Standard		0	0	0	0	0	0	0	0	0	0	0
4	Semi-Primitive Non-Motorized §	> 20	1,666	1,041	1,577	1,896	0	422	0	228	0	1,150	0
		< 20	1,519	589	2,123	4,201	0	0	1,839	0	392	0	1,042
5	Dev. Recreation - Standard		0	0	0	0	0	0	0	0	0	0	0
6	Dev. Recreation - Low Standard		0	0	0	0	0	0	0	0	0	0	0
7	Visual Retention ‡	> 20	3,325	1,908	1,216	5,769	0	5,356	0	234	22	337	313
		< 20	913	1,516	619	1,777	0	2,187	0	54	0	506	476
8	Special Areas		0	0	0	0	0	0	0	0	0	0	0
9	Raptor Management	> 20	196	0	0	245	0	278	112	1,717	424	404	958
		< 20	121	0	0	349	0	65	430	952	17	757	999
		Range	103	0	0	1,081	0	646	289	1,860	314	200	1,278
10	Rangeland		4,369	17,382	4,053	28,108	0	21,572	12,984	16,159	18,709	28,522	25,031
11	Range-Forage		11,241	2,464	7,336	0	0	2,782	4,347	0	0	0	10,886
12	Even-Aged Timber		4,456	20,226	1,111	8,637	0	4,366	5,201	3,931	4,821	26,249	19,355
13	Timber-Visuals		6,555	12,436	1,734	11,673	0	11,320	497	4,535	1,059	13,422	7,835
14	Timber-Forage	PR †	0	0	0	0	0	0	1,497	684	0	0	0
		MOD ‡	0	0	0	0	0	0	7,615	0	0	0	0
15	Uneven-Aged Timber		0	0	0	0	0	0	0	0	0	0	0
16	<20 Cu. Ft. Timber		0	5,832	1,405	3,513	0	0	27,430	3,418	3,292	3,421	18,275
17	Riparian Area	> 20	684	473	310	1,340	0	73	0	147	0	270	159
		< 20	181	164	60	556	0	341	0	44	0	83	89
		Range	329	228	114	271	0	391	0	47	0	32	53

§ Timber Acres only; range acres are in Prescriptions 10 and 11.

† PR = Partial Retention

‡ MOD = Modification

CUR - Current Alternative (continued)														
Mgt. Area 51	Mgt. Area 52	Mgt. Area 54	Mgt. Area 5	Mgt. Area 61	Mgt. Area 62	Mgt. Area 64	Mgt. Area 6	Mgt. Area 65	Mgt. Area 66	Mgt. Area 67	TOTAL	Prescription Description		Mgt. Rx
877	1,346	4,348	453	698	2,935	3,151	1,196	296	348	0	22,871	MinimumLevel	> 20	1
0	0	0	0	0	295	1,727	0	0	0	0	33,931		< 20	
4,533	157	82	232	1,628	1,081	1,283	0	0	0	2,087	15,498		Range	
0	0	0	0	0	0	0	0	0	0	0	70,385	Wilderness - Standard		2
0	0	0	0	0	0	0	0	0	0	0	0	Wild.- Low Standard		3
0	0	0	484	1,934	438	77	0	0	0	0	10,913	SPNM §	> 20	4
90	0	0	251	0	40	14	0	0	0	0	12,100		< 20	
0	0	0	0	0	0	0	0	0	0	0	198	Dev. Rec. - Standard		5
0	0	0	0	0	0	0	0	0	0	0	0	Dev. Rec. - Low Std.		6
0	0	78	159	1,658	1,309	546	292	0	0	0	22,522	Visual Retention §	> 20	7
187	0	0	89	0	32	14	235	0	0	0	8,605		< 20	
800	0	0	0	570	13,218	0	0	0	0	0	14,588	Special Areas		8
818	1,946	14	152	1,579	310	2,665	0	22	0	45	11,885	Raptor Management	> 20	9
915	1,224	40	448	0	51	6	0	115	0	307	6,796		< 20	
9,959	3,430	254	2,056	472	0	760	0	1,615	4,186	4,927	33,430		Range	
234,432	20,863	20,119	15,179	0	0	11,434	27,188	11,311	187,305	23,266	727,986	Rangeland		10
84,566	0	0	0	0	0	0	0	33,977	12,823	8,240	178,662	Range-Forage		11
5,118	24,737	45,803	13,548	9,444	17,469	5,921	1,487	6,021	96	32	228,029	Even-Aged Timber		12
0	564	854	3,069	8,023	8,525	2,433	279	0	70	0	94,883	Timber-Visuals		13
0	0	3,526	0	0	0	5,450	1,368	0	0	0	12,525	Timber-Forage	PR †	14
0	0	9,371	0	0	0	5,485	2,795	0	0	0	25,266		MOD ‡	
0	0	0	0	463	0	1,748	0	0	0	0	2,211	Uneven-Aged Timber		15
6,012	7,201	7,200	4,880	60	414	13,533	10,507	3,453	794	64	120,704	<20 Cu. Ft. Timber		16
0	203	0	179	19	0	0	0	25	0	0	3,882	Riparian Area	> 20	17
34	92	0	50	0	0	0	0	61	0	0	1,755		< 20	
580	245	0	46	4	0	0	0	712	585	0	3,637		Range	

## RPD - Resource Planning Act (with departure) Alternative

Mgt. Rx	Prescription Description		Mgt. Area 41	Mgt. Area 42	Mgt. Area 44	Mgt. Area 4	Mgt. Area 45	Mgt. Area 46	Mgt. Area 1	Mgt. Area 2	Mgt. Area 4	Mgt. Area	Mgt. Area 5
1	Minimum Level	> 20	13	589	668	0	0	48	875	409	885	1,551	2,180
		< 20	1,022	80	0	3,318	0	6,026	0	338	0	8,532	0
		Range	103	332	50	0	0	61	560	892	20	3,710	1,910
2	Wilderness - Standard		0	0	0	0	70,385	0	0	0	0	0	0
3	Wilderness - Low Standard		0	0	0	0	0	0	0	0	0	0	0
4	Semi-Primitive Non-Motorized §	> 20	1,666	1,041	1,577	1,896	0	422	0	228	0	1,150	0
		< 20	1,519	589	2,123	4,201	0	1,839	0	392	0	1,042	90
5	Dev. Recreation - Standard		0	0	0	0	0	0	0	0	0	0	0
6	Dev. Recreation - Low Standard		0	0	0	0	0	0	0	0	0	0	0
7	Visual Retention §	> 20	3,325	1,908	1,216	5,769	0	5,356	0	234	22	337	313
		< 20	913	1,516	619	1,777	0	2,187	0	54	0	506	476
8	Special Areas		0	0	0	0	0	0	0	0	0	0	0
9	Raptor Management	> 20	196	0	0	245	0	278	112	1,717	424	404	958
		< 20	121	0	0	349	0	65	430	952	17	757	999
		Range	103	0	0	1,081	0	646	289	1,860	314	200	1,278
10	Rangeland		0	783	0	548	0	2,660	205	383	3,175	370	3,601
11	Range-Forage		15,610	19,063	11,389	27,560	0	21,694	17,126	16,059	15,534	24,646	32,316
12	Even-Aged Timber		3,105	14,714	839	5,052	0	3,408	9,411	2,688	2,674	20,211	14,518
13	Timber-Visuals		2,957	6,719	1,279	5,998	0	3,383	1,455	2,029	565	10,328	1,813
14	Timber-Forage	PR †	3,598	5,829	454	5,673	0	7,936	539	3,112	696	3,405	5,598
		MOD ‡	1,350	5,398	271	3,584	0	957	3,404	1,321	1,946	5,724	5,262
15	Uneven-Aged Timber		0	0	0	0	0	0	0	0	0	0	0
16	<20 Cu. Ft. Timber		1,654	9,009	1,908	8,136	0	338	28,023	3,472	2,900	6,164	17,663
17	Riparian Area	> 20	684	473	310	1,340	0	73	0	147	0	270	159
		< 20	181	164	60	556	0	341	0	44	0	83	89
		Range	329	228	114	271	0	391	0	47	0	32	53

§ Timber Acres only; range acres are in Prescriptions 10 and 11.

† PR = Partial Retention

‡ MOD = Modification

# RPD - Resource Planning Act (with departure) Alternative (continued)

Mgt. Area 51	Mgt. Area 52	Mgt. Area 54	Mgt. Area 5	Mgt. Area 61	Mgt. Area 62	Mgt. Area 64	Mgt. Area 6	Mgt. Area 65	Mgt. Area 66	Mgt. Area 67	TOTAL	Prescription Description		Mgt. Rx
876	1,346	4,347	453	251	2,206	3,002	1,196	296	348	0	21,539	MinimumLevel	> 20	1
0	0	0	499	59	263	0	0	0	0	0	20,137		< 20	
4,533	157	82	232	1,628	1,081	1,283	0	0	0	2,087	18,721		Range	
0	0	0	0	0	0	0	0	0	0	0	70,385	Wilderness - Standard		2
0	0	0	0	0	0	0	0	0	0	0	0	Wild.- Low Standard		3
0	0	0	484	1,934	438	77	0	0	0	0	10,913	SPNM §	> 20	4
0	0	0	251	0	40	14	0	0	0	0	12,100		< 20	
0	0	0	0	0	0	0	0	0	0	0	198	Dev. Rec. - Standard		5
0	0	0	0	0	0	0	0	0	0	0	0	Dev. Rec. - Low Std.		6
0	0	78	159	1,658	1,309	546	292	0	0	0	22,522	Visual Retention §	> 20	7
187	0	0	89	0	32	14	235	0	0	0	8,605		< 20	
800	0	0	0	570	13,218	0	0	0	0	0	14,588	Special Areas		8
818	1,946	14	152	1,579	310	2,665	0	22	0	45	11,885	Raptor Management	> 20	9
915	1,224	40	448	0	51	6	0	115	0	307	6,796		< 20	
9,959	3,430	254	2,056	472	0	760	0	1,615	4,186	4,927	33,430		Range	
108,732	15,587	0	0	0	0	0	0	0	0	0	136,044	Rangeland		10
210,266	5,276	20,119	15,179	0	0	11,434	27,188	45,288	200,128	31,506	767,381	Range-Forage		11
3,310	3,155	25,997	5,532	8,170	13,640	11,860	3,192	1,922	96	0	153,494	Even-Aged Timber		12
0	420	4,146	1,283	4,234	5,288	7,863	938	0	70	0	60,768	Timber-Visuals		13
0	259	233	1,786	2,197	2,843	528	709	0	0	0	45,395	Timber-Forage	PR †	14
1,808	21,467	29,177	8,016	1,547	3,981	672	1,090	4,099	0	32	101,106		MOD ‡	
0	0	0	0	2,228	969	262	0	0	0	0	3,459	Uneven-Aged Timber		15
5,922	7,201	7,200	4,388	0	446	15,260	10,507	3,453	794	63	134,501	<20 Cu. Ft. Timber		16
0	203	0	179	19	0	0	0	25	0	0	3,882	Riparian Area	> 20	17
34	92	0	50	0	0	0	0	61	0	0	1,755		< 20	
580	245	0	46	4	0	0	0	712	585	0	3,637		Range	

## IND - Industry Alternative

Mgt. Rx	Prescription Description		Mgt. Area 41	Mgt. Area 42	Mgt. Area 44	Mgt. Area 4	Mgt. Area 45	Mgt. Area 46	Mgt. Area 1	Mgt. Area 2	Mgt. Area 4	Mgt. Area	Mgt. Area 5
1	Minimum Level	> 20	1,365	1,583	479	1,345	0	1,673	4,555	2,373	1,092	2,020	4,123
		< 20	0	0	0	0	0	0	0	0	0	0	0
		Range	103	332	50	0	0	61	560	713	20	204	1,910
2	Wilderness - Standard		0	0	0	0	70,385	0	0	0	0	0	0
3	Wilderness - Low Standard		0	0	0	0	0	0	0	0	0	0	0
4	Semi-Primitive Non-Motorized §	> 20	0	0	0	0	0	0	0	0	0	0	0
		< 20	0	0	0	0	0	0	0	0	0	0	0
5	Dev. Recreation - Standard		0	0	0	0	0	0	0	0	0	0	0
6	Dev. Recreation - Low Standard		0	0	0	0	0	0	0	0	0	0	0
7	Visual Retention †	> 20	2,206	756	1,686	2,451	0	2,388	0	231	22	351	313
		< 20	1,042	1,260	1,802	1,353	0	1,499	0	54	0	468	324
8	Special Areas		0	0	0	0	0	0	0	0	0	0	0
9	Raptor Management	> 20	196	0	0	245	0	278	112	1,717	424	404	958
		< 20	121	0	0	349	0	65	430	952	17	757	999
		Range	103	0	0	1,081	0	646	289	1,860	314	200	1,278
10	Rangeland		4,369	17,382	4,053	28,108	0	21,572	9,766	8,699	7,667	20,540	7,426
11	Range-Forage		11,241	2,464	7,336	0	0	2,782	7,565	7,922	11,042	7,982	28,491
12	Even-Aged Timber		4,419	14,653	1,267	4,371	0	3,738	4,314	2,335	364	20,571	15,013
13	Timber-Visuals		3,805	3,707	1,408	9,329	0	6,067	1,102	1,358	3,270	7,225	1,889
14	Timber-Forage	PR †	2,132	5,708	1,210	6,030	0	4,988	0	2,322	123	5,466	5,137
		MOD ‡	2,088	9,790	255	4,448	0	2,656	5,715	1,402	1,915	7,074	3,207
15	Uneven-Aged Timber		0	0	0	0	0	0	0	0	0	0	0
16	<20 Cu. Ft. Timber		4,066	9,935	2,849	16,079	0	7,052	29,862	3,810	3,292	14,993	18,857
17	Riparian Area	> 20	684	473	310	1,340	0	73	0	147	0	270	159
		< 20	181	164	60	556	0	341	0	44	0	83	89
		Range	329	228	114	271	0	391	0	47	0	32	53

§ Timber Acres only; range acres are in Prescriptions 10 and 11.

† PR = Partial Retention

‡ MOD = Modification

# **IND - Industry Alternative (continued)**

Mgt. Area 51	Mgt. Area 52	Mgt. Area 54	Mgt. Area 5	Mgt. Area 61	Mgt. Area 62	Mgt. Area 64	Mgt. Area 6	Mgt. Area 65	Mgt. Area 66	Mgt. Area 67	TOTAL	Prescription Description		Mgt. Rx
1,206	1,228	2,262	440	3,729	2,410	4,147	1,465	227	327	0	38,049	MinimumLevel	> 20	1
0	0	0	0	0	0	0	0	0	0	0	0		< 20	
433	157	82	232	1,628	1,081	1,283	0	0	0	2,087	10,936		Range	
0	0	0	0	0	0	0	0	0	0	0	70,385	Wilderness - Standard		2
0	0	0	0	0	0	0	0	0	0	0	0	Wild.- Low Standard		3
0	0	0	0	0	0	0	0	0	0	0	0	SPNM ‡	> 20	4
0	0	0	0	0	0	0	0	0	0	0	0		< 20	
0	0	0	0	0	0	0	0	0	0	0	198	Dev. Rec. - Standard		5
0	0	0	0	0	0	0	0	0	0	0	0	Dev. Rec. - Low Std.		6
0	0	78	163	1,643	1,383	531	292	0	0	0	14,494	Visual Retention ‡	> 20	7
187	0	0	89	0	32	14	235	0	0	0	8,359		< 20	
800	0	0	0	570	13,218	0	0	0	0	0	14,588	Special Areas		8
818	1,946	14	152	1,579	310	2,665	0	22	0	45	11,885	Raptor Management	> 20	9
915	1,224	40	448	0	51	6	0	115	0	307	6,796		< 20	
9,959	3,430	254	2,056	472	0	760	0	1,615	4,186	4,927	33,430		Range	
162,034	19,566	11,756	15,179	0	0	11,434	13,658	59	55,433	8,717	427,418	Rangeland		10
161,064	1,297	8,363	0	0	0	0	13,530	45,229	144,695	22,789	483,792	Range-Forage		11
3,747	7,778	45,765	9,192	8,412	13,372	12,829	2,995	5,179	139	0	180,453	Even-Aged Timber		12
30	46	3,781	776	4,551	4,375	4,119	525	0	48	0	57,411	Timber-Visuals		13
0	0	1,037	1,871	3,045	3,125	2,438	915	0	0	0	45,547	Timber-Forage	PR †	14
1,011	17,702	3,155	5,269	838	6,009	746	1,227	910	0	32	75,449		MOD ‡	
0	0	7,933	0	0	0	0	0	0	0	0	7,933	Uneven-Aged Timber		15
6,012	7,201	7,200	5,138	59	749	15,274	10,507	3,453	794	63	167,245	< 20 Cu. Ft. Timber		16
0	203	0	179	19	0	0	0	25	0	0	3,882	Riparian Area	> 20	17
34	92	0	50	0	0	0	0	61	0	0	1,755		< 20	
580	245	0	46	4	0	0	0	712	585	0	3,637		Range	
											1,663,642			

## RBU - Reduced Budget Alternative

Mgt. Rx	Prescription Description		Mgt. Area 41	Mgt. Area 42	Mgt. Area 44	Mgt. Area 4	Mgt. Area 45	Mgt. Area 46	Mgt. Area 1	Mgt. Area 2	Mgt. Area 4	Mgt. Area	Mgt. Area 5
1	MinimumLevel	> 20	0	1,583	0	81	0	673	875	531	885	2,020	2,183
		< 20	4,066	9,923	2,873	16,090	0	7,016	29,846	3,803	3,292	14,720	18,868
		Range	103	383	50	0	0	463	560	2,241	20	204	1,910
2	Wilderness - Standard		0	0	0	0	70,385	0	0	0	0	0	0
3	Wilderness - Low Standard		0	0	0	0	0	0	0	0	0	0	0
4	Semi-Primitive Non-Motorized §	> 20	0	0	0	0	0	0	0	0	0	0	0
		< 20	0	0	0	0	0	0	0	0	0	0	0
5	Dev. Recreation - Standard		0	0	0	0	0	0	0	0	0	0	0
6	Dev. Recreation - Low Standard		0	0	0	0	0	0	0	0	0	0	0
7	Visual Retention §	> 20	2,206	756	1,686	2,451	0	2,388	0	231	22	351	313
		< 20	1,042	1,260	1,802	1,353	0	1,499	0	54	0	468	324
8	Special Areas		0	0	0	0	0	0	0	0	0	0	0
9	Raptor Management	> 20	196	0	0	245	0	278	112	1,717	424	404	958
		< 20	121	0	0	349	0	65	430	952	17	757	999
		Range	103	0	0	1,081	0	646	289	1,860	314	200	1,278
10	Rangeland		15,610	19,795	11,389	28,108	0	23,952	17,331	15,093	18,709	28,522	35,917
11	Range-Forage		0	0	0	0	0	0	0	0	0	0	0
12	Even-Aged Timber		4,449	18,683	849	8,763	0	5,371	10,101	3,498	2,664	21,577	16,722
13	Timber-Visuals		3,636	4,605	1,274	3,207	0	3,428	118	2,194	254	1,949	741
14	Timber-Forage	PR †	2,819	5,433	1,626	9,183	0	6,092	24	2,411	209	9,991	6,101
		MOD ‡	2,863	5,099	906	4,314	0	3,544	4,541	1,122	2,750	6,787	3,646
15	Uneven-Aged Timber		0	0	0	0	0	0	0	0	0	0	0
16	<20 Cu. Ft. Timber		0	0	0	0	0	0	0	0	0	0	0
17	Riparian Area	> 20	684	473	310	1,340	0	73	0	147	0	270	159
		< 20	181	164	60	556	0	341	0	44	0	83	89
		Range	329	228	114	271	0	391	0	47	0	32	53

§ Timber Acres only; range acres are in Prescriptions 10 and 11.

† PR = Partial Retention

‡ MOD = Modification



### RBU - Reduced Budget Alternative (continued)

Mgt. Area 51	Mgt. Area 52	Mgt. Area 54	Mgt. Area 5	Mgt. Area 61	Mgt. Area 62	Mgt. Area 64	Mgt. Area 6	Mgt. Area 65	Mgt. Area 66	Mgt. Area 67	TOTAL	Prescription Description		Mgt. Rx
903	1,339	4,378	764	4,312	2,257	3,026	1,196	292	348	0	27,646	MinimumLevel	> 20	1
6,012	7,201	7,200	5,133	59	749	15,274	10,507	3,444	794	63	166,933		< 20	
4,533	157	82	232	1,628	1,081	1,283	0	0	0	2,087	17,017		Range	
0	0	0	0	0	0	0	0	0	0	0	70,385	Wilderness - Standard		2
0	0	0	0	0	0	0	0	0	0	0	0	Wild.- Low Standard		3
0	0	0	0	0	0	0	0	0	0	0	0	SPNM ‡	> 20	4
0	0	0	0	0	0	0	0	0	0	0	0		< 20	
0	0	0	0	0	0	0	0	0	0	0	198	Dev. Rec. - Standard		5
0	0	0	0	0	0	0	0	0	0	0	0	Dev. Rec. - Low Std.		6
0	0	78	163	1,643	1,383	531	292	0	0	0	14,494	Visual Retention ‡	> 20	7
187	0	0	89	0	32	14	235	0	0	0	8,359		< 20	
800	0	0	0	570	13,218	0	0	0	0	0	14,588	Special Areas		8
818	1,946	14	152	1,579	310	2,665	0	22	0	45	11,885	Raptor Management	> 20	9
915	1,224	40	448	0	51	6	0	115	0	307	6,796		< 20	
9,959	3,430	254	2,056	472	0	760	0	1,615	4,186	4,927	33,430		Range	
318,998	20,863	20,119	15,179	0	0	11,434	27,188	45,288	200,128	31,506	905,129	Rangeland		10
0	0	0	0	0	0	0	0	0	0	0	0	Range-Forage		11
3,288	9,994	50,845	9,446	2,703	13,647	13,667	3,668	2,571	139	0	202,645	Even-Aged Timber		12
0	2	1,646	1,709	4,735	3,352	2,206	217	0	49	0	35,322	Timber-Visuals		13
0	46	2,220	1,144	6,293	4,312	4,948	1,223	0	0	0	64,075	Timber-Forage	PR †	14
1,831	15,249	4,816	4,399	2,682	6,088	425	885	3,455	0	32	75,434		MOD ‡	
0	0	0	0	0	0	0	0	0	0	0	0	Uneven-Aged Timber		15
0	0	0	0	0	0	0	0	0	0	0	0	<20 Cu. Ft. Timber		16
0	203	0	179	19	0	0	0	25	0	0	3,882	Riparian Area	> 20	17
34	92	0	50	0	0	0	0	61	0	0	1,755		< 20	
580	245	0	46	4	0	0	0	712	585	0	3,637		Range	

## AMN - Amenity Alternative

Mgt. Rx	Prescription Description		Mgt. Area 41	Mgt. Area 42	Mgt. Area 44	Mgt. Area 4	Mgt. Area 45	Mgt. Area 46	Mgt. Area 1	Mgt. Area 2	Mgt. Area 4	Mgt. Area	Mgt. Area 5
1	MinimumLevel	> 20	2,406	9,434	711	1,222	0	800	3,268	2,144	3,566	11,274	8,543
		< 20	0	0	0	0	0	0	0	0	0	0	0
		Range	11,344	5,713	9,195	7,396	0	705	560	1,322	20	204	1,910
2	Wilderness - Standard		0	0	0	0	70,385	0	0	0	0	0	0
3	Wilderness - Low Standard		0	0	0	0	0	0	0	0	0	0	0
4	Semi-Primitive Non-Motorized ‡	> 20	4,608	2,213	3,225	3,708	0	3,539	0	865	1,343	1,849	77
		< 20	2,457	1,812	2,777	6,830	0	2,952	0	516	596	1,249	420
5	Dev. Recreation - Standard		0	0	0	0	0	0	0	0	0	0	0
6	Dev. Recreation - Low Standard		0	0	0	0	0	0	0	0	0	0	0
7	Visual Retention †	> 20	4,615	5,934	1,782	8,461	0	6,539	541	578	60	2,258	3,063
		< 20	1,388	3,717	1,075	3,197	0	2,787	1,831	205	23	2,529	3,074
8	Special Areas		0	0	0	0	0	0	0	0	0	0	0
9	Raptor Management	> 20	196	0	0	245	0	278	112	1,717	424	404	958
		< 20	121	0	0	349	0	65	430	952	17	757	999
		Range	103	0	0	1,081	0	646	289	1,860	314	200	1,278
10	Rangeland		4,369	14,465	2,244	20,712	0	20,928	9,766	8,090	7,667	28,522	9,747
11	Range-Forage		0	0	0	0	0	2,782	7,565	7,922	11,042	0	26,170
12	Even-Aged Timber		0	1,200	0	1,700	0	0	0	0	0	11,259	10,250
13	Timber-Visuals		2,196	6,189	196	6,599	0	2,984	1,399	3,486	1,293	8,226	4,073
14	Timber-Forage	PR †	1,095	7,674	391	5,084	0	3,942	10,239	1,474	262	1,867	1,838
		MOD ‡	1,095	3,553	0	1,200	0	555	239	1,474	262	1,940	1,838
15	Uneven-Aged Timber		0	0	0	0	0	3,151	0	0	0	4,034	0
16	<20 Cu. Ft. Timber		1,263	5,666	799	7,405	0	2,812	28,031	3,143	2,673	11,683	15,687
17	Riparian Area	> 20	684	473	310	1,340	0	73	0	147	0	270	159
		< 20	181	164	60	556	0	341	0	44	0	83	89
		Range	329	228	114	271	0	391	0	47	0	32	53

§ Timber Acres only; range acres are in Prescriptions 10 and 11.

† PR = Partial Retention

‡ MOD = Modification

AMN - Amenity Alternative (continued)														
Mgt. Area 51	Mgt. Area 52	Mgt. Area 54	Mgt. Area 5	Mgt. Area 61	Mgt. Area 62	Mgt. Area 64	Mgt. Area 6	Mgt. Area 65	Mgt. Area 66	Mgt. Area 67	TOTAL	Prescription Description		Mgt. Rx
1,638	3,699	4,362	1,669	4,610	6,164	0	0	1,935	389	32	67,866	Minimum Level	> 20	1
0	0	0	0	0	0	0	0	0	0	0	0		< 20	
4,533	157	82	232	1,628	1,081	1,283	0	0	0	2,087	49,452		Range	
0	0	0	0	0	0	0	0	0	0	0	70,385	Wilderness - Standard		2
0	0	0	0	0	0	0	0	0	0	0	0	Wild.- Low Standard		3
0	0	53	484	1,934	438	85	0	19	12	0	24,452	SPNM ‡	> 20	4
0	0	134	258	0	37	15	0	235	474	0	20,762		< 20	
0	0	0	0	0	0	0	0	0	0	0	198	Dev. Rec. - Standard		5
0	0	0	0	0	0	0	0	0	0	0	0	Dev. Rec. - Low Std.		6
0	90	1,138	1,180	5,801	5,087	3,206	1,046	0	70	0	51,449	Visual Retention §	> 20	7
456	36	15	263	9	114	168	1,087	0	0	0	21,974		< 20	
800	0	0	0	570	13,218	0	0	0	0	0	14,588	Special Areas		8
818	1,946	14	152	1,579	310	2,665	0	22	0	45	11,885	Raptor Management	> 20	9
915	1,224	40	448	0	51	6	0	115	0	307	6,796		< 20	
9,959	3,430	254	2,056	472	0	760	0	1,615	4,186	4,927	33,430		Range	
221,998	20,863	20,119	15,179	0	0	11,434	15,941	59	55,433	8,717	496,253	Rangeland		10
97,000	0	0	0	0	0	0	11,247	45,229	144,695	22,789	376,441	Range-Forage		11
0	3,149	435	0	0	2,800	0	0	0	0	0	30,793	Even-Aged Timber		12
1,490	12,570	6,225	1,356	3,549	4,737	5,453	972	0	43	0	73,036	Timber-Visuals		13
2,866	3,623	4,957	9,261	0	9,351	15,369	1,237	0	0	0	80,530	Timber-Forage	PR †	14
0	3,623	23,941	3,761	0	2,097	697	4,164	4,362	0	0	54,801		MOD ‡	
0	0	22,900	0	6,324	0	0	0	0	0	0	36,409	Uneven-Aged Timber		15
5,743	7,165	7,051	4,706	50	630	15,105	9,655	3,218	320	63	132,868	<20 Cu. Ft. Timber		16
0	203	0	179	19	0	0	0	25	0	0	3,882	Riparian Area	> 20	17
34	92	0	50	0	0	0	0	61	0	0	1,755		< 20	
580	245	0	46	4	0	0	0	712	585	0	3,637		Range	







## Appendix E

### Roadless Areas

Within its boundaries, the Forest has 19 roadless areas totalling 201,600 acres. Figure E-1 is a Forest-wide map showing all roadless areas. An individual map of each roadless area accompanies its description. Table E-1

shows the management prescriptions which apply to these areas by alternative. The map packet accompanying this document also shows roadless areas by alternative and management prescription.

Figure E-1. Modoc National Forest Roadless Areas.

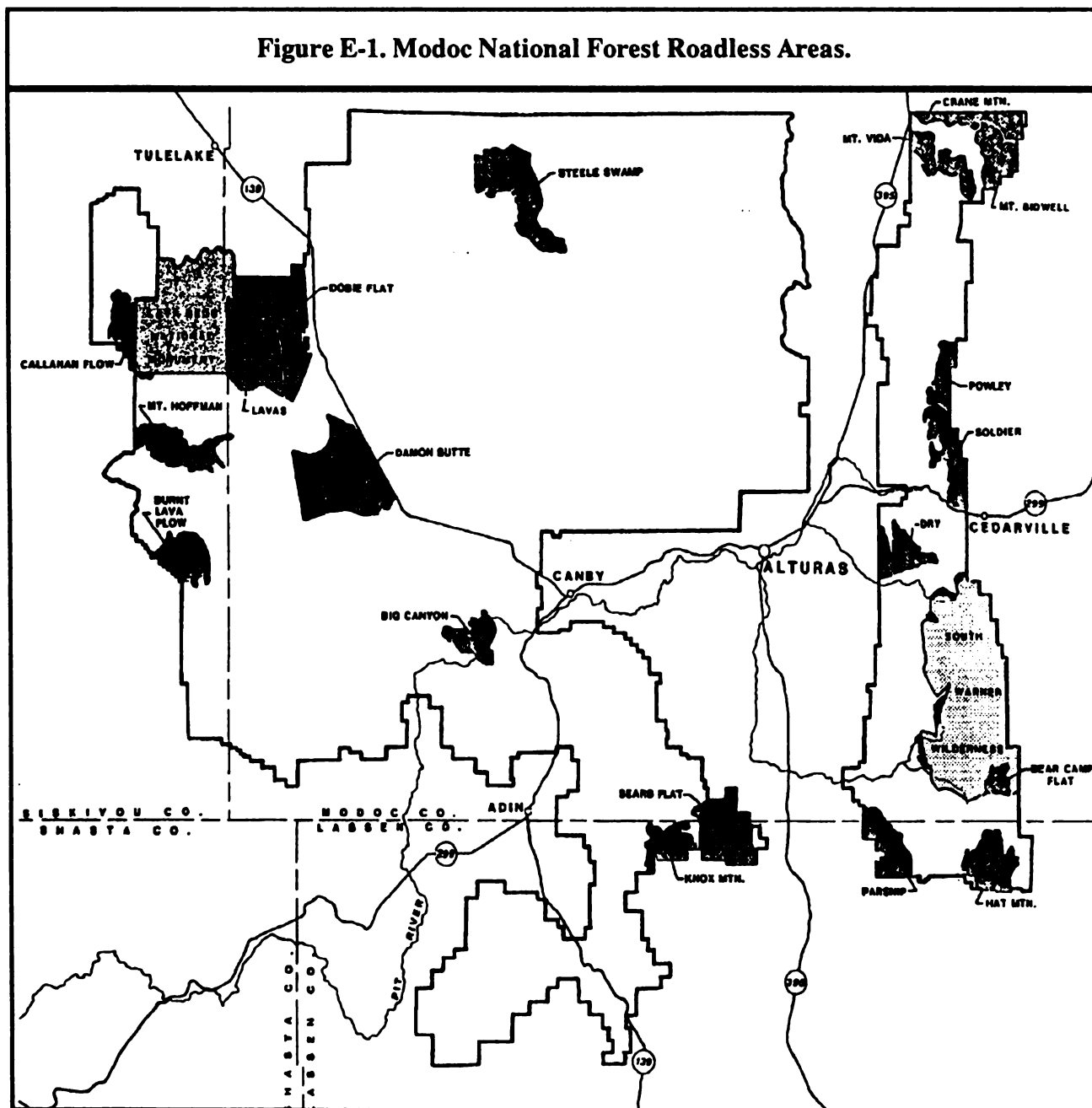


Table E-1. Prescriptions for Roadless Areas by Alternative and Percent.													
Area	Acreage	Prescriptions <sup>1</sup>											
		PRF	(%)	CUR	(%)	RPD	(%)	IND	(%)	RBV	(%)	AMN	(%)
Bear Camp Flat (05154) <sup>2</sup>	2,300	7	25	7	25	7	25	7	20	7	20	7	77
		10	65	10	65	11	65	10	70	10	70	10	20
		13, 14, 15	5	13, 14, 15	5	13, 14, 15	5	12, 14, 15	5	12, 14, 15	5	16	3
		16	5	16	5	16	5	16	5	16	5		
Big Canyon (05166)	6,400	4	60	4	60	4	60	9	30	9	30	4	60
		9	30	9	30	9	30	10	40	10	45	9	35
		10	5	10	5	11	5	11	5	12	5	10	1
		12	nominal	12	nominal	12	nominal	12	5	13, 14, 15	10	11	nominal
		13, 14, 15	3	13, 14, 15	3	13, 14, 15	3	13, 14, 15	10	16	10	12	1
Burnt Lava Flow (E)		16	2	16	2	16	2	16	10			13, 14, 15	2
	8,800	8	100	8	100	8	100	8	100	8	100	8	100
Callahan Flow (E)	8,000	4	98	4	98	4	98	10	95	10	100	4	95
		10	2	10	2	11	2	11	5	13, 14, 15	nominal	11	nominal
		11	nominal					13, 14, 15	nominal				
Crane Mountain (05705)	2,400 (600) <sup>3</sup>	7	70	7	70	7	70	7	1	7	1	4	5
		12, 14, 15	30	12, 14, 15	30	12, 14, 15	30	12	nominal	12	nominal	7	95
								13, 14, 15	99	13, 14, 15	99		



Table E-1. Prescriptions for Roadless Areas by Alternative and Percent. (cont'd)													
Area	Acreage	Prescriptions <sup>1</sup>											
		PRF	(%)	CLUR	(%)	RPD	(%)	IND	(%)	RBU	(%)	AMN	(%)
Damon Butte (05149)	24,700	10	25	10	40	11	40	10	40	10	40	7	<i>nominal</i>
		11	15	12	5	12	5	12	5	12	5	10	40
		12	5	13, 14, 15	10	13, 14, 15	10	13, 14, 15	10	13, 14, 15	10	12	10
		13, 14, 15	10	16	45	16	45	16	45	16	45	13, 14, 15	10
		16	45									16	40
Dobie Flat (C)	12,900	10	100	10	100	11	100	10	100	10	100	7	5
		11	<i>nominal</i>									10	95
Dry (05163)	7,100	4	90	4	94	4	94	7	2	7	2	4	95
		7	3	7	1	7	1	10	50	10	50	7	<i>nominal</i>
		10	7	10	5	11	5	13, 14, 15	<i>nominal</i>	12	1	10	5
		12, 14, 15, 16	<i>nominal</i>					16	48	13, 14, 15	<i>nominal</i>		
										16	47		
Hat Mountain (05152)	9,900	10	50	10	50	11	50	10	50	10	50	4	95
		12	5	13, 14, 15	45	13, 14, 15	45	13	5	13	5	10	3
		13, 14, 15	40	16	5	16	5	12, 14, 15	40	12, 14, 15	40	12	1
		16	5					16	5	16	5	13, 14, 15	1
												16	<i>nominal</i>

Table E-1. Prescriptions for Roadless Areas by Alternative and Percent. (cont'd)													
Area	Acreage	Prescriptions <sup>1</sup>											
		PRF	(%)	CUR	(%)	RPD	(%)	IND	(%)	RBU	(%)	AMN	(%)
Knox Mountain (05146)	5,900 (200)	10	90	10	90	10	89	10	90	10	90	4	87
		12	nominal	12	nominal	11	1	12, 14, 15	10	12, 14, 15	10	10	10
		13, 14, 15	10	13, 14, 15	10	12	nominal	16	nominal	16	nominal	12, 14, 15	3
		16	nominal	16	nominal	13, 14, 15	10	nominal				16	nominal
Lavas (B)	25,400	4	40	4	40	4	40	10	100	10	100	4	40
		10	60	7	nominal	7	nominal	12	nominal	13, 14, 15	nominal	7	10
		13, 14, 15	nominal	10	60	11	60	13, 14, 15	nominal			10	50
				13, 14, 15	nominal	13, 14, 15	nominal						
Mount Bidwell (A5706) (B5706)	11,600	7	35	7	35	7	35	7	25	7	25	4	85
		11	55	11	55	11	55	11	60	10	60	7	5
		12	nominal	12	nominal	13, 14, 15	5	12	5	12	5	10	10
		13, 14, 15	5	13, 14, 15	5	16	5	13, 14, 15	nominal	13, 14, 15	nominal	16	nominal
	16	5	16	5			16	10	16	10			

Table E-1. Prescriptions for Roadless Areas by Alternative and Percent. (cont'd)												
Area	Acreage	Prescriptions <sup>1</sup>										
		PRF (%)	CUR	(%)	RPD	(%)	IND	(%)	RBU	(%)	AMN	(%)
Mount Hoffman (D)	10,800 (200)	4	4	25	4	25	8	45	8	45	4	25
		8	8	45	8	45	10	2	10	2	8	45
		10	10	5	10	5	12	13	12	13	10	nominal
		12	12	10	12	10	13, 14, 15	40	13, 14, 15	40	12	15
		13, 14, 15	13, 14, 15	15	13, 14, 15	15			16	nominal	13, 14, 15	15
Mount Vida (05153)	9,100 (80)	4	4	70	4	70	7	30	7	30	4	88
		7	7	10	7	15	9	5	9	5	7	2
		9	9	3	9	3	10	20	10	35	9	3
		10	10	nominal	11	1	11	15	12	10	10	3
		11	12	2	12	nominal	12	10	13, 14, 15	5	12	2
		12	13, 14, 15	nominal	13, 14, 15	15	13, 14, 15	5	16	15	13, 14, 15	nominal
		13, 14, 15	16	nominal	16	nominal	16	15			16	2
		16	5									
Parsnip (05162)	8,200	4	4	95	4	95	10	32	10	65	4	97
		7	7	3	7	4	11	33	13, 14, 15	8	10	1
		11	10	2	11	1	13, 14, 15	8	16	27	11	2
		16	11	nominal		2	16	7				

Table E-1. Prescriptions for Roadless Areas by Alternative and Percent. (cont'd)

Area	Acreage	Prescriptions <sup>1</sup>											
		PRF	(%)	CUR	(%)	RPD	(%)	IND	(%)	RBU	(%)	AMN	(%)
Powley (05156)	6,200	4	95	4	95	4	95	7	95	7	95	4	95
		11	5	7	nominal	7	nominal	10	3	10	3	7	5
		16	nominal	11	5	11	5	11	nominal	12, 14, 15	2		
Sears Flat (05147)	12,500 (500)			16	nominal	16	nominal	16	2	16	nominal		
		10	2	10	80	10	nominal	10	1	10	86	4	50
		11	78	12	10	11	80	11	85	12, 14, 15	10	10	1
		12	10	13, 14, 15	5	12	10	12, 14, 15	10	16	4	11	38
		13, 14, 15	5	16	5	13, 14, 15	5	16	4			12, 14, 15	10
Soldier (05155)	9,400	16	5			16						16	1
		4	90	4	85	4	85	7	70	7	70	4	90
		7	3	7	12	7	12	11	10	10	10	7	10
		11	5	11	1	11	1	12	3	12	3		
		12	1	12	nominal	12	nominal	13, 14, 15	15	13, 14, 15	15		
		13, 14, 15	1	13, 14, 15	1	13, 14, 15	1	16	2	16	2		
		16	nominal	16	1	16	1						

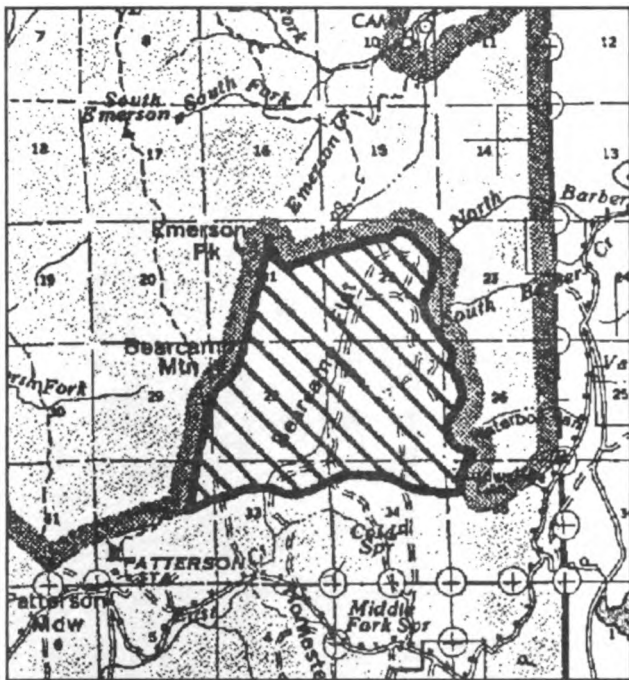
Table E-1. Prescriptions for Roadless Areas by Alternative and Percent. (cont'd)													
Area	Acreage	Prescriptions <sup>1</sup>											
		PRF	(%)	CUR	(%)	RPD	(%)	IND	(%)	RBU	(%)	AMN	(%)
Steele Swamp (05165)	20,000	9	20	9	20	9	20	9	20	9	20	4	50
		11	79	10	40	11	79	11	88	10	88	9	20
		12, 14, 15	1	11	39	12, 14, 15	1	12, 14, 15	2	12, 14, 15	2	11	30
		16	nominal	12, 14, 15	1	16	nominal	16	nominal			12, 14, 15	nominal
Total	201,600												

<sup>1</sup> Management Prescriptions by number:

1. Minimum Mgt. Level
2. Wilderness (Standard)
3. Wilderness (Low Standard)
4. Semi-Primitive Non-Motorized Dispersed Rec.
5. Developed Rec. Site (Standard)
6. Developed Rec. Site (Low Standard)
7. Visual Retention
8. Special Areas
9. Raptor Mgt.
10. Rangeland Mgt.
11. Range-Forage
12. Even-Aged Timber
13. Timber-Visuals
14. Timber-Forage
15. Uneven-Aged Timber
16. < 20 Timber
17. Riparian Area Mgt.

<sup>2</sup> Number assigned to roadless area. See map packet accompanying this document.

<sup>3</sup> Numbers in parentheses are private acres included in total acreage for the roadless area.



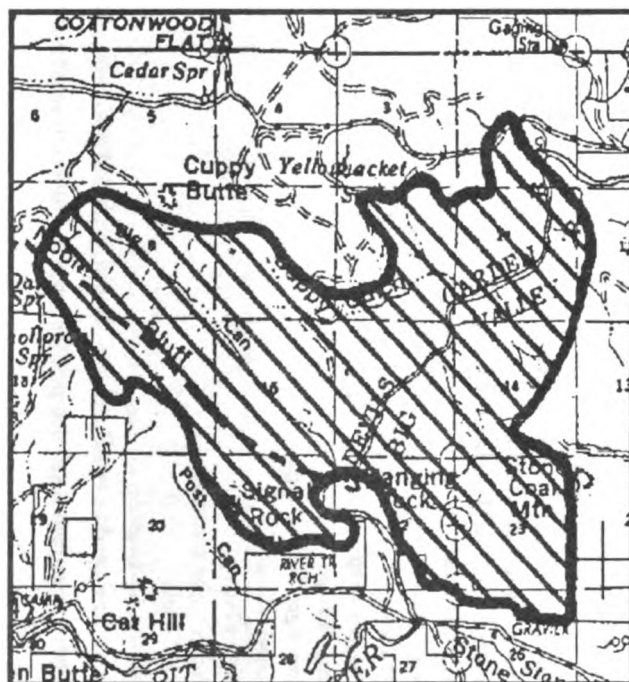
«

## Bear Camp Flat

Bear Camp Flat adjoins the South Warner Wilderness. The terrain is gently sloping until it approaches the Wilderness where it steepens sharply to the ridgetops that form the boundary on the west, north, and east sides of Bear Camp Flat.

Lodgepole pine, mahogany, and meadows dominate the landscape.

Primary uses include hunting and cattle grazing. Current uses include livestock watering ponds and drift fences, and approximately 6 miles of primitive road.



«

## Big Canyon

Big Canyon is located in the central portion of the Forest and is bisected by the Pit River. The terrain is mountainous and extremely steep along the sides of the river. Elevations range from 4,320 feet to 5,730 feet at the summit of Noble Bluff to the west. The boundary is irregular and ill-defined. Roads surround the area.

Big Canyon to the west is a long, arrow, moderately sloped canyon, with scattered ponderosa pine with dense pockets of timber at the head of the canyon. Pit River Canyon is extremely steep, dominated by large rocky outcrops. A major feature is Hanging Rock. The east side of the canyon contains numerous steep sided draws which contain scattered dense pockets of ponderosa pine. The canyon walls are vegetated with sagebrush and grass. Current uses include cattle grazing, hunting, and fishing.

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## Burnt Lava Flow

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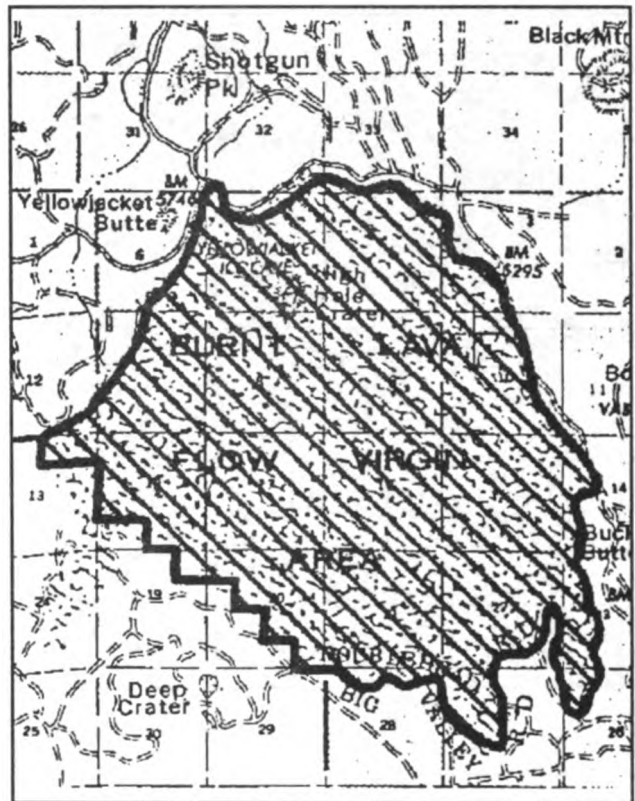
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Burnt Lava Flow is located on the western portion of the Forest and extends onto the Shasta-Trinity National Forest. The configuration is generally oval with the boundary following the lava flow.

The flow consists of a recent flow of jumbled, black lava surrounding three large islands of timber on old cinder cones that protrude above the flow as well as several small islands of timber in depressions caused by the lava dividing and flowing around them. The prominent feature is High Hole Crater at the north, a semi-barren cinder cone rising 386 feet above the flow, with a crater approximately 150 feet deep. Several ice caves are located at the northern edge of the flow and other probably exist in the largely unexplored interior region. There is no water source.

Well-travelled roads are visible from most points within the area.

The Burnt Lava Flow was withdrawn from mineral entry in 1967, following its original classification as a Virgin Area in 1957. On May 21, 1982, the area was classified as a Geological Area by the Pacific Southwest Regional Forester. This classification requires that the area remain in as near natural condition as possible.



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## Callahan Flow

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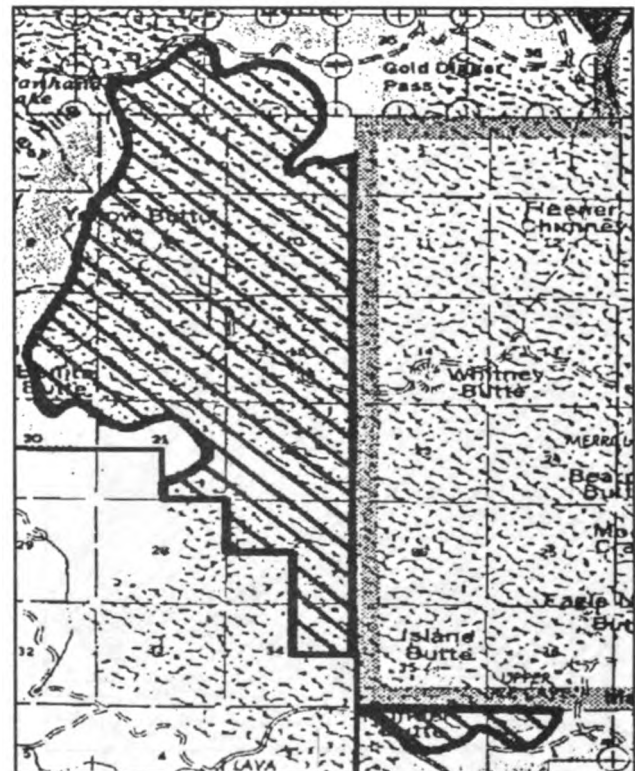
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The Callahan Flow is located in the northwestern portion of the Forest and rests against the south and west boundaries of the Lava Beds National Monument. The configuration is long and narrow. The north, west, and south boundaries meander along the Callahan Lava Flow.

The topography is formed by two major lava flows and is characterized by broken rough lava, gently flowing into two wavy fan shapes. The oldest flow to the north is extensively covered by native bunchgrass, while the southern area is rugged and difficult to travel. No water exists.

Current uses are principally cattle grazing, occasional sightseeing, hunting, and educational and scientific study.

Historic logging railroad grade parallels the southern boundary.



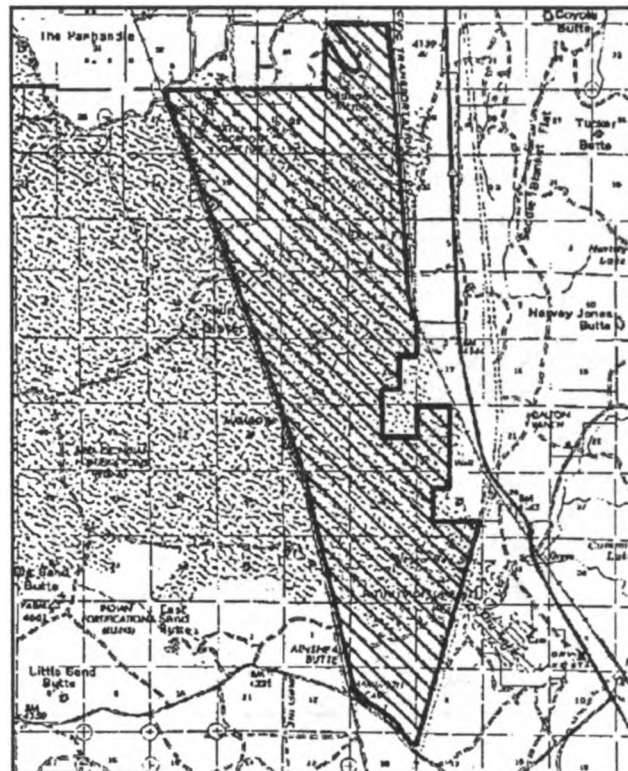




## Dobie Flat

>>

Dobie Flat is located in the western portion of the Forest. The boundary runs parallel to the Southern Pacific Railroad and a 500-KV powerline on the east, and the Burlington Northern Railroad (BNR) on the west. The Lavas roadless area lies across the tracks to the west of the BNR. The terrain consists of expansive areas of flat, broken, rough lava. Grasses interrupted by extensive stands of sagebrush and juniper dominate the landscape. The predominant feature of the area is Casuse Mountain, a barren hill. The climate is generally windy year-round. The topography provides little available refuge. Wild fires are common.



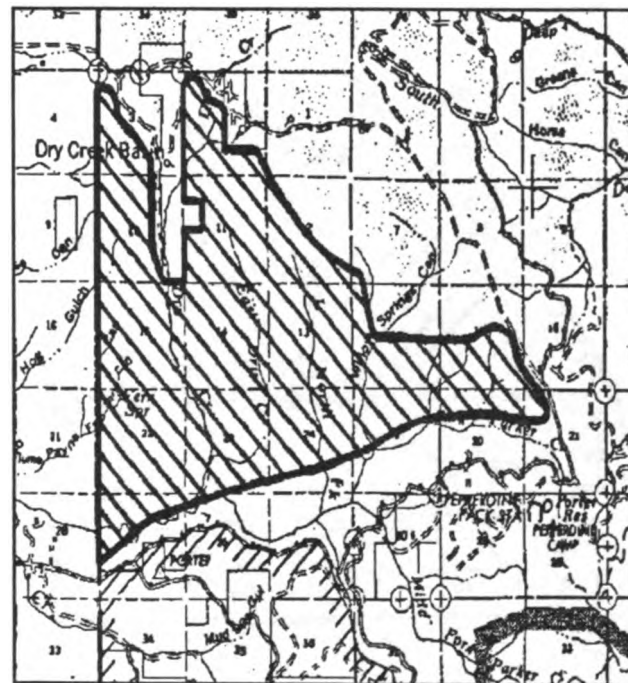
## Dry

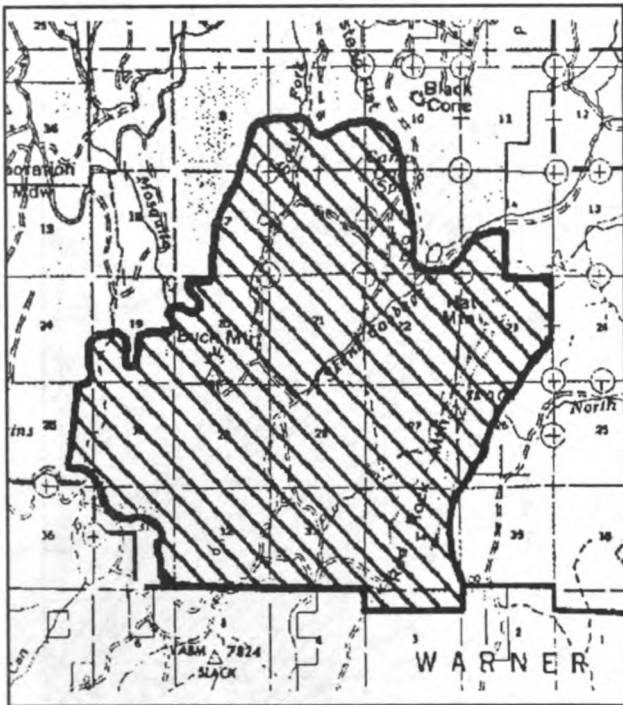
>>

Dry is located in the central portion of the Warner Mountain range, adjacent to the Forest boundary, and north of the Parker Creek Road. Terrain is mountainous and steep, ranging from 5,200 feet to 6,840 feet at the summit of an unnamed peak east of Dry Creek Basin. Vegetation consists of heavy timber in the canyons with juniper on the ridges.

Primary uses include hunting and cattle grazing. Non-conforming uses include livestock ponds, scattered throughout the area, and a fence which borders the private land to the north.

The area contains habitat for mule deer winter and summer range, and fawning areas, as well as prairie falcon nest sites.





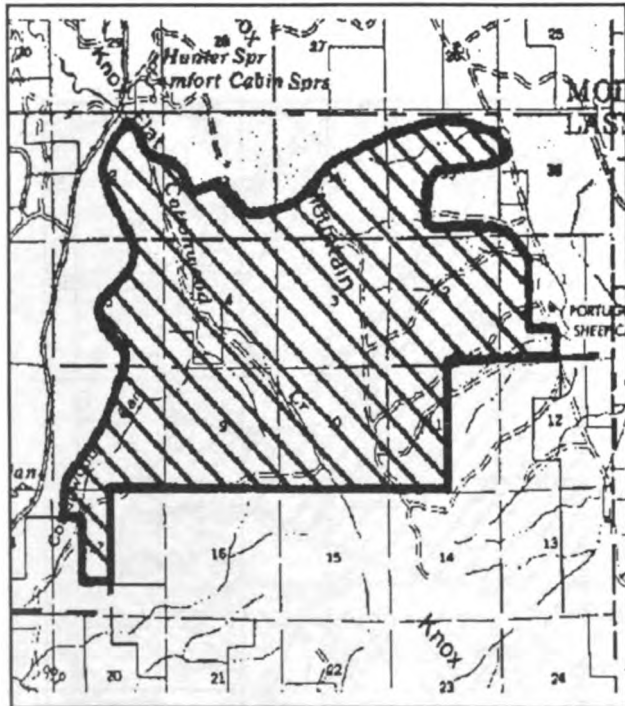
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## Hat Mountain

Hat Mountain is located at the extreme southern end of the Warner Mountains adjacent to the Forest boundary. The terrain is generally mountainous, ranging from 7,000 feet to 8,700 feet at the summit of Hat Mountain. Lodgepole pine and mixed conifers, mountain mahogany, and grasses dominate the landscape.

Hunting and livestock grazing are primary uses. Non-conforming uses including livestock watering ponds, approximately 27 miles of primitive road and 2.5 miles of road providing logging truck access to a 730-acre commercial firewood cutting area.

Wildlife habitat consists of mule deer summer range and fawning areas; existing and potential goshawk; potential for pileated woodpecker, osprey, and prairie falcon; and nesting and brood rearing sites for waterfowl.



<<

## Knox Mountain

Knox Mountain is located at the southern edge of the Forest and straddles the Modoc-Lassen County line. Sears Flat roadless area is located to the east. The west boundary follows a ridge but the northwest and eastern boundaries lack definition. Knox Mountain, the prominent feature runs north and south through the central part. The eastern slopes of Knox Mountain are dominated with open stands of ponderosa pine. Wild fires are typical. The western slopes of Knox Mountain are dominated with sagebrush and scattered young juniper with large stands of mountain mahogany.

Primary uses of the area include hunting and cattle grazing. Suitable wildlife habitat consists of summer range for pronghorn, and winter and summer range for mule deer with localized areas used for fawning.

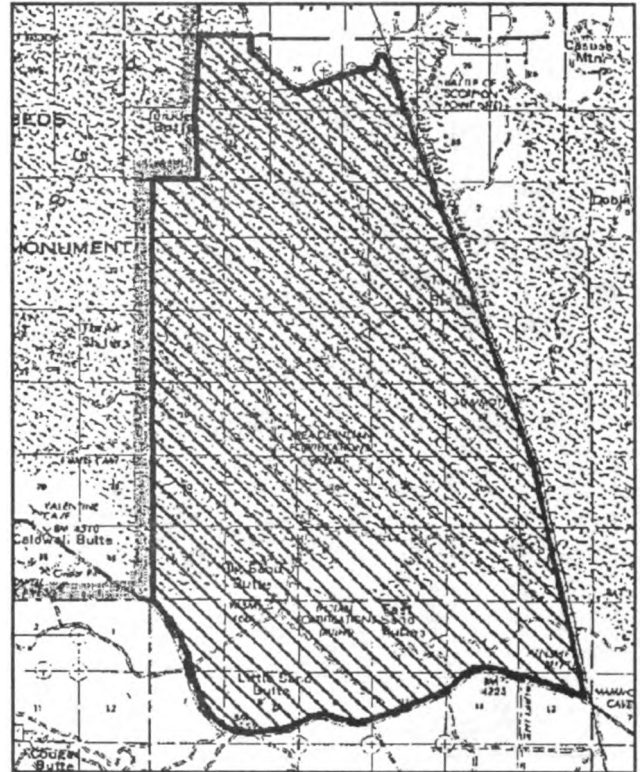
## Lavas



Lavas is located in the western portion of the Forest. The boundary runs parallel to the Lava Beds National Monument on the west, and the BNR on the east. Dobie Flat roadless area lies across the tracks to the east of the BNR. The terrain consists of expansive areas of flat, broken, rough lava.

Grasses interrupted by extensive stands of sagebrush and juniper dominate the landscape. The climate is generally windy year-round. The topography provides little available refuge. Wild fires are common.

Primary uses of the area are sheep grazing and big game hunting. The area provides key winter range for deer and pronghorn.



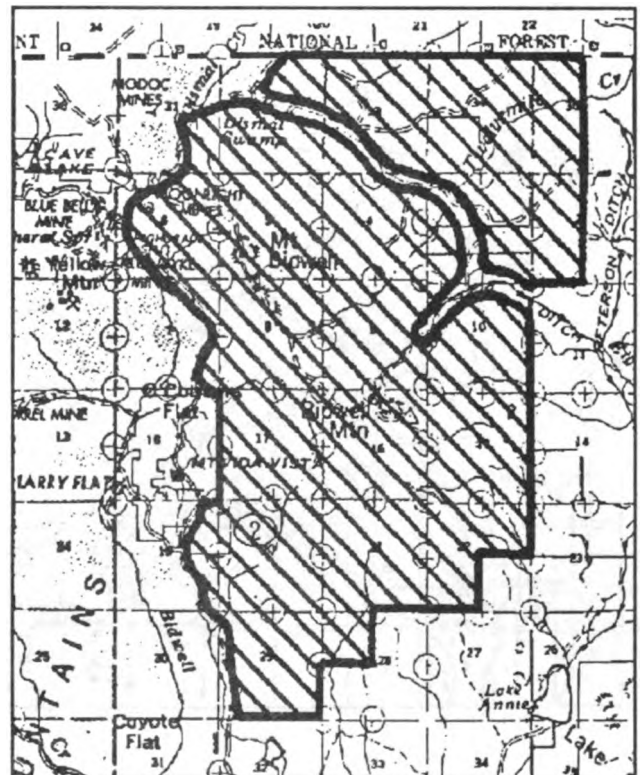
## Mount Bidwell

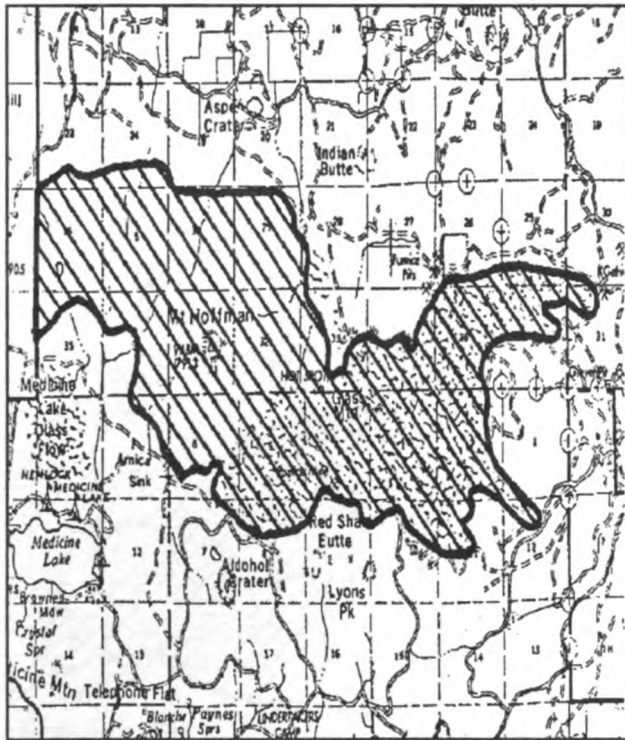


Mount Bidwell is located north of the Warner Mountain range extending into Oregon on the Fremont National Forest. This discussion is confined to the 72% portion in California. This roadless area is bordered on the east by the Forest boundary, and the road from Fort Bidwell to New Pine Creek forms most of the western boundary. About 620 acres of private land are located within the area.

Topography is generally mountainous and extremely steep, ranging from 5,400 feet to 8,290 feet high at the summit of Mount Bidwell, the dominant feature. Vegetation consists of lodgepole pine and mixed conifer at higher elevations, giving way to mountain mahogany, aspen and willows and grasses at the lower elevations.

Primary uses include hunting and livestock grazing. Non-conforming uses include fences and primitive roads. Old mining cabins, related facilities, and mine tailings are visible along the northwestern boundary.





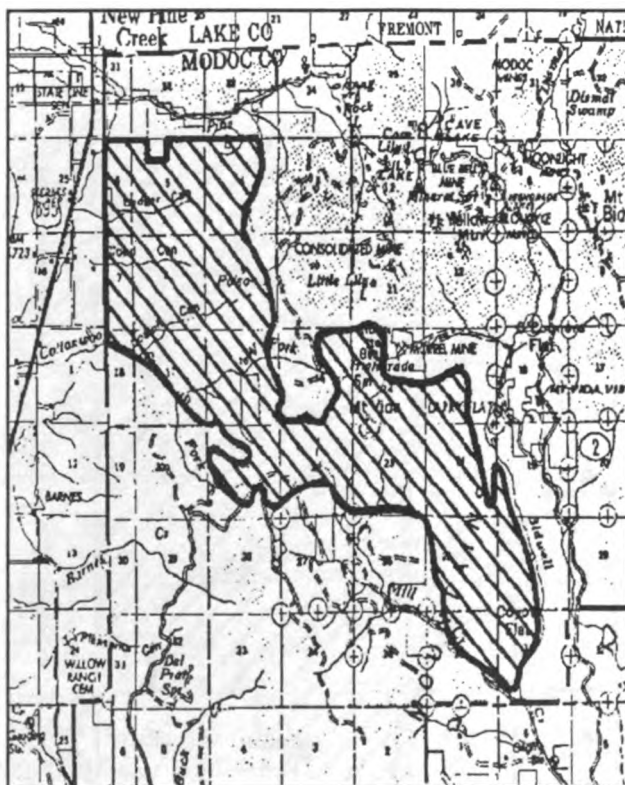
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## Mount Hoffman

Mount Hoffman is located in the western portion of the Forest to the north and northeast of Medicine Lake recreational complex. The area consists of two distinct contrasting features — forested slopes of Mount Hoffman to the west and Glass Mountain volcanic glass flow to the east. The configuration is wide and narrow and generally surrounded by primitive logging and mining roads. The western portion extends into the Klamath National Forest.

The gentle slopes of Mount Hoffman sweep upward rising to a peak of 7,913 feet where the surrounding area, including Mount Shasta and Lassen Peak, can be viewed. Over 5,000 acres of fir, lodgepole pine, and mixed conifer cover the landscape in an unbroken pattern.

To the east, in stark contrast, is Glass Mountain which is devoid of vegetation. Formed through the accumulation of three independent lava flows, the area displays a great mass of volcanic extrusion and a wide variety of obsidian, pumice and minerals. Glass Mountain is a monolith reaching to 7,622 feet, the highest elevation of any lava flow in the Medicine Lake Highlands. Visitation to the area is generally confined to the exterior because of the rough, rugged lava terrain. There is no water.



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## Mount Vida

Mount Vida is located on both sides of the main crest in the north Warner Mountains. It is bordered on the west by the Forest boundary and meanders in a southeasterly direction. Its configuration is long and narrow, and its boundary difficult to locate on the ground. The topography is mountainous with steep canyons. Elevations range from 5,200 feet along the western boundary to 8,200 feet at the summit of Mount Vida, the dominant feature. Mount Vida provides an excellent vista of California, Nevada, and Oregon.

Vegetation consists of scattered mixed conifer stands at the higher elevations giving way to sage and grasses at the lower elevations. Primary uses are cattle grazing and hiking. Non-conforming uses include livestock water developments and fences associated with grazing. The Highgrade National Recreation Trail bisects the area in a southwest to northeast direction, passing immediately west of the Mount Vida summit.

Suitable habitat for bald eagles has been identified in the area. Other habitat includes mule deer summer and winter range, existing and potential habitat for goshawk, and potential nesting sites for prairie falcon and peregrine falcon.



## Parsnip

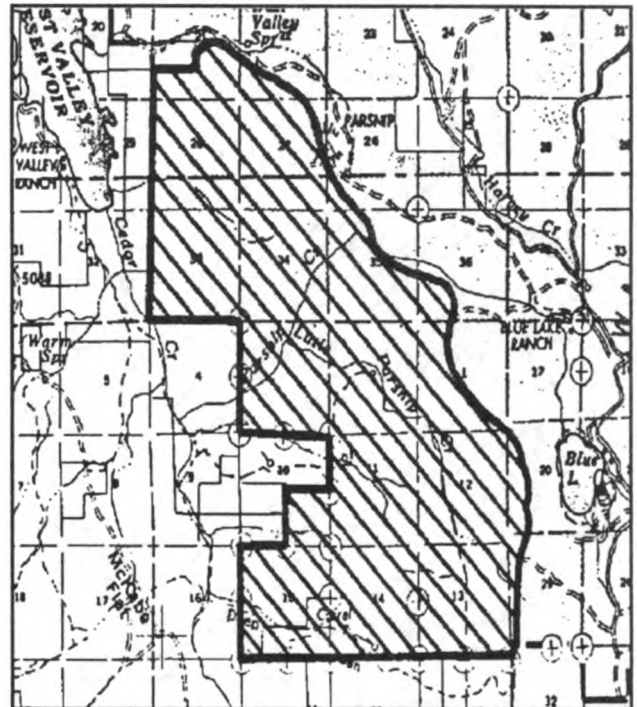
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Parsnip is located in the southwest corner of the Warner Mountain range adjacent to the Forest boundary. Blue Lake is located just east of the area, with West Valley Reservoir to the west, outside the Forest boundary.

Terrain is gently sloping in the western portion, becoming gradually steeper in the eastern portion with elevations ranging from 5,000 feet to 7,000 feet. Vegetation consists of mixed conifer at the higher elevations, giving way to juniper and mahogany at the lower elevations.

Primary uses include hunting and cattle grazing. Non-conforming uses include livestock ponds, trails, fences, a water diversion ditch not currently in use, and four miles of primitive roads.

Portions of three cattle allotments, and one special use pasture, exist within the area, producing approximately 650 AUMs annually.



## Powley

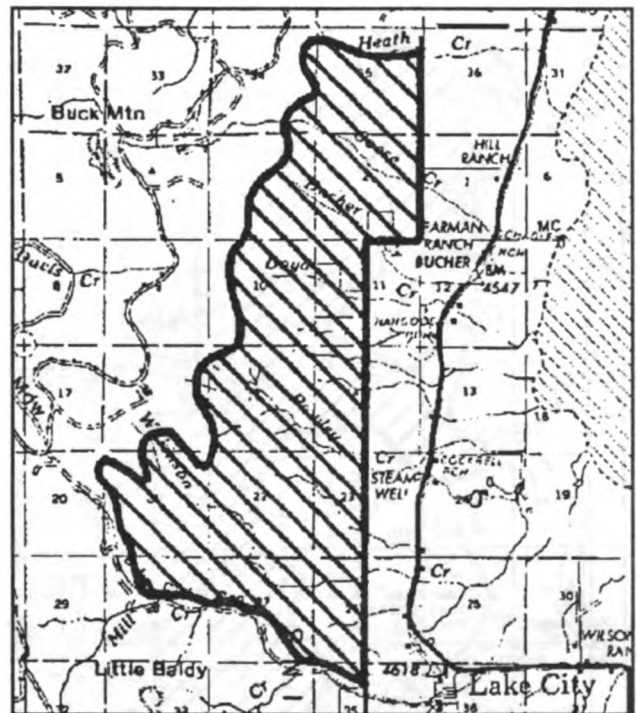
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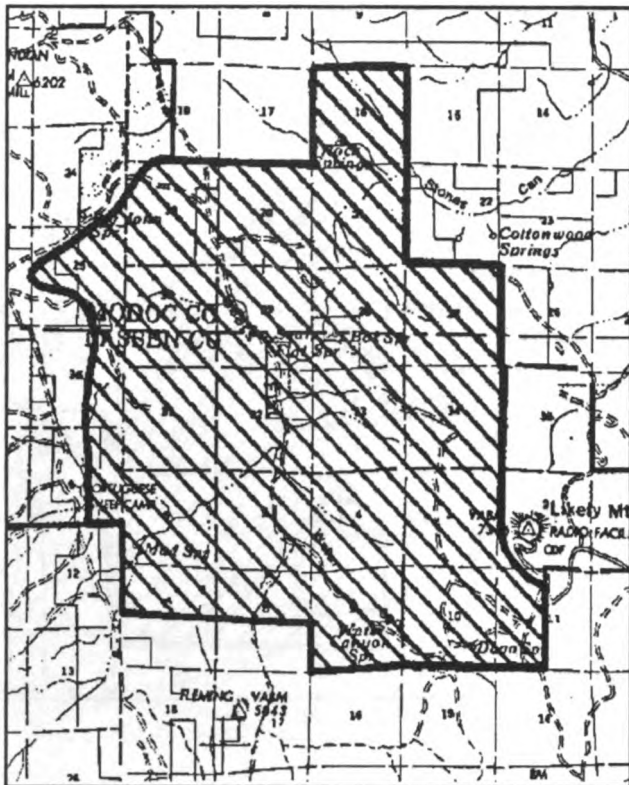
Powley is located in the north central portion of the Warner Mountain range between Lake City Canyon on the south and Heath Creek on the north. The area is contiguous to the eastern boundary of the Forest. The community of Lake City is located to the east in Surprise Valley. The Lake City Canyon road separates this area from the Soldier roadless area to the south.

Situated on the eastern facing escarpment of the Warner Mountains, Powley is mountainous and extremely steep. Elevations range from 5,000 feet to 7,600 feet at the crest of the Warners.

Vegetation in the area consists of lodgepole pine, mixed conifer, white fir, and ponderosa pine at the higher elevations, giving way to bitterbrush, mahogany, sage, and grasses at the lower elevations.

Primary use is limited by the steep terrain and consists of hunting and cattle grazing. There are no physical improvements within the area.





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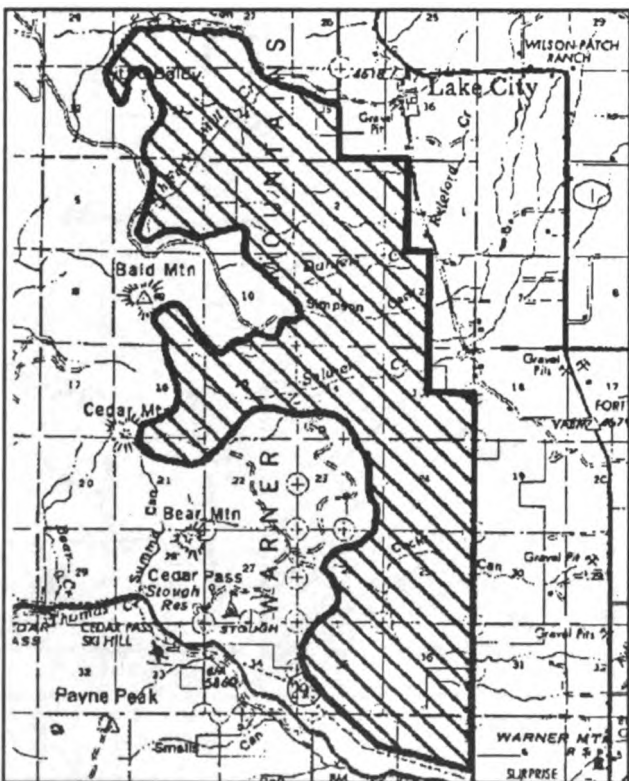
## Sears Flat

Sears Flat is located at the southeastern edge of the Forest and straddles the Modoc and Lassen County lines. The Knox Mountain roadless area is positioned to the west. Likely Mountain and a major ridge running north and south dominate the eastern landscape.

The topography is characterized by moderate terrain dominated by sage, juniper and mountain mahogany. Several small pockets of ponderosa pine are located in the western portion.

Primary use of the area is cattle grazing and big game hunting.

Wildlife habitat consist of pronghorn summer range and kidding grounds, and mule deer intermediate and summer range.



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## Soldier

Soldier is located in the central portion of the Warner Mountain range between Lake City Canyon on the north and Highway 299 on the south. The area is contiguous to the eastern boundary of the Forest. The communities of Lake City and Cedarville are immediately east in Surprise Valley. The Lake City Canyon road separates this area from Powley roadless area to the north.

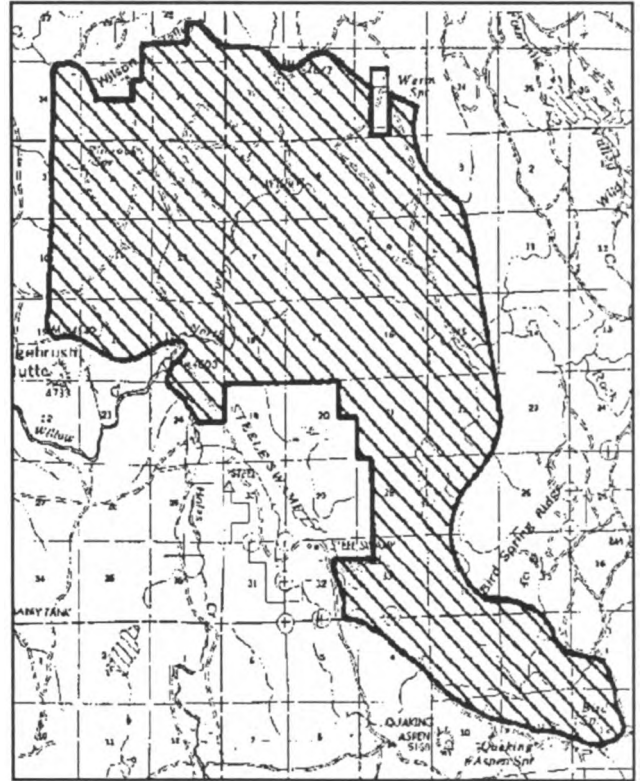
Situated on the eastern facing escarpment of the Warner Mountains, Soldier is mountainous and extremely steep. Elevations range from 5,000 feet to 8,270 feet at the summit of Bald Mountain.

Vegetation consists of lodgepole pine, mixed conifer, white fir, and ponderosa pine at the higher elevations, giving way to mountain mahogany, sage, and grasses at the lower elevations.

Primary use is limited by the steep terrain and consists of hunting and cattle grazing. There is evidence of past logging on some of the lower slopes (abandoned road, mill site, old stumps) but the area has almost returned to a natural state. There are no other improvements existing in the area.

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Current uses in the area include livestock watering tanks, fences, an old telephone line right-of-way, and approximately 15 miles of primitive road. The historic Applegate Trail crosses the southwest portion.











## Appendix F

### National Natural Landmark Analysis

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This appendix summarizes the evaluation of the potential National Natural Landmarks (NNLs) on the Forest.

NNLs are sites possessing exceptional values or qualities that illustrate or interpret the natural heritage of the nation. The NNL program is a U. S. Department of Interior, National Park Service (NPS) program based on the authority of the Historic Sites Act of 1935. The purposes of the NNL program are (1) to encourage the preservation of sites illustrating the geological and ecological character of the United States, (2) enhance the educational and scientific value of sites thus preserved, and (3) to foster a greater concern for the conservation of the nation's heritage.

The NPS conducts theme studies to identify potential sites that appear to meet the criteria for natural landmarks. Four general natural history themes are used to select areas: (1) Landforms of the Present, (2) Geologi-

cal History of the Earth, (3) Land Ecosystems, and (4) Aquatic Ecosystems. Unlike Special Interest Areas, the establishment of an NNL is not a Forest Service action; the Forest Service may make recommendations. The NPS accepts them and evaluates potential NNLs against a list of NNL criteria including feature excellence, viability, condition, inherent diversity, and education and research. Upon NPS recommendation, the Secretary of the Interior can designate an NNL. Forest Service direction identifies areas through the Forest Planning process that will be recommended to the NPS as NNLs.

When an area is designated as an NNL, the Regional Forester and Forest Supervisor take appropriate steps to protect the important features. The Forest Service retains full management prerogative. Provided the integrity of the NNL is protected, no restrictions are placed on managing the site under the multiple-use concept.







## Appendix G

### Snag Management and Modeling

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#### Introduction

Planning regulations in 36 CFR 219.19 direct forests to maintain viable wildlife populations. Snags are important for many wildlife species which forage or dwell in them (Chapter 3, Section 24). The first step in snag management is determining the minimum number of snags necessary to sustain viable populations of dependent species. Following research and the experience of many forests, Region 5 developed minimum management requirements (MMRs) displayed in Chapter 4 Section E of the Forest Plan:

1.5 snags/acre on > 20 timber land

0.5 snags/acre on < 20 timber land

This appendix reviews the opportunities and assumptions used by the Forest to incorporate snag MMRs in the modelling and management of the Forest. Detailed information is available in the Snag Analysis of the Management Situation in the Forest planning records.

This appendix reflects changes in snag modeling assumptions which were used to determine snag density levels and management direction for the PRF, IND, and AMN alternatives. Under the CUR, RPD, and RBU alternatives, the assumptions used for modeling snags are explained in the EIS, Appendix G.

#### Current Management Situation

The value of snags in forest ecosystems has not always been apparent. For many years some people perceived snags as lightning rods which attract and spread wildfires. As a result, thousands of snags were cut to reduce fire potential. Others felt snags were safety hazards along roads and in timber harvest operations. Consequently, snags were cut under the provisions of timber sale contracts as a safety measure. Because some regard standing dead trees as a waste of a commercially valuable resource, many green, insect-infested snags were harvested in salvage sales.

In the early 1970's, snag management on the Forest progressed from non-existent to passive. Timber sale contracts no longer required purchasers to fall snags within a sale area. Fire crews have not cut them as winter projects for 10-20 years. However, salvage sales and firewood cutting continued. With improved inventories to

determine the extent of snag deficits, the need for active management became apparent.

In 1980, snag cutting for firewood was prohibited on all districts except within 200 feet of designated roads, and in designated units on the Warner Mountain and Doublehead Districts. In 1982, Forest initiated policy that prohibited all snag cutting except in designated units for lodgepole pine on the Warner Mountain and Doublehead Districts. Since then, approximately 2.9 MMBF has been salvage logged on the Forest, almost 2.3 MMBF of which has come from the eastside pine vegetation type. Without an inventory of pre-sale snag densities a conflict between meeting snag MMRs and salvage logging could exist. Timber sale contracts still require removal of snags deemed safety hazards.

Transects and other field evaluations by biologists indicate that snag densities are generally adequate (1.4 to 3.0 snags/acre) in mixed conifer and red fir timber. But densities are below standards (.2 to .6 per acre) in eastside pine. Low snag densities are the result of past harvest practices such as intensive annual salvaging, selective cutting and snag felling after harvest. Further, because eastside pine has a higher value than other species, and is easily accessible, timber operations have historically concentrated in those stands. Eastside pine comprises about 50% of commercial timber types on the Forest. The deficit is more acute when the MMR of 1.5 snags/acre is managed at the timber compartment level (as required in MMRs, R5 LMP Direction).

#### Opportunities

Forest biologists reviewed literature on snags to determine opportunities for relieving the snag deficit (bibliography). From research and experience on the Forest, the following opportunities were developed and evaluated.

*Green Tree Recruitment* - is the most widely practiced method on the Forest for achieving minimum snag numbers. Theoretically, enough trees are left in a harvest unit to account for the difference between the existing snag density and the snag MMR of 1.5/acre. For example, if existing snag density is .5 snags/acre, 1.0 green trees/acre should be left to equal 1.5. Historically, however, too few green trees are retained in the harvest unit to meet minimum snag density. Live culls and spike-top green trees

are left, but the total number of snags is usually less than 1.5/acre.

Although this passive method of snag recruitment does not increase snag density, if practiced fully it could provide enough green trees which may eventually become snags. Green tree recruitment methods designed to meet only existing snag density standards (1.5 snags per acre) has several disadvantages:

- Green recruitment trees eventually will die, but at an unknown rate. Therefore, predicting when or if minimum snag levels will be met is impossible.
- If green recruitment trees and existing snags, both susceptible to windthrow, are blown over, minimum snag densities will never be met.
- If green recruitment trees are not permanently marked as future snags and designated in stand record cards, they may be cut during the next harvest entry.
- Recruitment trees are not left in sufficient numbers to account for snag densities over the rotation period.

**Girdling** - is an active method of recruitment to kill green trees and increase snag density quickly. Bull (1986) found that 13% of the trees girdled in her study area had fallen within five years. However, about one-half of the girdled trees fell over after ten years.

This method was used on the Forest one time and cost approximately \$5/tree. In 1985, 75 trees were girdled in a snag deficient area of the Twin Springs Timber Sale (Devil's Garden District), and financed with KV funds.

**Topping** - is a recruitment method for removing the tops of green trees by explosives or chain saw, and costs approximately \$30/tree. The remaining portion of the tree dies naturally. Topping is the best method for increasing snag density because:

- Topped snags are resistant to windthrow. Over the long term, fewer trees are required to maintain MMRs.
- Topped trees die more slowly than snags recruited through other methods.
- Volume in the topped portion of the tree can be sold, which reduces costs.
- Topped trees will not be considered as crop trees during the next harvest entry.

Topping was used within the Bonneville Power Administration Malin-Warner powerline right-of-way that

crosses the Doublehead and Devil's Garden Ranger Districts. Topping 250 green ponderosa pine trees was part of the project's mitigation plan to offset the loss of snags and green trees during right-of-way clearing operations. This project demonstrated a methodology for snag management by which the Forest could actually meet MMRs.

**No Salvage** - If salvage sales were reduced or eliminated Forest-wide in snag deficient vegetation types, snags would gradually increase. However, MMRs cannot be met using this method alone. Another drawback to natural mortality is that the distribution of snags cannot be controlled. Some areas may have a biological excess of snags (> 5/acre), while others remain deficient. Finally, the falling rate of natural snags is high. Bull (1986) found that over one-half the natural snags in her study area had fallen within five years.

### Snag Modeling Assumptions - Treated Acres

The Forest analyzed several options for snag recruitment using a model based on the recruitment methods described above. Based on our analysis, we feel the most expedient means of meeting snag requirements is to manage both snags and green recruitment trees on treated acres to meet snag densities over an entire rotation.

Snags will be managed on treated acres with the goal of leaving dead and green trees to insure that snag densities are met over the rotation period. Within treated areas, snags and green trees are topped to meet the existing MMRs (1.5 snags per acre). Green trees are selected and identified as replacement snags. These are topped to provide snags during the rotation. Outside of the treated areas snags are not aggressively managed, except in areas such as old-growth habitats and designated territories for pileated woodpeckers, marten and raptors.

The following assumptions were made relative to the modeling snags on treated acres:

- On treated acres there will be no natural recruitment of snags following harvest. Snags will be maintained by the allocation of snags and green trees that will be managed as future snags during the rotation period.
- For purposes of snag allocation, a 120-year rotation will be assumed.
- Current snag guidelines in the plan will be met on these acres. A minimum of 1.2 snags/acre in the 15-24" and .3 snags/acre in the 24" + size classes will be managed.



- The following snag falling rates were used (Bull and Partridge 1985, Bull, pers. com., 1985, Conner et al., 1984, Jensen, 1984, Bull, 1983, Clemens, 1984, Raphael, 1980).

Falling Rates for Snags		
	Natural	Topped
10 Years	60%	5%
20 Years	80%	30%
30 Years	100%	95%

- For modeling purposes, up to 6 snag/live tree combinations will be required per treated acres to maintain 1.5 snags per acre for 120 years (1.5 snags per 30 year period). Depending on the current snag densities, the number of snag/live tree combinations could be less than this. For example, if 0.5 snags/acre exist on a harvest site, these would be retained and 5.5 snags/live trees would be required.
  - Natural recruitment of snags will be the method used on untreated acres. Estimates are that these acres will increase snag densities at the rate of 0.2 snags per decade.
  - Salvage harvest will not be done in snag deficient areas.
- Catastrophic events (fire, insects) were not considered.
- The following approximate size classes of trees will need to be retained to provide for 20" and 30" snags during the rotation period. This assumes an average growth rate of 1 inch in diameter per decade.

Time	Present Size to Produce a 20" Tree	Present Size to Produce a 30" Tree
Present	20"	30"
30 Years	17"	27"
60 Years	14"	24"
90 Years	11"	21"
120 Years	-	20" <sup>1</sup>

<sup>1</sup> This 20" dbh tree was added to account for some representation of 30" trees during the time period when the plantation trees are incapable of providing 30" trees.

## Snag Modeling in FORPLAN

To determine volume required for managing snags at MMR levels, land managers determined current Forest-wide snag densities by strata based on several years of data from snag transects and limited surveys. Using these densities, they calculated the weighted average snag density for each strata.

We used current snag and replacement green tree densities within each strata to estimate the volume required for snag management. Existing eastside pine yield tables were reduced to accommodate the snag requirements.

We assumed that mixed conifer and red fir (currently above minimum snag numbers) would meet MMRs; no volume adjustments were made. We also assumed that no topping would be done in these types because natural mortality in existing stands would maintain snag numbers.

The following volumes were used to meet snag densities throughout the rotation period. This assumes growth rates approximately 1" DBH/decade.

1.2 Snags Per Acre			0.3 Snags Per Acre		
DBH	Height	Volume (BF)	DBH	Height	Volume (BF)
			20" <sup>1</sup>	80	300
11"	45	25	21"	80	325
14"	60	90	24"	100	530
17"	70	175	27"	100	750
20"	80	300	30"	110	1,080
Total		590			2,985
	x 1.2 = 708 bf			x 0.3 = 895	

708 + 895 = 1,603 board feet per acre in snag and recruitment trees.

<sup>1</sup> This 20" dbh tree was added to account for some representation of 30" trees during the time period when the plantation trees are incapable of providing 30" trees.

- Ponderosa pine strata 3P and 4P have a constant .45 snags per acre. Ponderosa pine strata 3G, 4G, and 6G have a constant .55 snags per acre.

- We then calculated snag and recruitment tree equivalent volume per acre needed to meet 1.5 snags-trees/acre over the rotation period.

The ponderosa 3P and 4P strata need to be reduced by .45 snags per acre as follows:

$$- 1,603 \text{ bf} / 1.5 \text{ snags per acre} = X / 1.5 - 0.45$$

$$- X(\text{vol in 1.05 snags per acre}) = 1,122 \text{ bf} / 6.1 \text{ cf/bf} = 184 \text{ cf. This was rounded to 200 cf (2 cunits).}$$

The ponderosa 3G, 4G, and 6G strata need to be reduced by .55 snags per acre as follows:

$$- 1603 \text{ bf} / 1.5 \text{ snags per acre} = X / 1.5 - 0.55$$

$$- X(\text{vol in .95 snags per acre}) = 1,015 \text{ bf} / 6.1 \text{ cf/bf} = 166 \text{ cf. This was rounded to 200 cf (2 cunits). Thus, eastside pine yield tables were reduced by 400 cf (4 cunits) for our FORPLAN runs.}$$

## Literature Citation

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Snags P. 60-77 in J.W. Thomas ed. Wildlife habitats in managed forests in the Blue Mountains of Oregon and





## Appendix H

### Withdrawals

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Forest Mineral Withdrawals		
Site	Original Acres	After Review
Hayden Hill Administration Site	160	0
Willow Creek Administration Site	80	40
Blue Lake Campground	478	478
Patterson Guard Station	80	40
Rush Creek Administration Site	160	0
Lava Ridge Administration Site	160	20
Happy Camp Lookout	10	10
Pit River Administration Site	120	0
Burnt Lava Flow Geological Area	8,908	8,908
Happy Camp Administration Site	40	40
Howard's Gulch Administration Site	40	40
Medicine Lake Recreation Area	6,623	6,623
Roadside Strip	356	0
Timber Mountain Administration Site	10	10
Dry Lake Administration Site	141	20
Plum Valley Administration Site	60	40
Blue Mountain Administration Site	10	10
Devil's Garden Natural Area	800	800
Sugar Hill Administration Site	20	20
Buck Creek Ranger Station	50	50
Cave and Lily Lakes Recreation Area	161	161
Cave and Lily Lakes Administration Site	80	80
Crowder Flat Ranger Station	160	40
Mahogany Ridge Administrative Site	10	0
Tulelake Administrative Site	4	4
South Warner Wilderness	70,385	70,385
<b>Total</b>	<b>89,106</b>	<b>87,819</b>

Other Agency Withdrawals	
Site	Acres
500-KV Transmission Line (USBR)	3464
Boundary Dam & Reservoir (USBR)	1,890
Clear Lake Dam (USBR)	480
Klamath Project (USBR)	1,120
<b>Total</b>	<b>6,954</b>

Potential Withdrawals	
Recreation Areas	Ash Creek Campground
	Big Sage Campground
	Cedar Pass Campground
	Cedar Pass Ski Hill Area
	Cottonwood Campground
	Mill Creek Campground
	Pepperdine Campground
	Stough Reservoir
	Upper and Lower Rush Creek Campgrounds
Administrative Sites	Grouse Mountain Electronic Site
	Harvey Jones Butte Electronic Site
	Likely Mountain Electronic Site
	Payne Peak Electronic Site
	Red Shale Butte Electronic Site
Special Interest Areas	Glass Mountain Glass Flow
	Medicine Lake Glass Flow (northern portion)
	Dismal Swamp

Source: Land Status Atlas, 1985.

Minerals Analysis of the Management Situation, 1986.







## Appendix I

### Management Strategies For Major Pests

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**Annosus Root Disease** - Root rots kill individual trees and clusters of trees, or weaken them until they succumb to bark beetle attack. *Fomes annosus*, the most prevalent root disease, effects almost all conifers in all major timber types. However, the affect on the host and the resulting damage differ among species. In pine, the fungus spreads through the root system and eventually girdles the tree. Infected pine trees die relatively quickly and are often infested with bark beetles. The root system of true fir are seldom attacked to the point of death. The disease is generally confined to the heartwood and sapwood. The host is generally not killed directly. Losses in true firs from this disease are mainly the result of butt rot, increased susceptibility to insect attack, and increased windthrow. Stump infection rate on timber sales on the Modoc NF average 50% for stumps not treated with borax and 4% for those treated with borax. Damage in a stand usually appears as clusters of dead trees. Stand growth and site productivity are reduced. The impact will be lessened by applying borax to fresh-cut stumps in pine stands, favoring resistant species, and reducing tree injuries during intermediate harvests. Since infected true fir apparently cannot infect ponderosa pine, fir stands can be regenerated with ponderosa pine with little risk of infection, thereby favoring resistant species.

**Black Stain** - *Ceratocystis wagneri* like *Fomes* is a root disease. Black stain root disease is transmitted to the tree host by root contact or insects. Attacking trees of all ages, it infects the roots where it spreads throughout the sapwood of the root system, root crown, and lower bole. Infection of the root system visibly diminishes the tree crown. Terminal growth is reduced, needles are shorter and chlorotic, the number of needles produced and retained is reduced, and the host finally dies. All pines tested are susceptible; white and red firs are resistant. On the Forest, infected ponderosa and Jeffrey pine have been found in the southern part of the Forest on about 17,000 acres. Harvesting infested trees and using resistant species can help prevent or control the disease.

**Dwarf Mistletoes** - Dwarf mistletoes infect all commercial conifers on the Forest except incense-cedar. The

main impact from mistletoe infection is loss of growth and decreased vigor, which increases susceptibility to death by insects. Symptoms are swollen branches, witches' brooms<sup>1</sup> and trunk swelling or cankers. Most species of dwarf mistletoe have only one host. Western dwarf mistletoe attacks ponderosa and Jeffrey pine and is the most damaging. Most mistletoe infection centers on the Forest are of local incidence. The mistletoes can be controlled through specific silvicultural treatments of stands, such as clearcutting, removing infected individuals or groups of trees, and branch or broom pruning.

**Stem Decay** - Stem decay (rot) causes significant wood losses in the old-growth trees by destroying the heartwood. Multiple entries into stands cause basal wounds on residual trees, especially in true firs which are non-resinous and highly susceptible to decay. As old-growth stands are regenerated and managed, the incidence of stem decay may be reduced.

**Pine Bark Beetles** - Pine bark beetles often kill a tree by girdling the cambium. An entire tree with dead, orange, or yellow needles is a frequent sign. Predominant bark beetles on the Forest are the mountain, western and Jeffrey pine beetles (*Dendroctonus ponderosae*, *D. brevicornis*, and *D. jeffreyi*, respectively). In general, bark beetle problems are often associated with trees and stands that have been weakened by some predisposing agent or condition. Predisposing factors include root diseases, mistletoes, drought, and competition from overstocking. When many trees are stressed, bark beetle populations increase and healthy trees may also be killed. The best way to manage bark beetle infestation is by prevention, such as promoting healthy stands, and reducing predisposing conditions such as disease. When trees are temporarily stressed, such as during fire or drought, individual tree protection by chemicals may be warranted.

Pine bark beetles cause density-dependent mortality in eastside pine stands. If the stand density is maintained below 80% of normal basal, appreciable damage can be prevented in these stands.

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1 An abnormally bushy, local growth of parts of the branch system, characterized by shortening of the internodes and excessive proliferation ("brooming").

**Pine Engraver Beetles - *Ips spp.*** beetles kill the tops of pines. *Ips* beetles usually breed in fresh green slash; but when populations are abundant, they often attack standing trees. Weakened trees are also more susceptible to top-killing. Damage can be prevented by proper slash disposal, by timing timber harvest activities to reduce the amount of green slash available in the spring and early summer, and by thinning dense young-growth stands to help maintain their vigor.

**Fir Engraver -** Top-killed firs are evidence of *Scolytus* beetles. This insect is common in white and red fir stands. Associated tree mortality is usually caused by a combination of stand and site conditions that predispose the host to attack: overstocking, unsuitable site, annosus root disease, and dwarf mistletoe. The fir engraver beetle may infest the tops and scattered patches of cambium without killing the host. The best control is prevention, i.e., maintaining proper stocking, favoring pine on pine sites, and reducing diseases.

**Douglas Fir Tussock Moth -** On this Forest *Orgyia pseudotsugata* infests white fir. The last outbreak on the Forest occurred between 1963 and 1965 on the Big Valley and Warner Mountain Ranger Districts, and affected approximately 60,000 acres. Stands with the greatest potential for infestation are on ridgetops and upper slopes at 5,000-6,000 feet, open, grown, and composed of 50-60% white fir mixed with pine and incense-cedar. The Forest uses pheromone-baited traps in locations to monitor the moth population for predicting population trends and possible defoliation. Biological and chemical insecticides are registered for control.

**Modoc Budworm -** The Modoc budworm, *Choristoneura viridis*, is unique to the Modoc and Fremont National Forests and similar to the spruce budworm. The host for this defoliator is white fir; it attacks trees of all ages. The budworm causes loss of tree growth. Death does not generally occur unless defoliation continues for 4-5 years, or the tree is already in a weakened condition. Damage occurs to the current year's buds and needles. Budworm outbreaks have lasted 3-4 years. White fir in the Warner Mountains were defoliated between 1959 and 1962. A larger outbreak, which peaked in 1973 and declined rapidly in 1975, also included fir stands on Knox Mountain on the Big Valley District. The most recent occurrence was observed in 1984 in the Warner Mountains. The infestation spread in 1985 and involved most of the Warners. Monitoring occurred during 1985 and 1986. The budworm population has since declined to endemic levels. Various strategies are being considered by the Forest Staff in consultation with the Regional Pest Management Staff.

Stands susceptible to damage by the Modoc budworm are shade-tolerant conifers; very dense and of low vigor; multi-storied; physiologically mature; and grow on warm, dry sites characterized by relatively warm, dry regional climate. All these factors—except regional and site climate—can be changed silviculturally to reduce the stands' susceptibility to the Modoc budworm. Even-aged management of seral, shade-intolerant species will substantially reduce stand susceptibility; all-aged management is appropriate when non-host species are featured. Stands can be rated for susceptibility to Modoc budworm damage using quantitative indices for important stand and site factors. Silvicultural treatment provides immediate and long-term benefits to treated stands; Forest susceptibility will gradually decline as more stands are treated.

- **Successional Status:** Generally, the most shade-tolerant conifers are the most susceptible; stands with a high proportion of shade-tolerant species tend to be near climax and highly susceptible.
- **Stand Density:** As the density of host species increases, susceptibility also increases. Dispersing budworm larvae are less likely to reach suitable substrate in open rather than in dense stands. Larvae that fall to the ground are likely to starve, or even more likely are eaten by predators.
- **Stand Height-Class Structure:** Defoliation caused by the Modoc budworm increases as the variation in height, diameter, and age increases. The budworm feeds first in the upper crowns of trees and progresses downward through them. Stands with multi-storied crowns provide a convenient ladder effect that aids the intensity of larval feeding through tree crowns.
- **Tree and Stand Vigor:** Vigorous trees—those growing rapidly—usually have more fully developed crowns than slower growing trees. At a particular larval density, vigorous trees have a lower density of larvae per unit of foliage biomass, resulting in a lower percent defoliation and less effect on fiber production. Vigorous trees can, therefore, better withstand repeated defoliation because their carbohydrate resources remain higher.
- **Maturity of Trees and Stands:** Susceptibility of trees and stands to the Modoc budworm usually increases as stands mature. Small, young trees regenerated through even-aged cutting methods are only slightly susceptible. When stands are multi-storied with the same seral tree species, smaller trees sustain the greatest larval feeding damage, because the budworm larvae feed downward through the crowns of trees and tend to intensify their numbers in the lower strata of the crown canopy as their season of feeding progresses. Adult moths tend not to lay their eggs on

small trees, which are poor targets for spring-dispersing larvae. Larvae which do land on small trees are in greater danger of being eaten by ants, birds, spiders, and other predators.

– *Continuity of Host Type*: As the acreage of susceptible host type increases, the susceptibility of stands within or adjacent to that host type tends to increase. Large acreages of mature budworm-infested forests tend to produce large quantities of budworms, especially during periods of budworm outbreak. These periods of budworm outbreak are cyclic; they occur at about ten-year intervals in the Warner Mountains of the Forest and persist for 3-5 years.

– *Silvicultural Treatment to Reduce Stand Susceptibility and Vulnerability*: Many factors influencing stand susceptibility to the Modoc budworm – species composition, relative density of host to non-hosts, height, structure, vigor, age, and the character of the surrounding forest – can be changed through silvicultural activities, thereby reducing the probability of infestation. Stand hazard rating methods, such as Wulf and Carlson's method, should be used to rate stands' relative susceptibility to budworm damage. Treatment should be scheduled based on their relative degree of susceptibility. Treatment priorities can then be set, and managers can prescribe appropriate treatments.

**Tent Caterpillar** - Western tent caterpillar (*Malacosoma californicum*) larvae feed on a variety of range plants, including manzanita and various species of ceanothus, as well as antelope bitterbrush (*Purshia tridentata*). Bitterbrush is a valuable food source for do-

mestic livestock and wildlife, particularly deer. Tent caterpillar outbreaks lasting 2-4 years have been recorded on the Modoc periodically since the early 1940's. The most recent outbreak (1981-1984) affected approximately 30,000 acres, primarily on the Devil's Garden and Big Valley Ranger Districts. Mortality was observed as scattered individual plants and in patches of less than an acre to several acres. Most of the mortality occurred in stands with many over-mature and decadent plants; relatively little feeding was evident on seedlings and young plants. Management options include chemical and biological insecticides and short-term adjustments to livestock grazing patterns.

**Animal Pests** - Deer, pocket gophers, and porcupines eat seedlings and small saplings, particularly in plantations. Currently the damage is localized. Where damage from deer is heavy, such as in wintering areas, the Forest uses vexar (plastic mesh) tubes to protect planted seedlings. Porcupines are a particular nuisance because their gnawing reduces tree growth and quality, and damages signs and buildings. Pocket gophers pose the most serious threat to entire plantations and associated timber management objectives. Treatments include reducing gopher habitat or placing poison in the burrows, or both. As more plantations are established the gopher problem will increase and require more time and money for its control.

Ground squirrels and other rodents can damage campground structures through their chewing and digging behavior; they can also carry bubonic plague. The Forest cooperates with appropriate State and local public health agencies in monitoring, reporting, and controlling plague problems.







## Appendix J

### Average Annual Water Yield for Watersheds, 1982

Sub-Region	LMP #	Watershed <sup>1</sup>	Average Yield (Acre-Feet)	Watershed Size (NFS Lands) (Acres)	Yield/Acre (Acre- Feet/Acre)
Pacific Northwest	010	Twentymile Creek	5,400	5,535	0.97
Pacific Northwest	020	Deep Creek	1,400	1,464	0.97
Central Valley	030	Goose Lake	64,600	92,330	0.70
Central Valley	040	N.F. Pit River	32,000	55,124	0.58
Central Valley	050	S.F. Pit River	63,600	142,029	0.45
Central Valley	060	Upper Pit River	60,500	195,100	0.31
Central Valley	070	Ash Creek	42,000	109,135	0.38
Central Valley	080	Egg Lake <sup>2</sup>	0	106,286	0.00
Central Valley	090	Big Valley	36,300	89,964	0.40
Central Valley	100	Juniper Creek	8,500	23,396	0.36
Central Valley	110	Hambone <sup>3</sup>	0	48,289	0.00
Central Valley	120	Lake Britton	1,500	4,177	0.36
Central Valley	130	Horse Creek	5,800	15,898	0.36
North Coast	140	Willow Creek	90,000	255,983	0.35
North Coast	150	Clear Lake	35,800	101,935	0.35
North Coast	160	Lost River	13,400	38,263	0.35
North Coast	170	Lower Klamath River <sup>3</sup>	0	256,853	0.00
Lahontan	180	Upper Surprise Valley	41,200	41,381	1.00
Lahontan	190	Lower Surprise Valley	59,900	72,020	0.83
Lahontan	210	Madeline Plains	3,900	5,731	0.68
<b>Total</b>			<b>565,800</b>	<b>1,660,893</b>	<b>0.34</b>

<sup>1</sup> See Figure J-1.

<sup>2</sup> This watershed is a closed basin with little surface runoff.

<sup>3</sup> This watershed has no surface runoff because of extremely porous volcanic soils.









# Appendix K

## Wildlife and Fish on the Modoc National Forest

These lists represent species that are found on the Modoc National Forest, or whose ranges fall within this general geographic area.

AMPHIBIANS	
English Name	Scientific Name
long-toed salamander	<i>Ambystoma macrodactylum</i>
Great Basin spadefoot	<i>Scaphiopus intermontanus</i>
western toad	<i>Bufo boreas</i>
Pacific treefrog	<i>Hyla regilla</i>
spotted frog	<i>Rana pretiosa</i>
leopard frog	<i>Rana pipiens</i>
bullfrog	<i>Rana catesbeiana</i>
rough-skinned newt	<i>Taricha granulosa</i>

REPTILES	
English Name	Scientific Name
northern alligator lizard	<i>Gerrhonotus coeruleus</i>
night snake	<i>Hypsiglena torquata</i>
long-nosed leopard lizard	<i>Gambelia wislizenii</i>
sagebrush lizard	<i>Sceloporus graciosus</i>
western fence lizard	<i>Sceloporus occidentalis</i>
side-blotched lizard	<i>Uta stansburiana</i>
desert horned lizard	<i>Phrynosoma platyrhinos</i>
short-horned lizard	<i>Phrynosoma douglassi</i>
western skink	<i>Eumeces skiltonianus</i>
western whiptail	<i>Cnemidophorus tigris</i>
rubber boa	<i>Charina bottae</i>
striped whipsnake	<i>Masticophis taeniatus</i>
racer	<i>Coluber constrictor</i>
gopher snake	<i>Pituophis melanoleucus</i>
common kingsnake	<i>Lampropeltis getulus</i>
western terrestrial garter snake	<i>Thamnophis elegans</i>
common garter snake	<i>Thamnophis sirtalis</i>
western rattlesnake	<i>Crotalus viridis</i>

FISH	
English Name	Scientific Name
Goose Lake lamprey	<i>Lampetra tridentata ssp.</i>
Pacific lamprey	<i>Lampetra tridentata</i>
Pit-Klamath brook lamprey	<i>Lampetra lethophaga</i>
Goose Lake redband trout	<i>Oncorhynchus mykiss ssp.</i>
rainbow trout	<i>Oncorhynchus mykiss</i>
Lahontan cutthroat trout	<i>Oncorhynchus clarki henshawi</i>
brown trout	<i>Salmo trutta</i>
brook trout	<i>Salvelinus fontinalis</i>
arctic grayling	<i>Thymallus arcticus</i>
Pit River tui chub	<i>Gila bicolor ssp.</i>
Klamath tui chub	<i>Gila bicolor bicolor</i>
blue chub	<i>Gila coerulea</i>
upper Pit California roach	<i>Hesperoleucus symmetricus mitrulus</i>
hardhead	<i>Mylopharodon conocephalus</i>
Sacramento squawfish	<i>Ptychocheilus grandis</i>
speckled dace	<i>Rhinichthys osculus</i>
golden shiner	<i>Notemigonus crysoleucas</i>
fathead minnow	<i>Pimephales promelas</i>
Modoc sucker	<i>Catostomus microps</i>
Sacramento sucker	<i>Catostomus occidentalis</i>
Goose Lake sucker	<i>Catostomus occidentalis lacusanserinus</i>
Lost River sucker	<i>Deltistes luxatus</i>
shortnose sucker	<i>Chasmistes brevirostris</i>
brown bullhead	<i>Ictalurus nebulosus</i>
channel catfish	<i>Ictalurus punctatus</i>
Sacramento perch	<i>Archoplites interruptus</i>
largemouth bass	<i>Micropterus salmoides</i>
bluegill	<i>Lepomis macrochirus</i>
green sunfish	<i>Lepomis cyanellus</i>
pumpkinseed	<i>Lepomis gibbosus</i>
white crappie	<i>Pomoxis annularis</i>
Pit sculpin	<i>Cottus pitensis</i>
marbled sculpin	<i>Cottus klamathensis</i>

BIRDS	
English Name	Scientific Name
horned grebe	<i>Podiceps auritus</i>
eared grebe	<i>Podiceps nigricollis</i>
western grebe	<i>Aechmophorus occidentalis</i>
pied-billed grebe	<i>Podilymbus podiceps</i>
white pelican	<i>Pelecanus erythrorhynchos</i>
double-crested cormorant	<i>Phalacrocorax auritus</i>
great blue heron	<i>Ardea herodias</i>
cattle egret	<i>Bubulcus ibis</i>
great egret	<i>Casmerodius albus</i>
snowy egret	<i>Egretta thula</i>
black-crowned night heron	<i>Nycticorax nycticorax</i>
American bittern	<i>Botaurus lentiginosus</i>
white-faced ibis	<i>Plegadis chihi</i>
whistling swan	<i>Olor columbianus</i>
Canada goose	<i>Branta canadensis</i>
white-fronted goose	<i>Anser albifrons</i>
snow goose	<i>Chen caerulescens</i>
mallard	<i>Anas platyrhynchos</i>
gadwall	<i>Anas strepera</i>
pintail	<i>Anas acuta</i>
green-winged teal	<i>Anas crecca</i>
blue-winged teal	<i>Anas discors</i>
cinnamon teal	<i>Anas cyanoptera</i>
American wigeon	<i>Anas americana</i>
northern shoveler	<i>Anas clypeata</i>
redhead	<i>Aythya americana</i>
ring-neck duck	<i>Aythya collaris</i>
canvasback	<i>Aythya valisineria</i>
lesser scaup	<i>Aythya affinis</i>
common goldeneye	<i>Bucephala clangula</i>
bufflehead	<i>Bucephala albeola</i>
ruddy duck	<i>Oxyura jamaicensis</i>
hooded merganser	<i>Lophodytes cucullatus</i>
common merganser	<i>Mergus merganser</i>
turkey vulture	<i>Cathartes aura</i>
white-tailed kite	<i>Elanus leucurus</i>
goshawk	<i>Accipiter gentilis</i>
sharp-shinned hawk	<i>Accipiter striatus</i>
Cooper's hawk	<i>Accipiter cooperii</i>
red-tailed hawk	<i>Buteo jamaicensis</i>

BIRDS	
English Name	Scientific Name
Swainson's hawk	<i>Buteo swainsoni</i>
rough-legged hawk	<i>Buteo lagopus</i>
ferruginous hawk	<i>Buteo regalis</i>
golden eagle	<i>Aquila chrysaetos</i>
bald eagle	<i>Haliaeetus leucocephalus</i>
marsh hawk	<i>Circus cyaneus</i>
osprey	<i>Pandion haliaetus</i>
prairie falcon	<i>Falco mexicanus</i>
peregrine falcon	<i>Falco peregrinus</i>
merlin	<i>Falco columbarius</i>
American kestrel	<i>Falco sparverius</i>
blue grouse	<i>Dendragapus obscurus</i>
sage grouse	<i>Centrocercus urophasianus</i>
California quail	<i>Lophortyx californicus</i>
mountain quail	<i>Oreortyx pictus</i>
chukar	<i>Alectoris chukar</i>
turkey	<i>Meleagris gallopavo</i>
sandhill crane	<i>Grus canadensis</i>
Virginia rail	<i>Rallus limicola</i>
sora	<i>Porzana carolina</i>
American coot	<i>Fulica americana</i>
snowy plover	<i>Charadrius alexandrinus</i>
killdeer	<i>Charadrius vociferus</i>
common snipe	<i>Capella gallinago</i>
long-billed curlew	<i>Nomenius americanus</i>
spotted sandpiper	<i>Actitis macularia</i>
willet	<i>Catoptrophorus semi-palmatus</i>
American avocet	<i>Recurvirostra americana</i>
black-necked stilt	<i>Himantopus mexicanus</i>
Wilson's phalarope	<i>Steganopus tricolor</i>
California gull	<i>Larus californicus</i>
ring-billed gull	<i>Larus delawarensis</i>
Franklin's gull	<i>Larus pipixcan</i>
Forster's tern	<i>Sterna forsteri</i>
Caspian tern	<i>Sterna caspia</i>
black tern	<i>Chlidonias niger</i>
band-tailed pigeon	<i>Columba fasciata</i>
rock dove	<i>Columba livia</i>
mourning dove	<i>Zenaida macroura</i>
yellow-billed cuckoo	<i>Coccyzus americanus</i>
barn owl	<i>Tyto alba</i>

BIRDS	
English Name	Scientific Name
screech owl	<i>Otus asio</i>
flammulated owl	<i>Otus flammeolus</i>
great horned owl	<i>Bubo virginianus</i>
pygmy owl	<i>Glaucidium gnoma</i>
burrowing owl	<i>Athene cunicularia</i>
long-eared owl	<i>Asio otus</i>
short-eared owl	<i>Asio flammeus</i>
saw-whet owl	<i>Aegolius acadicus</i>
poor-will	<i>Phalaenoptilus nuttallii</i>
common nighthawk	<i>Chordeiles minor</i>
Vaux's swift	<i>Chaetura vauxi</i>
white-throated swift	<i>Aeronautes saxatalis</i>
rufous hummingbird	<i>Selasphorus rufus</i>
black-chinned hummingbird	<i>Archilochus alexandri</i>
calliope hummingbird	<i>Stellula calliope</i>
belted kingfisher	<i>Megaceryle alcyon</i>
common flicker	<i>Colaptes auratus</i>
pileated woodpecker	<i>Dryocopus pileatus</i>
acorn woodpecker	<i>Melanerpes formicivorus</i>
Lewis' woodpecker	<i>Melanerpes lewis</i>
red breasted sapsucker	<i>Sphyrapicus ruber</i>
red-naped sapsucker	<i>Sphyrapicus nuchalis</i>
Williamson's sapsucker	<i>Sphyrapicus thyroideus</i>
hairy woodpecker	<i>Picoides villosus</i>
downy woodpecker	<i>Picoides pubescens</i>
Nuttall's woodpecker	<i>Picoides nuttallii</i>
white-headed woodpecker	<i>Picoides albolarvatus</i>
black-backed three-toed woodpecker	<i>Picoides arcticus</i>
western kingbird	<i>Tyrannus verticalis</i>
ash-throated flycatcher	<i>Myiarchus cinerascens</i>
Say's phoebe	<i>Sayornis saya</i>
willow flycatcher	<i>Empidonax traillii</i>
Hammond's flycatcher	<i>Empidonax hammondi</i>
dusky flycatcher	<i>Empidonax oberholseri</i>
gray flycatcher	<i>Empidonax wrightii</i>
western flycatcher	<i>Empidonax difficilis</i>
western wood pewee	<i>Contopus sordidulus</i>
olive-sided flycatcher	<i>Nuttallornis borealis</i>
horned lark	<i>Eremophila alpestris</i>

BIRDS	
English Name	Scientific Name
violet-green swallow	<i>Tachycineta thalassina</i>
tree swallow	<i>Iridoprocne bicolor</i>
bank swallow	<i>Riparia riparia</i>
rough-winged swallow	<i>Stelgidopteryx ruficollis</i>
barn swallow	<i>Hirundo rustica</i>
cliff swallow	<i>Petrochelidon pyrrhonota</i>
gray jay	<i>Perisoreus canadensis</i>
Steller's jay	<i>Cyanocitta stelleri</i>
scrub jay	<i>Aphelocoma coerulescens</i>
black-billed magpie	<i>Pica pica</i>
common raven	<i>Corvus corax</i>
common crow	<i>Corvus brachyrhynchos</i>
pinyon jay	<i>Gymnorhinus cyanocephalus</i>
Clark's nutcracker	<i>Nucifraga columbiana</i>
mountain chickadee	<i>Parus gambeli</i>
plain titmouse	<i>Parus inornatus</i>
bushtit	<i>Psaltirparus minimus</i>
white-breasted nuthatch	<i>Sitta carolinensis</i>
red-breasted nuthatch	<i>Sitta canadensis</i>
pygmy nuthatch	<i>Sitta pygmaea</i>
brown creeper	<i>Certhia familiaris</i>
wrentit	<i>Chamaea fasciata</i>
dipper	<i>Cinclus mexicanus</i>
house wren	<i>Troglodytes aedon</i>
winter wren	<i>Troglodytes troglodytes</i>
Bewicks wren	<i>Thryomanes bewickii</i>
marsh wren	<i>Cistothorus palustris</i>
canyon wren	<i>Catherpes mexicana</i>
rock wren	<i>Salpinctes obsoletus</i>
mockingbird	<i>Mimus polyglottos</i>
sage thrasher	<i>Oreoscoptes montanus</i>
American robin	<i>Turdus migratorius</i>
varied thrush	<i>Ixoreus naevius</i>
hermit thrush	<i>Catharus guttatus</i>
Swainson's thrush	<i>Catharus ustulatus</i>
western bluebird	<i>Sialia mexicana</i>
mountain bluebird	<i>Sialia currucoides</i>
Townsend's solitaire	<i>Mysdestes townsendi</i>
blue-gray gnatcatcher	<i>Poliophtila caerulea</i>
golden-crowned kinglet	<i>Regulus satrapa</i>
ruby-crowned kinglet	<i>Regulus calendula</i>

BIRDS	
English Name	Scientific Name
Bohemian waxwing	<i>Bombycilla garrulus</i>
cedar waxwing	<i>Bombycilla cedrorum</i>
northern shrike	<i>Lanius excubitor</i>
loggerhead shrike	<i>Lanius ludovicianos</i>
starling	<i>Sturnus vulgaris</i>
solitary vireo	<i>Vireo solitarius</i>
warbling vireo	<i>Vireo gilvus</i>
orange-crowned warbler	<i>Vermivora celata</i>
Nashville warbler	<i>Vermivora ruficapilla</i>
yellow warbler	<i>Dendroica petechia</i>
hermit warbler	<i>Dendroica occidentalis</i>
yellow-rumped warbler	<i>Dendroica coronata</i>
black-throated gray warbler	<i>Dendroica nigrescens</i>
MacGillivray's warbler	<i>Oporornis tolmiei</i>
common yellowthroat	<i>Geothlypis trichas</i>
yellow-breasted chat	<i>Icteria virens</i>
Wilson's warbler	<i>Wilsonia pusilla</i>
house sparrow	<i>Passer domesticus</i>
western meadowlark	<i>Sturnella neglecta</i>
yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>
red-winged blackbird	<i>Agelaius phoeniceus</i>
tricolored blackbird	<i>Agelaius tricolor</i>
northern oriole	<i>Icterus galbula</i>
Brewer's blackbird	<i>Euphagus cyanocephalus</i>
brown-headed cowbird	<i>Molothrus ater</i>
western tanager	<i>Piranga ludoviciana</i>
black-headed grosbeak	<i>Pheucticus melanocephalus</i>
lazuli bunting	<i>Passerina amoena</i>
evening grosbeak	<i>Hesperiphona vespertina</i>
purple finch	<i>Carpodacus purpureus</i>
Cassin's finch	<i>Carpodacus cassinii</i>
house finch	<i>Carpodacus mexicanus</i>
pine grosbeak	<i>Pinicola enucleator</i>
gray-crowned rosy finch	<i>Leucosticte tephrocotis</i>
pine siskin	<i>Carduelis pinus</i>
American goldfinch	<i>Carduelis tristis</i>
lesser goldfinch	<i>Carduelis psaltria</i>
red crossbill	<i>Loxia curvirostra</i>
green-tailed towhee	<i>Pipilo chlorurus</i>
rufous-sided towhee	<i>Pipilo erythrophthalmus</i>

BIRDS	
English Name	Scientific Name
Savannah sparrow	<i>Passerculus sandwichensis</i>
vesper sparrow	<i>Pooecetes gramineus</i>
lark sparrow	<i>Chondestes grammacus</i>
black-throated sparrow	<i>Amphispiza bilineata</i>
sage sparrow	<i>Amphispiza belli</i>
dark-eyed junco	<i>Junco hyemalis</i>
tree sparrow	<i>Spizella arborea</i>
chipping sparrow	<i>Spizella passerina</i>
Brewer's sparrow	<i>Spizella breweri</i>
Harris's sparrow	<i>Zonotrichia querula</i>
white-crowned sparrow	<i>Zonotrichia leucophrys</i>
golden-crowned sparrow	<i>Zonotrichia atricapilla</i>
fox sparrow	<i>Passerella iliaca</i>
Lincoln's sparrow	<i>Melospiza lincolni</i>
song sparrow	<i>Melospiza melodia</i>

MAMMALS	
English Name	Scientific Name
vagrant shrew	<i>Sorex vagrans</i>
water shrew	<i>Sorex palustris</i>
Trowbridge's shrew	<i>Sorex trowbridgii</i>
Merriam's shrew	<i>Sorex merriami</i>
broad-footed mole	<i>Scapanus latimanus</i>
little brown myotis	<i>Myotis lucifugus</i>
Yuma myotis	<i>Myotis yumanensis</i>
long-eared myotis	<i>Myotis evotis</i>
fringed myotis	<i>Myotis thysanodes</i>
long-legged myotis	<i>Myotis volans</i>
California myotis	<i>Myotis californicus</i>
small-footed myotis	<i>Myotis leibii</i>
silver-haired bat	<i>Lasionycteris noctivagans</i>
big brown bat	<i>Eptesicus fuscus</i>
red bat	<i>Lasiurus borealis</i>
hoary bat	<i>Lasiurus cinereus</i>
Townsend's big-eared bat	<i>Plecotus townsendii</i>
pallid bat	<i>Antrozous pallidus</i>
Brazilian free-tailed bat	<i>Tadarida brasilienses</i>
pika	<i>Ochotona princeps</i>
pygmy rabbit	<i>Sylvilagus idahdensis</i>

MAMMALS	
English Name	Scientific Name
Nuttall's cottontail	<i>Sylvilagus nuttallii</i>
snowshoe hare	<i>Lepus americanus</i>
white-tailed jack rabbit	<i>Lepus townsendii</i>
black-tailed jack rabbit	<i>Lepus californicus</i>
least chipmunk	<i>Eutamias minimus</i>
yellow-pine chipmunk	<i>Eutamias amoenus</i>
Allen's chipmunk	<i>Eutamias senex</i>
yellow-bellied marmot	<i>Marmota flaviventris</i>
white-tailed antelope squirrel	<i>Ammospermophilus leucurus</i>
Townsend's ground squirrel	<i>Spermophilus townsendii</i>
Belding's ground squirrel	<i>Spermophilus beldingi</i>
California ground squirrel	<i>Spermophilus beecheyi</i>
golden-mantled ground squirrel	<i>Spermophilus lateralis</i>
western gray squirrel	<i>Sciurus griseus</i>
Douglas squirrel	<i>Tamiasciurus douglasii</i>
northern flying squirrel	<i>Glaucomys sabrinus</i>
Botta's pocket gopher	<i>Thomomys bottae</i>
northern pocket gopher	<i>Thomomys talpoides</i>
mountain pocket gopher	<i>Thomomys monticola</i>
little pocket mouse	<i>Perognathus longimembris</i>
Great Basin pocket mouse	<i>Perognathus parvus</i>
dark kangaroo mouse	<i>Microdipodops megacephalus</i>
Ord's kangaroo rat	<i>Didodomys ordii</i>
chisel-toothed kangaroo rat	<i>Dipodomys microps</i>
Heermann's kangaroo rat	<i>Dipodomys heermanni</i>
beaver	<i>Castor canadensis</i>
western harvest mouse	<i>Reithrodontomys megalotis</i>
deer mouse	<i>Peromyscus maniculatus</i>
canyon mouse	<i>Peromyscus crinitus</i>

MAMMALS	
English Name	Scientific Name
brush mouse	<i>Peromyscus boylii</i>
pinon mouse	<i>Peromyscus truei</i>
northern grasshopper mouse	<i>Onychomys leucogaster</i>
desert woodrat	<i>Neotoma lepida</i>
dusky-footed woodrat	<i>Neotoma fuscipes</i>
bushy-tailed woodrat	<i>Neotoma cinerea</i>
montane vole	<i>Microtus montanus</i>
long-tailed vole	<i>Microtus longicaudus</i>
sagebrush vole	<i>Lagurus curtatus</i>
muskrat	<i>Ondatra zibethicus</i>
house mouse	<i>Mus musculus</i>
western jumping mouse	<i>Zapus princeps</i>
porcupine	<i>Erethizon dorsatum</i>
coyote	<i>Canis latrans</i>
gray fox	<i>Urocyon cinereoargenteus</i>
black bear	<i>Ursus americanus</i>
raccoon	<i>Procyon lotor</i>
fisher	<i>Martes pennanti</i>
pine marten	<i>Martes americana</i>
ermine	<i>Ernstia erminea</i>
long-tailed weasel	<i>Mustela frenata</i>
mink	<i>Mustela vison</i>
wolverine	<i>Gulo gulo</i>
badger	<i>Taxidea taxus</i>
western spotted skunk	<i>Spilogale gracilis</i>
striped skunk	<i>Mephitis mephitis</i>
river otter	<i>Lutra canadensis</i>
mountain lion	<i>Felis concolor</i>
bobcat	<i>Felis rufus</i>
horse	<i>Equus equus</i>
elk (wapiti)	<i>Cervus elaphus</i>
mule deer	<i>Odocoileus hemionus</i>
pronghorn	<i>Antilocapra americana</i>









## Appendix L

### Mule Deer Forage Requirements

#### Introduction

During the early phases of Land Management Planning on the Modoc National Forest, the allocation of forage surfaced as a public issue. Cattle and sheep permittees rely on forage from the Forest to seasonally graze livestock, while many Forest users are interested in maintaining or increasing numbers of deer and pronghorn. In addition, the Forest is required to maintain a herd of about 305 wild horses. Therefore, the public is concerned about the manner in which the Forest allocates forage.

In the past, forage allocations were generally determined only on important deer areas such as winter ranges. The Interstate deer winter range, for example, was seriously overgrazed by both cattle and deer during the 1940's and 1950's (Interstate Deer Herd Technical Committee 1947). The Forest began allocating forage between cattle and deer to bring utilization within limits. Livestock numbers were reduced and deer harvest was increased.

Forage allocation on most of the Forest was based on range analyses which estimated forage production and livestock capacities. Original estimates of capacity have been adjusted on many allotments to reflect use that can be supported by the soil and vegetation. However, on numerous allotments forage resources are already over-allocated to livestock, but livestock numbers have not been reduced. On other allotments, livestock numbers have been reduced to meet estimated forage production, but with no allowances for deer or other species. Few range analyses considered the forage requirements of deer. It was generally thought that because cattle were grazers and deer

were browsers, they seldom competed for the same forage.

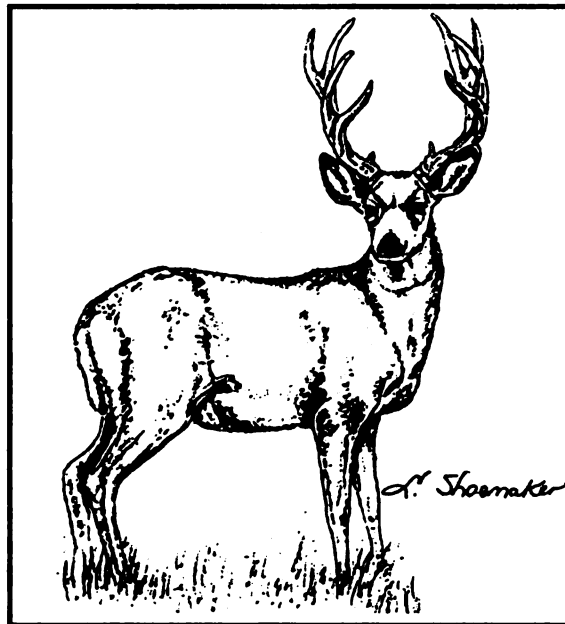
Studies (Dasmann 1949, Salwasser 1979, Bertram and Ashcraft 1981, Walmo 1981) of deer forage requirements over the last three decades have shown that the diets of cattle and deer substantially overlap. Direct competition can occur unless specific allocations are made for deer. As deer consume large amounts of grasses and forbs, so livestock use browse species such as bitterbrush. This degree of overlap is particularly significant in riparian zones, fawning areas, migration routes, holding areas, and winter ranges.

In order to clarify the issue of forage allocation, the Forest converted the forage requirements of deer, pronghorn, wild horses, cattle and sheep to a common, measurable unit - the Animal Unit Month (AUM)<sup>1</sup>. Standardizing forage requirements enables the Forest to estimate total demand from the finite capability of various vegetation and soil productivity types. It also allows the Forest to estimate the effects on forage utilization when livestock numbers or seasons increase,

or when deer populations increase.

Cattle, sheep and horse forage requirements are well known and documented. Although pronghorn and deer forage requirements have been documented through numerous studies, these requirements have not been determined previously for Forest herds or individual allotments.

Conversion of deer and pronghorn forage requirements to AUMs which are comparable with livestock is



<sup>1</sup> One AUM is equal to 1,000 pounds of air dry forage. If daily or monthly forage consumption rates of animals are known, direct comparisons can be made between competing forage users.

complicated because their diets do not completely overlap; and many plant species eaten by deer or livestock are not measured as part of the forage base. Variations in diet must be considered when comparing deer and pronghorn and livestock AUMs.

This appendix presents the rationale and methodology for converting deer forage requirements to AUMs and comparing them to livestock requirements. (Pronghorn forage needs are presented in the Wildlife AMS in the Forest planning records.)

Because of the broad scope of this analysis, the conclusions drawn must be viewed in general terms. The purpose of our forage allocation analysis is to identify the potential for conflict between livestock and deer. Further validation of the model and site-specific forage allocations will be required at the allotment management planning level.

Site-specific data does not exist locally to make precise predictions of forage availability and diet overlap. The potential for forage conflicts between livestock and deer takes the following into consideration:

- Deer forage selectivity. It may take much more than a minimal forage allocation to insure that deer requirements are met. Although assumptions in the model may be conservative, they should be used as a safeguard to insure needs for deer are met.
- The model is viewed as a tool to compare relative differences in alternatives, and the resulting impacts on deer. Assumptions in any model are open to debate. The main purpose of the model was to identify limiting factors for deer, and to show how each alternative addresses this issue.
- Until a more refined model is developed that undergoes peer review, this model should be used as a baseline approximation of deer forage needs.
- Specific forage allocation concerns will be addressed at the allotment management plan level.

## Methodology

The daily deer forage requirement was estimated using several factors: (1) the average weight of an individual deer; (2) the average daily consumption of forage for each season, expressed in percentage of body weight and total pounds consumed; (3) the extent of dietary overlap for each season converted to a daily forage consumption rate expressed in pounds; and (4) the seasonal range of each allotment in order to apply the specific consumption rate for the major season of use.

## Average Deer Weight

The average weight of a mule deer is 163 pounds for males and 130 pounds for females (bled carcass weight) (Anderson 1981). Based on an average sex ratio of 20 bucks per 100 does, or 17% males and 83% females in deer herds on the Forest, the average weight used in this analysis is 135 pounds.

## Total Daily Forage Consumption Rates

Daily forage consumption rates vary depending on the condition of vegetation and seasonal needs. Studies on forage intake indicate three trends in consumption: (1) high intake during spring and summer due to succulent vegetation; (2) reduced intake during fall; and (3) maintenance levels during winter. Brown (1961), Hill (1966), Lyons (1968), and Short (1981) presented average upper limits on forage consumption from five to seven pounds (during spring and summer), or 4.5% of bodyweight for an average 135-pound deer. The average lower limit on forage consumption presented by these authors was four pounds (during winter), or 3% of body weight. Fall consumption rates were extrapolated to 4.7 pounds, or 3.5% of body weight.

## Dietary Overlap and Adjusted Forage Consumption Rates

Grasses, forbs and bitterbrush are important to the diets of both livestock and deer. They are the only vegetation types that were used to calculate total forage production and livestock capacities on grazing allotments. Although deer and livestock consume other shrubs, such as mountain mahogany, *Prunus* sp., *Ceanothus* sp., and snowberry, these plants were not used to estimate total allotment capacities.

The extent of dietary overlap between cattle and deer was based on studies of the Interstate herd by Salwasser (1979) and Leach (1956) and on average diets from all Rocky Mountain mule deer studies (Wallmo and Regelin 1981). Salwasser (1979) found that on herd ranges with limited or decadent browse species, grass and forb vegetation comprised 85% overlap in the diet; on ranges with young or abundant browse species, grass and forb vegetation comprised only 45% of overlap in the diet.

The finding compared favorably with the 65% grass and forb component presented by Wallmo and Regelin (1981), which is an average of all mule deer ranges. Based on these figures each deer requires three pounds of forage on range with high quantities of young browse plants and five pounds of forage on range with decadent, low frequency or less palatable browse plants. However, only two spring and summer range allotments on the

Forest contain sufficient shrubs in suitable age classes to use the three-pound forage rate. These allotments are within the Scarface Burn.

On fall range, herbaceous material and bitterbrush amount to 82% of the total forage consumed by deer (Leach 1956), or four pounds per day. The remaining 18% of the diet is comprised of curlleaf mahogany, squaw carpet, and snowbrush.

On winter ranges (January through March), grasses, forbs, and bitterbrush comprise 70% of the diet, or three pounds per day. Grasses (both dry and green) comprise the majority of this overlap, with bitterbrush representing only 10% of the diet. During winter, deer consume large amounts of juniper and big sagebrush, and supplement with grasses. During severe winters with deep or crusted snow, juniper and big sagebrush may be the sole items in the diet; however, this represents a starvation diet with heavy deer losses (Leach 1956).

Adjusted forage consumption rates indicate base forage needs of 6.5 deer per AUM or .16 AUM per deer.

#### **Seasonal Ranges on Each Allotment**

The seasonal deer range for each allotment or portion of each allotment was determined. Only Doublehead

and Devil's Garden Districts had allotments clearly defined as either winter or fall deer ranges. Only where seasonal use overlapped, deer occurrence and seasonal use were proportioned.

Total deer numbers and months of use were multiplied by the adjusted forage consumption rates for a particular season of use to determine total deer AUM needs for each herd. Population estimates for each deer herd were determined from data provided by Doug Thayer, CDFG. Population estimates are derived from population models which utilize historical herd size, buck/doe ratios, annual fawn production and recruitment, and mortality from hunting and natural causes. Spring herd size was used in all population and AUM calculations. On allotments or seasonal ranges encompassing large parcels not administered by the Forest, seasonal deer populations and use were reduced to only that which occurs on the Forest.

After determining total AUM requirements for all seasonal ranges of each deer herd, weighted average AUM requirements for deer in each herd were established (Table L-1). AUM requirements were used to model deer herd population trends and forage allocations in FORPLAN.

**Table L - 1. Forage Requirements and Deer Population Estimates on the Modoc National Forest. (1983)**

Deer Herd Seasonal Range	Season of Use (Months)	Current Deer Numbers <sup>a</sup>	Forest Deer Herd Goal	Current Forage Needs (AUMs) <sup>c</sup>	Herd Goal Forage Needs (AUMs)
<b>Interstate</b>					
<i>Westside</i>					
Fall Transition Range	2.0 (Nov-Dec)	5000 (M) <sup>b</sup>		1538	
	12.0 (year-round)	250 (R) <sup>b</sup>		<u>462</u>	
				2000	
Winter Range	3.5 (Jan-April)	5000 (M)		2692	
Spring Transition Range	1.5 (April-May)	5000 (M)		1154	
<i>Eastside</i>					
Transition Range	3.5 (Nov-Dec and April-May)	2200 (M)		1185	
	12.0 (year-round)	500 (R)		<u>923</u>	
				2108	
Winter Range	3.5 (Jan-April)	2200 (M)		1184	
	12.0 (year-round)	250 (R)		<u>462</u>	
				1646	
<b>Total</b>		<b>8200 <sup>d</sup></b>	<b>10,000</b>	<b>9600</b>	<b>12,000</b>

<sup>a</sup> Doug Thayer, California Department of Fish and Game  
Mike Ross, Modoc National Forest  
Estimates made 12/29/82 and 1/6/83

<sup>b</sup> R = Resident; M = Migratory

<sup>c</sup> AUM = 1000 lbs. of grasses, forbs, and bitterbrush; 6.5 deer/AUM

<sup>d</sup> Total deer numbers

**Table L - 1. Forage Requirements and Deer Population Estimates on the Modoc National Forest. (1983) (Continued)**

Deer Herd Seasonal Range	Season of Use (Months)	Current Deer Numbers <sup>a</sup>	Forest Deer Herd Goal	Current Forage Needs (AUMs) <sup>c</sup>	Herd Goal Forage Needs (AUMs)
<b>Glass Mountain</b>					
Summer Range	6.0 (June-Nov)	5500-1100 (pvt land) = 4400 (M)		4062	
Transition Range	3.0 (Apr-May and Nov-Dec)	5500 (M)		2538	
Winter Range	3.0 (Jan-Mar)	5500-550 (Lava Beds) = 4950 (M)		2285	
<b>Total</b>		<b>5500 <sup>d</sup></b>	<b>9600</b>	<b>8885</b>	<b>15,360</b>
<b>Warner Mountain</b>					
Summer Range	6.0	6500 + 700 (E. Lassen) = 7200 (M)		6646	
Winter Range	6.0	7200-3810 (pvt land) = 3390 (M)		3129	
<b>Total</b>		<b>7200 <sup>d</sup></b>	<b>10,500</b>	<b>9775</b>	<b>16,000</b>
<b>Adin</b>					
Summer Range	6.0	3000 + 1300 (W. Lassen) = 4300-1075 (pvt land) = 3225 (M)		2977	
Winter Range	6.0	4300-2580 (pvt land) = 1720 (M)		1588	
<b>Total</b>		<b>3225 <sup>d</sup></b>	<b>6000</b>	<b>4565</b>	<b>8400</b>
<b>Total for all Deer Herds</b>		<b>24,125</b>	<b>36,100</b>	<b>32,835</b>	<b>51,760</b>

<sup>a</sup> Doug Thayer, California Department of Fish and Game  
Mike Ross, Modoc National Forest  
Estimates made 12/29/82 and 1/6/83

<sup>b</sup> R = Resident; M = Migratory

<sup>c</sup> AUM = 1000 lbs. of grasses, forbs, and bitterbrush; 6.5 deer/AUM

<sup>d</sup> Total deer numbers

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## Appendix M

### Wildlife Habitat Relationship (WHR) Seral Stages

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WHR Seral Stage Code	Seral Stage	Age Group (Years)	General Description
1 (PL)	Grass/forb/seedlings	< 10	Plantations with tree seedlings and highly variable amounts of grasses, forbs and shrubs.
2	Shrub/sapling/pole	20-50	Mixed or pure stands of shrubs, tree saplings 1 to 11 inches DBH.
3a	Small tree	60-130	Trees in the 11-24" DBH size range; < 40% tree canopy, typically with a shrub understory.
3b/c	Small tree	60-130	Trees in the 11-24" DBH size range; > 40% tree canopy, typically with varying amounts of shrub understory, lessening as canopy coverage increases.
4a	Medium to large tree	140-180	Mature stand of trees > 24" DBH; < 40% tree canopy, typically with a shrub understory.
4b/c	Medium to large tree	140-180	Mature stand of trees > 24" DBH; > 40% tree canopy, typically with varying amounts of shrub understory, lessening as canopy coverage increases.
4b-old growth	Medium to large tree	190-270 + ("old growth")	Same as above, canopy cover is 40-70%, and the stand is older to provide old growth decadence.
4c-old growth	Medium to large tree	190-270 + ("old growth")	Same as above, except canopy is > 70%, and the stand is older to provide old growth decadence.







## Appendix N

### Potential Special Interest Areas

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#### Dismal Swamp Special Interest Botanical Area

Dismal Swamp is a riparian community complex located in the northern Warner Mountains, near the Oregon state line. Dismal Swamp will be evaluated for potential SIA designation during Forest Plan implementation.

##### Biological Setting

Dismal Swamp is a high montane (7,000 feet) freshwater marsh which drains via Dismal Creek into Big Valley, Oregon. Woody vegetation of the area is characterized by stands of aspen, lodgepole pine, and riparian shrubs, including *Salix lemmoni*, *Salix eastwoodii*, *Salix boothii*, *Betula glandulosa*, and *Kalmia polifolia*. Herbaceous riparian vegetation is dominated by stands of *Veratrum californicum*, *Carex vesicaria*, *Carex aquatilis* and others.

Several Holland vegetation types are represented, including Wet Montane Meadow, Aspen Riparian Forest, zonal Riparian Forest, Great Basin Sagebrush *Artemisia tridentata vaseyana*, and Transmontane Freshwater Marsh. Lodgepole pine stands south of Dismal Swamp are largely undisturbed. Much of the marsh area is inundated 4-5 inches deep during the summer months. Dismal Swamp averages 7 feet of snow annually. A high water table in the area is due largely to beaver activities.

##### *Betula glandulosa*

*Betula glandulosa* (bog birch) is a low-growing (1-2 meters) shrub in the birch family. The twigs are warty and glandular, hence its name. *Betula glandulosa* is distributed from Alaska through eastern Washington and Oregon. Its habitat is high elevation (> 7,000 feet) stream banks, and the margins of marshes, lakes and bogs. The shrub is considered rare in California. The Warner Mountains are probably the southernmost extension of the shrub's known range. Dismal Swamp contains unusually vigorous specimens.

#### Sites on the National Register of Historic Places

The following cultural resource sites are listed in the National Register of Historic Places and are potential candidates for Cultural Resource Special Interest Areas.

#### Anklin Village Archaeological Site

The Anklin Village archaeological site (FS-05-09-55-148; 4-Mod-678) is less than 10 acres and is situated about five miles west of Canby in Modoc County.

##### Cultural and Historical Information

The site appears to have three clearly differentiated areas of activity. Area 1, located in the northern portion of the site, consists of five large rock ring structural remains in a cluster, with five closely associated smaller rock ring structures and two peripheral small rock ring structures. In addition, the bulk of associated flake scatter (chipping evidence) is present around Area 1.

Area 2, in the central portion of the site, consists of two small rock ring structures and one stacked rock cairn (rock stack), with no associated flake scatter. Area 3, in the southern area, consists of four hunting blinds. One is constructed partly of juniper wood, which is very unusual because of its state of preservation.

This site probably was a semi-permanent seasonal village. The large rock ring structural remains may have been foundations for a brush and/or thatch covered wood-framed, half-dome house structure. The small associated rock rings may represent foundations for storage huts or sweat houses. The four hunting blinds, near a lava rim edge and removed from the main area of rock rings, probably concealed individual hunters waiting for game.

Artifacts associated with the main cluster of rock rings are evidence of such activities as stone tool manufacturing, butchering game, cooking and grinding plant food between c. A.D. 500 and the early 1800's. The Astariwawi band of the Pit River (Achomawi) Indians historically occupied the area.

#### **Geological and Biological Setting**

Anklin Village is located on a westward-dipping slope of the Devil's Garden Lava Platform facing a downward trough to the southwest. The site rests on Pleistocene basalts which form a ten-foot bluff at its western margins. It lies at the ecotone between juniper woodland and juniper-pine forest. Vegetation includes juniper, pine, sagebrush, rabbitbrush, epos, and annual bunch grasses. A variety of wildlife is found in the area. An abundant perennial spring of excellent quality flows nearby.

#### **Black Cow Spring**

The Black Cow Spring archaeological site (FS-05-09-55-115; 4-Mod-656) is less than 5 acres and is located about six miles west of Canby in Modoc County.

#### **Cultural and Historical Information**

Black Cow Spring may have been a temporary camping location associated with prehistoric hunting activities. Physical evidence consists of a surface scatter of obsidian flakes and chipped stone tools, such as projectile (arrow and dart) points, knives, a drill and utilized flakes (waste flakes which show evidence of scraping or cutting). The projectile point styles suggest a prehistoric occupation and use of the site from c. A.D. 500 to the early 1800's. The Astariwawi band of the Pit River (Achomawi) Indians historically occupied this area.

#### **Geological and Biological Setting**

Black Cow Spring is located on a westward-dipping slope of the Devil's Garden Lava Platform on a slight rise formed by thin soils overlying Pleistocene basalts. The site lies near the ecotone between juniper woodland and juniper-pine forest. Vegetation includes juniper, pine, sagebrush, rabbitbrush, epos, and annual grasses. A variety of wildlife is found in the area. A seasonal spring flows nearby.

#### **Cuppy Cave**

Cuppy Cave archaeological site (FS-05-09-55-74; 4-Mod-357) is less than 5 acres and is located about 7 miles WSW of Canby in Modoc County.

#### **Cultural and Historical Information**

Cuppy Cave is one of the few known caves containing an archaeological deposit in this area of California, and one of the few to have been scientifically investigated.

During the course of the archaeological investigation of this site, a fire area with associated projectile points was discovered. Burned wood samples were radiocarbon (C-14) dated to  $1780 \pm 100$  years Before Present (that is, before A.D. 1950, the date fixed as "Present" for the C-14 dating method), which is approximately A.D. 170. If the association of the arrow points with this feature is the result of prehistoric activity, then the C-14 date of A.D. 170 marks one of the earliest occurrences of arrow points and, by inference, uses of the bow and arrow in northern California.

Cuppy Cave may represent a seasonally occupied camping location used by the prehistoric ancestors of the Astariwawi band of the Pit River (Achomawi) Indians.

#### **Geological and Biological Setting**

The cave area is situated in the Pit River canyon in a semi-mountainous area of Tertiary pyroclastic and andesitic rock, near a contact zone with the Devil's Garden Lava Platform. Lying at the base of a 200-foot shear wall of ignimbrite outcrop, the cave has one deep chamber protruding nearly 60 feet into the cliff, with an overhang rockshelter over 70 feet wide by about 16 feet deep. The site lies in an ecotone of juniper woodland-coniferous forest and riparian zones. Vegetation includes juniper, pine, sagebrush, rabbitbrush, and annual grasses. A variety of wildlife inhabits the area.

#### **Mildred Ann Site**

The Mildred Ann archaeological site (FS-05-09-55-109; 4-Mod-650) is less than 5 acres, and is located about 5 miles west of Canby in Modoc County.

#### **Cultural and Historical Information**

The Mildred Ann site may have been a temporary habitation site where prehistoric people processed plant food. It contains the remains of one possible pit house (circular depression) and both ground- and chipped-stone tools. Ground-stone tools include a mortar, a mano (a hand-grinding stone used on a metate) and several millingstone (metate) fragments. Chipped-stone tools include projectile point fragments, and scraping and cutting tools, plus waste flakes created by making stone tools. This site may have been used and occupied before c. A.D. 500 until the early 1800's. The Astariwawi band of the Pit River (Achomawi) Indians historically occupied this area.

#### **Geological and Biological Setting**

Mildred Ann site occupies a low knoll, projecting into and overlooking an ephemeral spring. It lies on developing soil derived in place from underlying Miocene basalts on the southern edge of the Devil's Garden Lava Platform. The site lies in the ecotone between juniper wood-



land and juniper-pine forest. Vegetation includes juniper, pine, sagebrush, rabbitbrush, epos and annual bunch grasses. A variety of wildlife inhabits the area. An ephemeral spring is located adjacent to the site.

### **Seven Mile Flat Site**

The Seven Mile Flat archaeological site (FS-05-09-55-123; 4-Mod-661) is less than 5 acres and is located about 8 miles NW of Canby in Modoc County.

#### **Cultural and Historical Information**

The Seven Mile Flat site may have been a seasonal base camp (habitation) site associated with prehistoric hunting and gathering activities. It contains the remains of four faint rock rings, foundation stones for half-dome, wood-frame temporary shelters. Additionally, there appears to be one rock-lined fire pit or earth oven and several bedrock millings. Chipped-stone tools include projectile points and cutting and scraping tools, plus waste flakes from making stone tools. Projectile point styles indicate a time range from c. 2000 B.C. to the early 1800's. The Astariwawi and/or Atwamsini bands of the Pit River (Achomawi) Indians historically occupied this area.

#### **Geological and Biological Setting**

Seven Mile Flat site lies on a partially exposed surface of Miocene volcanic basalts on the northeastern margin of a down-warped trough of the Devil's Garden Lava Platform. A shallow rocky soil covers portions of the site. The site is situated within an ecotone of the Great Basin shrub-grass and juniper-pine forest. Vegetation includes juniper, pine, mountain mahogany, sagebrush, rabbitbrush, epos, and annual bunch grasses. An adjacent flat contains an ephemeral spring and drainage for a seasonal water source.

### **Skull Ridge**

The Skull Ridge archaeological site (FS-05-09-55-124; 4-Mod-662) is less than 5 acres and is located about 6 miles west of Canby in Modoc County.

#### **Cultural and Historical Information**

The Skull Ridge site may have been a temporary habitation and food processing site associated with prehistoric hunting and gathering. It contains the remains of one house structure and a boulder metate, plus numerous chipped stone artifacts. Projectile point fragments found at the site suggest a date between c. A.D. 500 to the early 1800's. The Astariwawi band of the Pit River (Achomawi) Indians historically occupied this area.

#### **Geological and Biological Setting**

The Skull Ridge site is located on a westward-dipping slope of the Devil's Garden Lava Platform, on a slight rise formed by thin soils overlying Pleistocene basalts. The site lies near the ecotone between juniper woodland and juniper-pine forest. Vegetation includes juniper, pine, sagebrush, rabbitbrush, epos, and annual grasses. A variety of wildlife inhabits the area. A seasonal spring flows nearby.

### **Skull Spring**

The Skull Spring archaeological site (FS-05-09-55-014-Mod-619) is less than 5 acres and is located about 6 miles west of Canby in Modoc County.

#### **Cultural and Historical Information**

The Skull Spring site may have been a temporary camp site associated with prehistoric hunting activities. It contains some chipped stone tools and waste flakes from their manufacture. The tools indicate prehistoric hunting and gathering activities. These materials most likely represent prehistoric use of the site dating back to at least A.D. 500. The Astariwawi band of the Pit River (Achomawi) Indians historically occupied this area.

#### **Geological and Biological Setting**

Skull Spring site is located on a westward-dipping slope of the Devil's Garden Lava Platform, on a slight rise formed by a thin, rocky soil deposit overlying Pleistocene basalts. The site lies near the ecotone between juniper woodland and juniper-pine forest. Vegetation includes juniper, pine, sagebrush, rabbitbrush, epos, and annual grasses. A variety of wildlife and a seasonal spring are found in the area.

## **Potentially Eligible Sites to the National Register of Historic Places**

Candidates for nomination to the National Register of Historic Places and potential Cultural Resource Special Interest Areas are:

### **Big Sand Butte: Modoc War and Archaeological District (4,160 acres)**

This area of rough lava flows, dominated by the Big Sand Butte cinder cone, was the scene of one Modoc Indian and two U.S. Army encampments in May 1873, during the closing weeks of the Modoc War. Lava rock fortifications still remain, as well as more than 50 prehistoric archaeological sites, spanning from at least 2000 B.C. to the mid-1800's. The area is situated east of the SE corner of the Lava Beds National Monument.

### **Fairchild Swamp Archaeological District (640 acres)**

This area contains more than 20 prehistoric archaeological sites, including petroglyph (drawings pecked into a rock face) panels. These sites date from c. 2000 B.C. to the mid-1800's. Collectively, these archaeological sites may yield valuable information on prehistoric life styles adapted to a seasonal wetlands environment. This area is located on the Devil's Garden Ranger District about 25 miles NW of Alturas.

### **High Grade Mining District (maximum area 19,760 acres)**

The District contains an estimated 200 locations with cabins, stamp mills, mines, prospect pits, water ditches, tailings, trash dumps and other evidence of Modoc County's early 20th century Gold Rush. The mining ghost towns of High Grade and Branley are also located in this area. Mining activities occurred between 1906 and the 1930's. The District lies high in the north Warner Mountains.

### **Battle of Dry Lake: Modoc War and Archaeological District (1,830 acres - about 780 of which are private land)**

Also known as the Battle of Sorass Lake, this incident took place during the early morning hours of May 10, 1873, when Modoc warriors attacked Captain Hasbrouck's encampment. From this engagement the

Modocs retreated to the vicinity of Big Sand Butte. Also within the District area are over 30 prehistoric archaeological sites which date from c. 2000 B.C. to the mid-1800's.

### **Battle of Scorpion Point: Modoc War and Archaeological District (1,320 acres)**

Scorpion Point was the site of an army encampment April-May 1873, during the Modoc War. Nearby the Modoc Indians attacked an army wagon train on May 7, 1873. Also within the general area are over 30 prehistoric and historic archaeological sites, dating from c. 2000 B.C. to the mid-1800's. This area is situated on the southern shoreline of Tule Lake east of the Lava Beds National Monument.

### **Captain Jack's Capture Site: Modoc War and Archaeological District (960 acres)**

At this location on Willow Creek, east of the Clear Lake Reservoir, Modoc leader Captain Jack surrendered on June 1, 1873, thus ending the Modoc War. A small cave is the traditional last refuge of Captain Jack. Over 20 prehistoric and historic archaeological sites in the area date from c. 2000 B.C. to the mid-1800's.

### **Boles Creek Rock Art District (320 acres)**

This canyon setting, east of Clear Lake Reservoir on the Devil's Garden Ranger District contains more than 100 individual panels of prehistoric petroglyphs. These drawings are fairly typical of the prehistoric style known as Great Basin. It contains primarily abstract geometric and wavy designs with a few figures which resemble humans and animals. This rock art style may date from c. 1000 B.C. to A.D. 1500, and was probably done by the ancestors of the historic Modoc Indians.

### **Blue Mountain Obsidian Quarry (640 acres)**

This site is located near the center of the Devil's Garden Ranger District about 35 miles NW of Alturas. It consists of a small cinder cone and obsidian vent, which produced a unique obsidian with a grainy, bottle-glass green appearance. It was used for making stone tools, especially projectile points, for at least 5,000 years. Quarry areas and remnants of prehistoric tool-making activities are still visible.





## Appendix O

### Identification of Lands Suitable for Timber Management

This appendix summarizes the process used to identify capable, available, and suitable lands for timber management. For more detailed data and information refer to "Timber Capability, Availability, and Suitability on the Modoc National Forest", "Timber Suitability", and "Process Criteria: Delineation of Capability Areas and Development of a Data Base Dictionary" in the Forest planning files.

#### Timber Inventory Background

Color resource photographs (1:15,840) were used to determine timber types—labels used to identify species, size class, and density. Timber typing was limited to areas with at least a 10% tree cover. Timber type delineations were then planimetrically mapped on smaller scale (1:24,000) quadrangle maps. For inventory purposes, timber types were aggregated into timber strata composed of Regional type, size, and density. For example, white fir, or white fir with a second species was aggregated into the Regional mixed conifer strata; and ponderosa pine, or ponderosa pine and incense-cedar were aggregated into the pine strata. The following table shows how timber typing size and density labels were aggregated into Regional size and density classes<sup>1</sup>.

Size Class	DENSITY			
	Sparse (S)	Poor (P)	Not Adequate (N)	Good (G)
1	PLP	PLP	PLG	PLG
2	3P	3P	3G	3G
3	3P	3P	3G	3G
4	4P	4P	4G	4G
5	4P	4P	4G	4G
6	-	-	-	6G
9	PLP	PLP	PLG	PLG

"Sparse" and "poor" stocked stands were combined, and "not adequate" and "good" stocked stands were

combined. Size classes 2 and 3 were combined and size classes 4 and 5 were combined.

Regional strata were used to set up the sampling scheme for the 1980 timber inventory.

#### Soil Resource Inventory and Soil Mapping Units

The Soil Resource Inventory - Order 3 (SRI 3) identifies soil mapping units (SMUs) generally larger than 40 acres. SMUs consist of unique combinations of soils and proportions of soils. A single specific soil type can occur in more than one SMU, but will not be in the same combination or proportion with other soils in different SMUs. Some SMUs composed of several soils have soils which are similar in productive potential. Other SMUs are composed of soils with varying productive potential. All soils within an SMU are inclusions; that is, soils are not distinct from one another, and locations of soils cannot be determined within an SMU. Information exists only on the proportions of each soil within an SMU. (This non-site-specific situation is similar to the aggregating of timber types into Regional strata.)

#### Availability

The South Warner Wilderness and the Burnt Lava Flow Special Interest Area are legally or administratively withdrawn land from timber production. All other timberlands are available for timber production.

#### Suitability

Two physical suitability tests complete the process of identifying land suitable for timber production. The first tests whether technology is available that will ensure timber production, including harvesting, from the land without irreversible resource damage to soil productivity or watershed condition. The second tests whether reasonable assurance exists that such lands can be adequately restocked within 5 years after final harvest.

On the Modoc National Forest, no areas have been identified that would be irreversibly damaged by timber

<sup>1</sup> Definitions of Regional type, size, and density labels are in R-5 FSH 2409.21b Timber Management Plan Inventory Handbook.

harvest, providing that Best Management Practices are applied. Technologically, all available lands pass this first test.

The criteria for determining adequate restocking and guidelines for determining final harvest are found in FSM 1922.24(f):

When trees are cut to achieve timber production objectives, the cuttings will be made in such a way as to assure that lands can be adequately restocked within five years after final harvest. Research and experience indicate that the harvest and regeneration practices planned can be expected to result in adequate restocking. Adequate restocking means that the cut area will contain the minimum number, size, distribution, and species composition of regeneration as specified in regional silvicultural guides attached to the Forest Plan for each forest type. Five years after final harvest means five years after clearcutting, five years after final overstory removal in shelterwood cutting, five years after the seed tree removal cut in seed tree cutting, or five years after selection cutting.

The minimum number of trees per acre for adequate restocking was established in the Regional Guide by forest type as follows:

Forest Type	R-S Site Class	Number of Trees Recommended	Minimum Acceptable for Certification
Ponderosa Pine	I	200	150
Ponderosa Pine	II	200	125
Ponderosa Pine	III	150	100
Ponderosa Pine	IV	125	75
Red & White Fir	All	300	200
Mixed Conifer	All	200	150

The Forest identified 17,840 acres as land physically unsuitable for adequate restocking 5 years after final harvest. According to the soil inventory, 26,000 acres of non-forested land was identified as potentially capable of growing 20 cubic feet per acre. After field evaluation, Forest timber staff found only 7,862 acres acceptable for timber production. On the remaining 17,840 acres, ground conditions showed no reasonable assurance of tree stocking within five years.

Suitable timberland on this Forest (619,258 acres) is separated into two categories:

#### **Timberland Growing More Than 20 Cubic Feet Per Acre Per Year (> 20 Lands)**

This is land that can be managed for a full range of silvicultural methods, either even-aged or uneven-aged management. Harvests can be by group selection, clear-cut, shelterwood, thinning, or single-tree selection. Over 435,000 acres are available to full or modified timber management. Full timber management prescriptions result in optimum timber production in volume and value. Modified timber management prescriptions are designed to meet other resource outputs together with timber outputs and result in reduced timber yields.

#### **Timberland Growing Less Than 20 Cubic Feet Per Acre Per Year (< 20 Lands)**

Less productive but suitable timberlands are managed separately from > 20 lands. Over 184,000 acres of timberlands contain large amounts of rock and inclusions of better soils. Inclusions are too small to be mapped. The largest area is about 60,000 acres, located in the Long Bell area. This area is composed of fractured lava reefs. Other < 20 lands consist of a layer of shallow soils with high rock content over old lava flows. Limited timber management is practiced on these lands. That means harvesting is nominal, occurring when sufficient understory trees are present to replace what is removed. If all lands are harvested, estimated yield from < 20 lands is approximately 4 MMBF, equivalent to 5% of the inventory on this land per decade.

Separating > 20 lands from < 20 lands was based on both soil and timber information. Since SMUs are larger than timber types, vegetation within SMUs were used to define inclusions of soils with different productive potentials. SMUs were ranked by their apparent productive potential by the Soil Scientist. This ranking system separated sparsely stocked timber located on deep soils (which could be more fully stocked) from sparsely stocked timber located on shallow rocky soils (which are as well stocked as possible).

SMUs are aggregations of 2-3 major soil types. The Soil Scientist grouped SMUs into three productivity categories. SMUs in Group 1 were productive soils. Group 2 SMUs were soil complexes with both productive and less productive soils. Group 3 SMUs were soils of low productive potential and distinguishable as shallow soils not capable of producing > 20 cubic feet of wood growth per acre per year. The exception in group 3 was timber strata with good stocking; these lands were considered > 20 lands.

Group 2 SMUs posed the most difficult to separate >20 lands from <20 lands. Again, when stocking was good (G), the land was considered >20 lands. Field evaluations showed that some poorly stocked timberlands, however, were a mixture of >20 lands and <20 lands. To correct this problem, the ratio of poor to sparsely stocked stands was used to distinguish >20 lands from <20 lands. Since poor and sparsely stocked stands had been aggregated in the Forest data base, the

original timber type data was used to supply ratios for each strata. The problem caused by aggregating the two density classes was not discovered until after the Forest data base was complete.

Note that full and modified timber management can be applied only on >20 lands only, and limited timber management can only be applied on <20 lands. The <20 lands are regulated separately, and outputs are not commingled with >20 lands outputs.









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### Major Silvicultural Systems and Their Application

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#### INTRODUCTION

This appendix describes the major silvicultural systems used in land management planning for the Modoc National Forest, and the advantages and disadvantages of each, considering both biological and managerial perspectives. However, almost all of the information in this paper also applies to selecting an appropriate silvicultural system for a particular stand.

Silvicultural systems are used to manage forest stands. A silvicultural system is a planned sequence of treatments for controlling the species composition and structure of the vegetation during the life of a stand. A stand is a community of trees sufficiently uniform to be distinguishable as a silvicultural or management unit. Typically, stand sizes vary from 5 to over 30 acres on most forest lands. However, pine stands on the Devil's Garden Plateau tend to be larger.

Management objectives for stands typically are combinations of forest products and amenities, e.g.: specific amounts of livestock forage, water runoff, and wood products; kinds of wildlife habitat; and specific scenic view qualities. No single silvicultural system can produce all desired combinations of products and amenities from a particular stand, or from a national forest.

Forests are managed by using combinations of silvicultural systems to achieve the forest management objectives. All of the silvicultural systems discussed here are used in the national forests in California. The combinations vary greatly, depending on the characteristics of local forest ecosystems and differing management objectives.

Selection of the appropriate silvicultural systems occurs at both the national forest land management planning level and ranger district project level. The forest's selection is based on a broad match of silvicultural systems with the overall planning objectives and ecological characteristics of broadly-defined land classes. Examples of land classes are: areas capable, available and suitable for growing commercial wood products; streamside management zones; and raptor management areas. The Modoc has further distinguished this land into and land capable of greater than or less than 20 cu. ft. of wood production per acre per year. At the ranger district, project level selection of silvicultural systems is typically

made by a certified silviculturist. Choices are based on matching the attributes of the silvicultural systems with specific management objectives and the ecological characteristics for specific stands.

#### DESCRIPTIONS OF THE SILVICULTURAL SYSTEMS

A silvicultural system for timber production typically includes cutting trees, growing new trees, and controlling competing plants. Cuttings are classified as regeneration cuttings (those that help to replace stands), and intermediate cuttings (those that maintain or improve the character of existing stands).

Silvicultural systems are not just the creation of foresters; rather, they are adaptations of natural occurrences. Nature makes "regeneration cuttings" by means of fire, insects, disease, wind, and other phenomena; by removing a single tree, a small group of trees, a stand, or sometimes a whole forest.

Regeneration cuttings strongly influence stand characteristics and management options. Therefore, the 5 major silvicultural systems are named after them: clearcutting, seed-tree, shelterwood, single-tree selection, and group selection. Each of these systems includes regeneration cuttings to establish new tree seedlings or sprouts, and intermediate cuttings to develop the desired stand characteristics, such as species composition, spatial distribution, and plant vigor.

The clearcutting, seed-tree, and shelterwood systems are even-aged systems; which means that all of the trees in the stand are approximately the same age for almost all the life of the stand. The single-tree and group selection systems are uneven-aged systems; the trees in the stand differ markedly in age, with at least three major age classes present. Uneven-aged stands have no beginning or end points in time.

##### Even-aged Systems

Clearcutting is the harvesting, in one operation, of all merchantable trees in a stand or a larger area to help establish a new even-aged stand. The new stand may be created by natural processes such as seeding from trees in adjacent stands, or by sprouting from the stumps or roots of the cut trees. The new stand can also be created by people through broadcast scattering of seeds, or by

planting seeds or seedlings. In California, and the Modoc specifically, clearcut stands are usually regenerated by planting seedlings.

Clearcutting does not necessarily mean that all unmerchantable trees are removed. Where feasible, high-quality unmerchantable trees are saved to become part of the new stand. A 1987 survey showed that on gentle terrain in the national forests on the western slope of the Sierra Nevada mountains, high-quality unmerchantable trees are being retained on an average of 10 and 20% of the acres being regenerated to ponderosa pine, and to red fir or white fir, respectively.

The clearcutting silvicultural system is illustrated in Figure P-1.

The shelterwood system (shown in Figure P-2) requires leaving sufficient trees per acre (typically 10 to 20), during the regeneration cutting, to provide an environment that protects (shelters) the seedlings of a new even-aged stand. Protection may be needed from excessive moisture stress or frosts in some forest areas. The new stand can be created by the natural or artificial processes described above.

Regeneration under shelterwoods by planting seedlings is a common practice on national forest lands in the Region and is planned on the Modoc. The shelterwood trees are harvested following establishment of the seedlings of the new even-aged stand. The shelterwood system is the second-most commonly used even-aged system on national forest lands in Region 5, after the clearcutting system. The shelterwood system is most commonly used in stands where red or white fir are to be regenerated.

The seed-tree system (shown in Figure P-3) leaves 3 to 10 good seed-producing trees per acre during the regeneration cutting. These trees produce the seed needed to establish a new even-aged stand. Following seedling establishment, the seed trees are harvested. This system has seldom been used for intensive timber management on the national forest lands in Region 5. The primary reasons were: frequent unreliability of natural regeneration in the desired periods, invasion of cleared lands by vegetation (particularly shrubs) undesirable for full timber production, and the poor economics of harvesting the few seed trees after natural seedlings were established.

#### Uneven-aged Systems

In the single-tree selection system (shown in Figure P-4), each tree is evaluated for its contribution to the desired characteristics of the uneven-aged stand. Regeneration and intermediate cuttings are usually done in one

operation. The desired seedlings or sprouts grow in the spaces created by harvesting of individual trees.

Repeated selection cuttings, part of the single-tree selection system, have been used frequently to manage national forest lands, particularly in the Sierra Nevada and Cascade Mountain Ranges. There has been a major shift to using the clearcutting or shelterwood systems over the last two decades. The primary reason is that the selection cuttings caused significant understocking in many stands, thereby reducing productivity. There are many examples of poor selection cuttings in California and on the Modoc (especially in ponderosa pine) under the guise of the single-tree selection system. High quality, large trees were cut, leaving inferior, small trees. Genetic principles were ignored, and many stands were left understocked, with slow-growing, small trees that are more susceptible to attacks by insects and diseases. In these situations, establishing a new even-aged stand typically is the most efficient way of regaining desired productivity levels and other stand qualities. The Timber AMS documents some adverse effects of past selection cutting on the Forest. Particularly troubling are many miles of skid trails and lands that are never closed because they are needed for frequent entries to the same stand.

The group selection system harvests trees in groups of less than 5 acres. The openings created in the stand resemble miniature clearcuts. The uneven-aged stand consists of a mosaic of even-aged groups. Thus, the group selection system uses the principles of even-aged systems described above to manage much smaller units of land. Currently, the group selection system is used less frequently than the single-tree selection system on the national forest lands in Region 5.

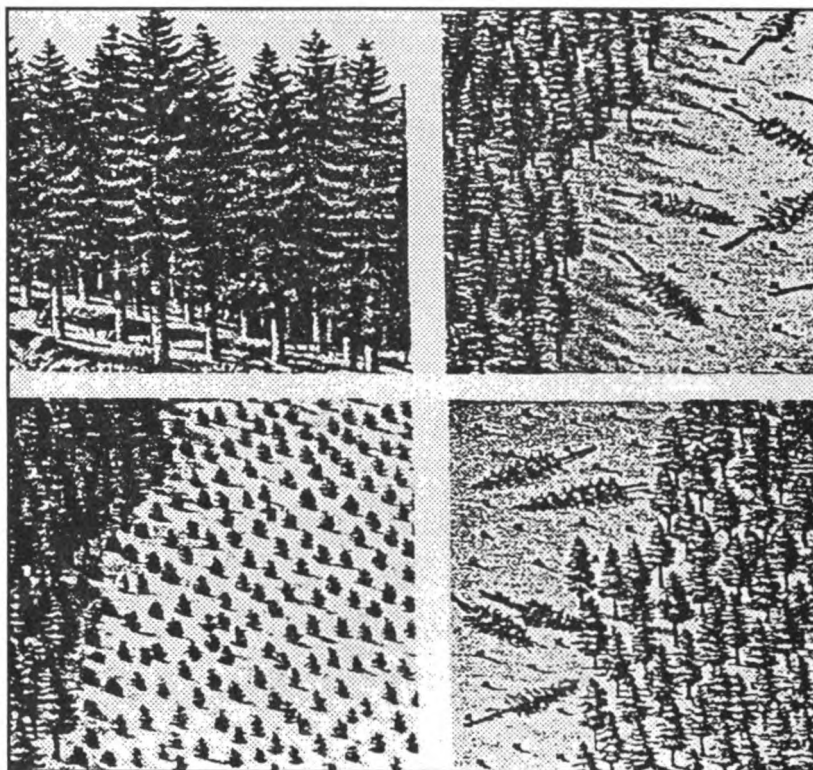
Even-aged systems are more practical than uneven-aged systems for intensive management of wood products. The reasons are explained in the section below on "Managerial Contrasts Among Forests and Stands Managed by Various Silvicultural Systems."

## TIMBER YIELD AND REGULATION OF FORESTS AND STANDS

Timber yield is the amount of wood that is harvested periodically from a specified forest area. The maximum yield allowed from a national forest for a planning period (typically one decade), is called the allowable sale quantity. By federal law, the allowable sale quantity generally cannot exceed the long-term, sustained capacity of that forest to grow wood. Within each national forest, stands are managed by silvicultural systems to achieve continuous production of the allowable sale quantity.

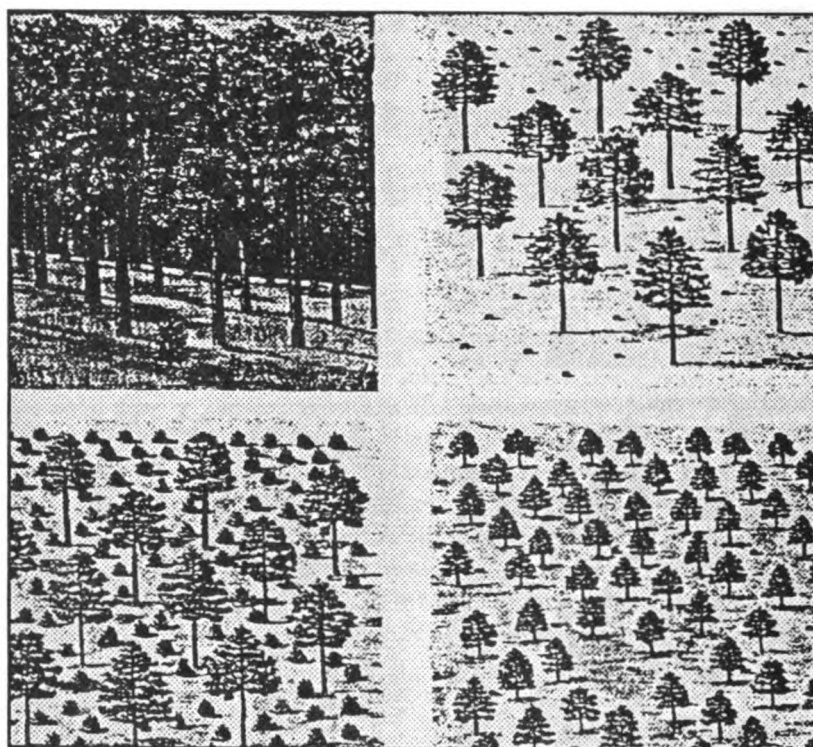
**Figure P - 1. Clearcutting**

**Clearcutting.** Part of a mature stand is cut, removing all trees. A new stand arises from seeds of surrounding trees or from sprouts sent up by roots or stumps. Seedlings may also be planted or seeds broadcast. When the new trees are well on their way in the unobstructed light of the clearing, a neighboring stand of mature trees is cut in turn. (The illustration is from *The Secret Life of the Forest* by Richard M. Ketchum, ©1970 by American Heritage Press, and is used with the permission of McGraw-Hill Book Company and the Society of American Foresters.)

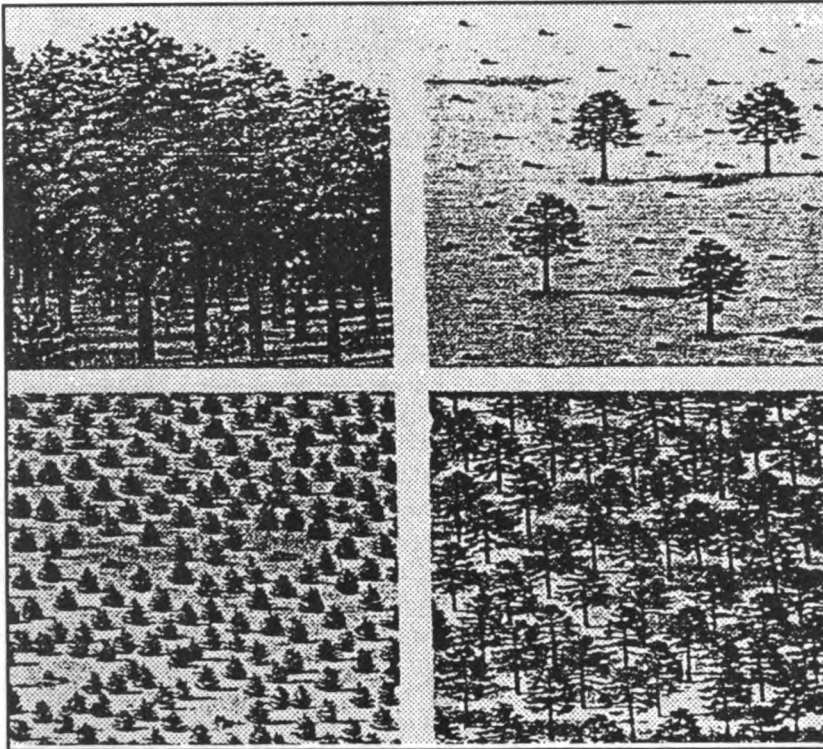


**Figure P - 2. Shelterwood System**

**Shelterwood System.** A mature stand is partially cut, leaving some of the better trees of desired species to grow, cast seed, and provide shade and perhaps other shelter for the new stand. Usually more trees are left per acre than in the seed-tree system. These shelter trees will be harvested after seedlings have become established and no longer need protection. (The illustration is from *The Secret Life of the Forest* by Richard M. Ketchum, ©1970 by American Heritage Press, and is used with the permission of McGraw-Hill Book Company and the Society of American Foresters.)

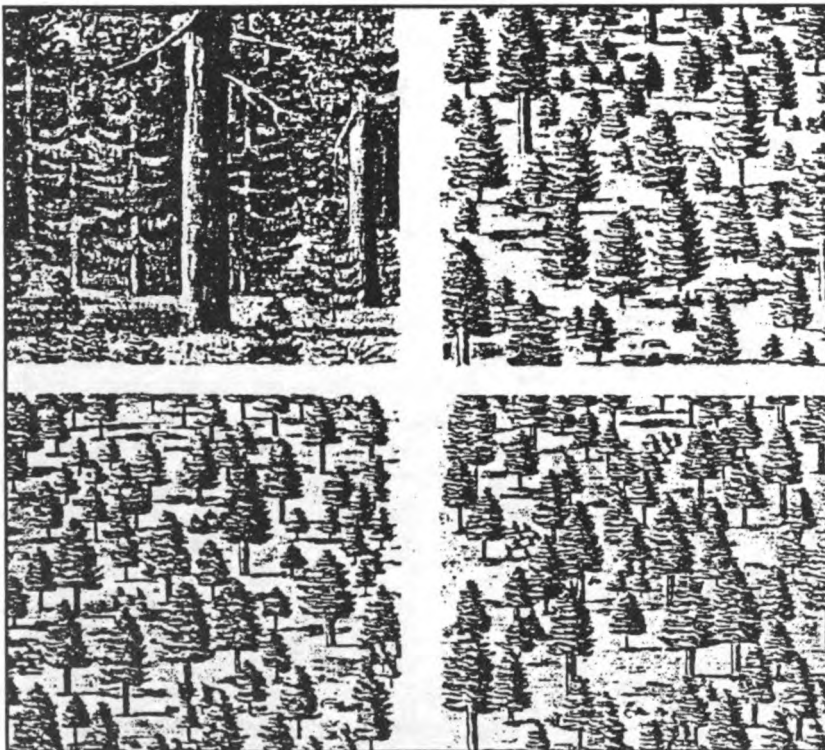


**Figure P - 3. Seed-Tree System**



**Seed-Tree System.** The mature stand is logged, but enough trees are left to reseed the area. The seed trees usually are large and valuable, and may be harvested when they have fulfilled their purpose. Like clearcutting, the system favors light-demanding species. (The illustration is from *The Secret Life of the Forest* by Richard M. Ketchum, ©1970 by American Heritage Press, and is used with the permission of McGraw-Hill Book Company and the Society of American Foresters.)

**Figure P - 4. Single-Tree Selection System**



**Single-Tree Selection System.** Cuts are made more often than in other systems, but since the entire stand is never removed, appearances are not much affected. Undesirable trees are removed, overly dense areas are thinned, and mature trees are harvested during each cut. Seedlings of shade-tolerant species develop wherever they can find room. The stand contains trees of many ages. (The illustration is from *The Secret Life of the Forest* by Richard M. Ketchum, ©1970 by American Heritage Press, and is used with the permission of McGraw-Hill Book Company and the Society of American Foresters.)



When this continuous production level is achieved, the forest and stands are said to be "regulated". Where the single-tree selection or group selection silvicultural systems are used, each regulated stand would produce approximately the same yield from each harvest, which would occur about every 20 years on the Modoc. The period between entries has been extended from the 10-year cutting cycle commonly used on other forests in Region 5 to account for lower site quality and slower growth. By contrast, where the even-aged systems are used, yields from each harvest in a regulated stand would not be equal, but the average yield for the Forest would be the same.

The conversion of wild stands to regulated stands in many of California's forests has just begun. The goal of regulation will take many decades to achieve. No major forest in California has yet been regulated.

## **BIOLOGICAL CONTRASTS AMONG FORESTS AND STANDS MANAGED BY DIFFERENT SILVICULTURAL SYSTEMS<sup>1</sup>**

### **Appearance**

#### **Variation in Tree Age**

A forest managed by even-aged silvicultural systems consists of a mosaic of even-aged stands. Every age class would be represented in a regulated forest, and each age class would be represented by approximately the same number of stands. A regulated forest managed by the group selection system would resemble forests managed by the even-aged silvicultural systems; except that the even-aged components (groups) would be much smaller and more numerous. By contrast, each stand in a regulated forest managed by the single-tree selection system would have trees of many ages (perhaps all ages).

The oldest (or largest) trees in any managed forest depend primarily on the management objectives, not on the silvicultural systems. In particular, the amounts of large- or old-growth to be produced or maintained depend more on the willingness to forego yields than on the kinds of silvicultural systems used to manage stands.

#### **Variation in Developmental Stages**

In the even-aged and group selection systems, all stages of forest development are present in the forest;

including grasses, forbs, shrubs, tree seedlings, and larger trees. Each stage is represented by entire stands or groups. By contrast, in the single-tree selection system the areas dominated by small plants such as grasses, forbs, or shrubs are commonly very small (for example, less than one one-hundredth of an acre), but they occur somewhere in every stand. In a regulated forest, the total area occupied by each stage should be about the same, regardless of the silvicultural system.

### **Occurrence of Shade-tolerant and Intolerant Plants**

Even-aged and group selection systems favor plants that can be readily established and which grow well in full sunlight (shade-intolerant plants). These include grasses, most forbs and shrubs, and many of the most valuable commercial tree species, such as ponderosa pine. The single-tree selection system favors plants that can be readily established and grow well at low light levels (shade-tolerant plants). Examples in California forests are many ferns; few grasses, forbs, and shrubs; many non-commercial hardwood tree species; and a few commercial conifer tree species, such as white fir and incense-cedar.

However, on forest lands (such as on the Modoc) where lack of soil moisture or other soil conditions cause low plant densities, shading by trees is greatly reduced. There, shade-intolerant plants will persist if the single-tree selection system is used. However natural regeneration of conifers rarely occurs in these stands, or occurs very slowly.

### **Diversity of Plant Species**

Species diversity depends on the biological and physical environments, how diversity is evaluated, and on how the stands are managed under the various silvicultural systems.

On moderate- to high-quality lands, stands managed by the single-tree selection system shift toward shade-tolerant species. In California, many stands and forests which were previously dominated by commercially more valuable pine and Douglas fir now have large components of less valuable tan oak, madrone, or white fir. This process could reduce tree species diversity in such stands, compared with management by other silvicultural systems. The shift toward more shade-tolerant species also means that the species diversity of plants near the

<sup>1</sup> The key biological contrasts are summarized in Table P-1.

ground would eventually be lower in stands managed by the single-tree selection system.

The species composition of commercial tree species can increase or decrease during stand regeneration, depending on the environmental conditions, availability of natural seed, selection of species to be planted, and the success of the plantings. If artificial regeneration fails in stands with mixed species, the diversity in the naturally-regenerated stand may be reduced significantly. Potential seed trees of some species could have been harvested, or only certain species (for example, white fir) could regenerate naturally under the brush that rapidly occupies newly harvested areas.

If both artificial and natural regeneration fail, the species diversity of commercial trees has been significantly reduced. The risk of a complete regeneration failure is least for the single-tree selection system. There is high probability of successful natural regeneration of all species where openings are small, seed sources are present, and ground environmental conditions are suitable for tree seedling establishment. However, these factors are not generally present on the Modoc. Many acres of understocked pine on this Forest attest to the cumulative effects of small regeneration failures after each selection cut. The risk of loss of diversity in large openings can be reduced by planting all appropriate species, or by designating appropriate seed trees or shelterwood trees of mixed species.

### Vertical Diversity

The vertical diversity in stands managed by the even-aged or group selection systems can be quite limited. Typically there is a single dominant layer of seedlings, saplings, or larger trees. However, considerable diversity exists in stands with larger trees because some trees are taller and have fuller crowns than others. Full vertical diversity still occurs over the forest, but not in each stand or group. By contrast, in the single-tree selection system, the vertical diversity within each stand should be much greater. Seedlings, saplings, and trees in larger tree classes should be seen from any point in the stand.

### Tree Vigor

If the stands are well managed, tree and stand vigor should be independent of silvicultural systems with three exceptions. First, new seedlings in openings (particularly shade-tolerant species such as red fir and white fir) are heavily stressed by heat and lack of adequate water, until they develop good root systems. These stresses often cause heavy mortality (especially of natural seedlings, or of low-quality or mishandled or poorly planted seedlings

from nurseries). Second, seedlings in openings are more susceptible to damage or mortality from frosts, particularly at high-elevation sites. Where seedling mortality (even of high-quality, properly handled and planted nursery seedlings) is expected to be excessive, use of the single-tree selection, shelterwood, and group selection (where groups are small) systems are favored. Third, maintaining good vigor of small shade-intolerant species, such as ponderosa pine, can be very difficult in stands managed by the single-tree selection system. To promote vigor and growth of these trees, tree density may have to be reduced, which can significantly reduce timber yields.

Many stands on national forest lands are severely infected with certain root diseases or dwarf mistletoes. It is very difficult and costly to maintain or improve tree vigor and productivity there if the single-tree selection system were used. These root diseases and dwarf mistletoes infect other trees more easily when this system is used.

## Genetic Resources

### Conservation of Genes

Genetic diversity is virtually unaffected when natural or artificial regeneration of commercial tree species is successful. (Successful artificial regeneration means that appropriate procedures are used during seed collection to ensure a large genetic diversity in the collected seed.) However, if regeneration of a particular species were to fail repeatedly over broad areas, genetic diversity would be reduced.

### Quality of Genes

Where improperly applied, the single-tree selection system can lead to "high-grading", which in turn reduces genetic quality for wood production. High grading is the selective removal of the best trees (most rapidly growing, largest, and most valuable for wood), so that most regeneration comes from seed produced by the lower-quality, remaining trees.

The average genetic quality may be significantly lowered in a stand managed by the single-tree selection system, because of higher rates of inbreeding. Some forest geneticists theorize that inbreeding should also increase under the shelterwood or seed-tree systems. Nearby trees of the same species usually are closely related, and they can pollinate each other. The natural seedlings should be even more inbred. By contrast, artificial regeneration or natural regeneration from edges of large openings reduces the probability of significant in-

breeding. Large openings facilitate pollen movement from more distant, less closely related trees.

## Productivity

Scientific long-term comparisons of wood production using various silvicultural systems have not been made anywhere in the world. This comparison will be possible many decades from now at Blodgett Forest, a University

of California research facility. Theoretically, the total biological productivity (biomass) may be greatest for stands managed by the single-tree selection system. This is because of more continuous tree cover, compared to the other systems. However, merchantable stand growth and timber yields may not be higher for the single-tree selection system. Merchantable yields are strongly influenced by managerial factors.

**Table P - 1. Major Silvicultural Systems by Principal Biological Attributes**

Biological Attribute	Clear-Cutting	Shelterwood	Seed-Tree	Group Selection	Single-Tree Selection
<b>Appearance</b>					
Diversity of tree sizes in a stand:					
- Vertical	■	■	■	‡	□
- Horizontal	■	■	■	‡	□
Number of openings in a forest <sup>1</sup> :					
- Larger than 2 acres	□	□	□	■	■
- 1/10th to 2 acres	■	■	■	□	■
- Smaller than 1/10th acre	■	■	■	■	□
Potential for conserving or improving plant species diversity in a stand	□	□	□	□	‡ <sup>3</sup>
<b>Genetics</b>					
Resistance to inbreeding effects	□	□ ‡	□ ‡	□	■
Resistance to degradation by "high-grading"	□	□	‡	□	‡
Potential for conserving genes in a forest <sup>2</sup>	□	□	□	□	□
<b>Productivity</b>					
Potential for producing biomass	□	□	□	□	□
<p>□ is Good, Excellent, or Many</p> <p>‡ is Moderate or Few</p> <p>■ is Poor or None</p>					
<p><sup>1</sup> Exclusive of roads and natural openings such as meadows or rock outcrops.</p> <p><sup>2</sup> Assumes all harvested species are planted successfully, or will regenerate naturally; otherwise "Poor".</p> <p><sup>3</sup> Assumes no major fires; otherwise "Poor".</p>					

## MANAGERIAL CONTRASTS AMONG FORESTS AND STANDS MANAGED BY VARIOUS SILVICULTURAL SYSTEMS<sup>1</sup>

### Public Concerns

In the last two decades the clearcutting system and to a lesser extent the shelterwood and seed-tree systems, have generated controversy in the United States and Europe.

At least six major concerns confront California forests:

- Clearcut areas are regarded as visually unattractive.
- The risks of significant soil erosion and loss of soil productivity are thought to be much greater for the clearcutting system.
- Regeneration of clearcut stands may be unreliable.
- The risks of significant genetic losses may be much greater for the clearcutting system because new stands may be monocultures.
- The use of chemical herbicides (strongly opposed by some groups and individuals) may be much greater if even-aged systems are used, particularly the clearcutting system
- Artificial regeneration, particularly of even-aged stands, may be too costly.

All of these undesirable effects can occur under any silvicultural system. However, the risks of some are significantly different among certain systems. Concerns about genetic losses were addressed earlier in the sections on Diversity of plant species and Genetic Resources. The other five concerns are discussed in the following sections on Effects on Scenic Quality, Risks of Adverse Effects on Watersheds and Soils, Scientific Knowledge Base, Management Experience, Need for control of competing vegetation (including the use of herbicides), and Treatment costs.

Other managerial aspects of the silvicultural systems are also discussed in the sections below: risk of major wildfires; risk of damage by insect, disease, or wildlife pests; production of livestock forage; protection of cultural resources; administration of silvicultural projects; timber harvesting efficiency; genetic improvements in forests; and effects on fisheries and wildlife.

### Effects on Scenic Quality

It is usually easier to create or maintain naturally-appearing landscapes with uneven-aged systems rather than even-aged systems. Uneven-aged systems are usually less noticeable because they create less contrast and are more flexible in design. However, long-term maintenance of natural appearing landscapes can be more difficult under the uneven-aged systems, particularly for the single-tree selection system, because the inevitable natural wildfires are more difficult to control. (See the section on Risk of Major Wildfires.)

Depending on circumstances, all silvicultural systems may achieve visual quality objectives, whether the emphasis is on wood production or natural-appearing landscapes. Regeneration cutting in some situations can meet retention or partial retention objectives; for example, partial cuttings, such as shelterwood or single-tree selection, or openings that emulate and blend with natural conditions. Which alternatives are optimal, or even feasible, depend on factors such as location relative to the viewer, slope steepness, and available topographic or vegetative screening.

### Risks of Adverse Effects on Watersheds and Soils

These risks depend more on the characteristics of the watershed and soils, and on the care and quality of work, than on the kind of silvicultural system used. Adverse effects associated with any silvicultural treatment can usually be avoided or mitigated. The major possible adverse effects are erosion, sedimentation in waterways, soil compaction, and loss of soil productivity through soil or nutrient loss.

The risks of significant, cumulative erosion and sedimentation effects in watersheds usually depend more on road quality and location than on silvicultural treatments.

The risk of significant erosion within stands depends on how much protective vegetation and litter cover is removed, as well as on road quality and location. This risk is generally higher for the clearcutting system because more cover is temporarily removed by clearcutting and preparation for seedling establishment. The risk is least for the single-tree selection system.

Extensive and frequent use of heavy machines can cause significant soil compaction of some soils. The risk of this occurring should not be different among silvicultural systems.

<sup>1</sup> The major managerial contrasts described in this section are summarized in Table P-2.

tural systems. However, old roads, skid trails, and landings tend to remain without cover when used periodically in selection systems.

The risk of soil nutrient losses is increased where vegetation or litter is cleared or high intensity fires occur. Again, the risk due to clearing vegetation or litter is greater for the even-aged silvicultural systems. High intensity fires may occur in any stand if controlled fires are used improperly. However, the risk of high intensity fires is greater for the single-tree selection system because crown wildfires are more likely. (See the section on Risk of Major Wildfires.)

## **Scientific Knowledge Base**

Knowledge is least for the single-tree selection system for national forest lands in California.

### **Biological**

Considerable research has been completed on the biological foundations for all of the silvicultural systems. Planting, natural regeneration, and genetic principles have been extensively studied for all systems. Research is more complete on early growth of young potential crop trees and control of competing plants for the even-aged and group selection systems. Similarly, stand growth model research is more complete for the even-aged and group selection systems. There are no major differences in the knowledge base about intermediate cuttings or about insect and disease pest management, among the silvicultural systems.

### **Managerial Aspects**

Research on the managerial aspects of California's forests has focused on the even-aged and group selection systems. Only in the last decade have concerted efforts been made to research the long-term practicality of the single-tree selection system. Earlier studies were not completed because of difficulties with controlling regeneration of some desired species, controlling stocking, or sustaining the desired stand structures and merchantable yields. This resulted in strong recommendations against the system by many forest research scientists. New interest has been generated by demands for continuous forest cover, maintenance of an unmanaged appearance, and an alternative to management by the even-aged systems. However, several decades of management will be required before analyses of overall effectiveness can be made.

## **Major Silvicultural Systems**

Research in the group selection system is also underway in California. It too will require several decades of treatments to achieve regulated stands.

### **Management Experience**

Timber harvesting has occurred in California for over 140 years. However, experience with managing forests with the goal of regulating potential yields, has been limited to the last several decades. Regulation of national forest lands has only involved the even-aged silvicultural systems, particularly clearcutting. However, extensive experience has been gained with all of the silvicultural systems in managing certain stands.

### **Single-tree Selection**

Most of the harvesting from national forests, including the Modoc, and many private timber lands in California has been selection cuttings of large trees. These cuttings were typically made with no long-term plan for managing the stands by the single-tree selection system. This system can require cutting trees in all size classes during each operation. Regeneration from natural seeding was usually counted on. Also, growth of the young trees and the uncut smaller merchantable trees was counted on to offset the reduction in the forest inventory due to harvesting the largest trees. Unfortunately, repeated harvests of the largest trees have often caused undesirable results: understocked residual stands with lower quality, lower value trees. These stands will have to be regenerated using one of the even-aged silvicultural systems or the group selection system, so as to re-establish full stocking of desired species.

### **Group Selection**

The group selection system was tried extensively on national forest land in the Region about 20 years ago. Small openings were made to encourage natural regeneration, particularly of sugar and ponderosa pines. Special cutting guidelines were developed for different kinds of naturally-occurring groups of trees. The system, called Unit Area Control, failed for three reasons. First, the many small groups of natural regeneration could not be managed efficiently. They could not be monitored. Needed subsequent treatments were not made. The young trees did not grow well or died. Some groups could not be treated due to the higher costs of treating small areas. Second, the cutting guidelines could not be used consistently. There was great difficulty in determining which kinds of groups were actually present in the stand, and the location of their boundaries. Third, many of the small groups were unavoidably destroyed when large

trees in adjacent groups were felled, or when logs were moved out of the stand, in later harvesting projects. It is particularly difficult and costly to save small groups of trees on steep slopes from excessive damage during harvesting or preparation of the site for successful establishment of tree seedlings.

### **Even-aged Systems**

The oldest plantations on national forest lands in the Region are about 60 years old and include some plantations on the Modoc. Commercial thinning is suitable now, but subject to market conditions. Within 15-20 years, these plantations can be harvest and replaced, thus completing the cycle of an even-aged silvicultural system. Extensive experience has been gained in the regeneration, promotion of young tree growth, intermediate cutting, and regeneration cutting treatments for even-aged systems in all major timber types in the Region. Overall, artificial regeneration following clearcutting has been very reliable in ponderosa pine, Douglas fir, and Mixed Conifer stands. Artificial regeneration has been significantly less reliable in red or white fir stands. The primary causes of planting failures are: (1) difficulties with consistently producing high-quality seedlings in the nurseries, and (2) planting when the environmental conditions are inappropriate. The shelterwood system with natural or artificial regeneration is presently used in red or white fir stands where regeneration after clearcutting is expected to be unreliable.

### **Wood Production**

#### **Need for control of competing vegetation (including the use of herbicides)**

Control of competing vegetation is needed in all of the silvicultural systems to ensure establishment and good growth of tree seedlings or sprouts. Some have theorized that less control is needed in the single-tree selection system. Under this system tree cover is more continuous, resulting in fewer competing grasses, forbs, and shrubs. However, these competitors cause significant moisture stress in the seedling and sapling potential crop trees (in addition to the moisture stress caused by the larger trees), thereby reducing their survival and growth. There is no compelling theoretical basis for concluding that the need for control of competing vegetation should be reduced if the single-tree selection system were used. Certain commonly-occurring, major competing plants can retain good vigor when shaded by most conifers (such as manzanita and squaw carpet). Using the single-tree selection

system would definitely not reduce the need for controlling competition from such plants.

Frequency of control treatments varies by silvicultural system. Treatments under the single-tree selection system could be needed somewhere in every stand as often as every 5 to 10 years. Average treatment frequencies in the other systems are much lower. In any even-aged system, up to about three treatments could be needed in the first ten years of a new stand. No additional treatments may be needed until the stand is regenerated — 70 years or longer on the Modoc. Thus, the average period between treatments would be greater than 20 years. Regardless of the silvicultural system used, the total acres treated (and the total pounds of herbicide applied per acre, if herbicides were used) should be about the same over the long term.

The aerial application of herbicides (usually the most cost-effective, and frequently the most controversial, method of applying herbicides) could not be used in the single-tree selection system. Depending on topography and vegetation structure, it could also be impractical in the group selection system.

#### **Treatment Costs**

The size of a treatment area is a major factor in determining treatment costs and managerial feasibility. Generally, costs per acre in intensively managed forests are higher when the treatment units are smaller. Therefore, the even-aged systems are the most cost efficient, and the group selection and the single-tree selection system (in that order) are the least cost-efficient.

Regeneration by clearcutting is the most cost-efficient among the even-aged systems. Shelterwood and seed tree systems are less so, in that order. The removal of shelterwood trees or seed-trees, after the seedlings are established, is a second cost not required in the clearcutting system.

In theory, the total cost of natural regeneration should be less than for artificial regeneration. The costs of seed collection, nursery operations, seedling handling, and planting are eliminated. However, these savings are often offset by increases in pre-commercial thinning costs. Natural regeneration can result in much greater densities of trees than would be planted, or are desirable, especially in the red fir type. Also, unreliable seed production by many commercial tree species often delays natural regeneration. This reduces wood productivity. When natural regeneration is delayed, the sites are occupied by competing plants, the control of which can be costly. Overall, artificial regeneration insures prompt reforestation of preferred species at desirable densities. If natural regen-

eration is to be used, the shelterwood and seed-tree systems are usually more cost-efficient than the uneven-aged systems. The reason is the economies of scale associated with larger treatment areas. Where artificial regeneration is to be used, the clearcutting and shelterwood systems are more cost-efficient, for the same reason.

#### **Achieving Regulated Forests, While Maintaining Forest Timber Harvest Levels**

Regulation can be accomplished most easily with the even-aged or group selection silvicultural systems. There are two critical disadvantages of the single-tree selection system. First, foresters lack the detailed information about trees needed for cutting on a stand-by-stand basis. There are tens of thousands of stands on a typical national forest in California, with up to ten thousand potential crop trees per stand. Currently, inventory data needed for the single-tree selection system are lacking for about two-thirds of these stands. Second, in the Mediterranean climate in California, large forest wildfires are inevitable. Reforestation after these fires creates many new even-aged stands. It is very difficult to regulate a forest under a single-tree selection system when substantial acreages of unplanned even-aged stands occur.

#### **Planning, Contracting, and Record Keeping**

Many small units used in uneven-aged systems are ineffective and costly to operate and administer. If stands in a typical ranger district on this Forest were managed by uneven-aged systems, more than 11,000 separate areas would have to be inventoried, planned for, treated, and monitored at the rate of 10 acres per area. Even with computers the management complexity would be excessive. Therefore, the extent to which uneven-aged management systems are used for intensive timber management will necessarily be limited.

#### **Timber Harvesting**

Five important aspects of timber harvesting are strongly influenced by the choice among silvicultural systems: (1) variability in sizes of harvested trees, (2) area to be harvested, (3) complexity of the harvesting treatments, (4) the probability of causing significant damage to trees to be left in the stand, and (5) the probability of causing long-term root disease problems. The first three influence harvesting efficiencies, and the other two affect the vigor, tree stocking, and value of the residual stand.

There is wide size variation in trees harvested in each operation under the single-tree selection system. This reduces harvesting efficiency because logging equipment is size-dependent. However, this disadvantage could be insignificant in young-growth stands.

Harvesting in the single-tree selection system is much less efficient than in other systems because more land must be treated in each operation to harvest the desired yield from the forest.

The complexity of harvesting treatments is also greatest in the single-tree selection system. Identifying which trees to cut, determining where they are to be felled, felling the trees in the designated areas, and removing the trees or logs out of the stand without damaging the residual trees can be difficult and costly. In the single-tree selection system, cuttings occur as frequently as every 10-20 years. In the other systems, only the intermediate cuttings are as complex. The regeneration cuttings in the other systems are more straightforward operations. Group selection and clearcutting are the most efficient.

Logging damage to trees left to grow in the stand is typically greatest for the single-tree selection system. It is difficult to selectively harvest trees in dense stands without damaging many residual trees, particularly on steep slopes. Damaged trees are often infected by wood-decaying fungi that can persist in the soil for long periods, thus retaining the capacity to infect new trees. The fungi reduce the windfirmness, vigor, commercial value, and stocking of residual trees. This characteristic is a particular concern in developed recreation areas where selection systems are often applied. Stands with red or white fir have an especially high probability of being infected with wood-decaying fungi when damaged.

#### **Genetic Improvements in Forests**

Genetic improvements to increase timber growth, improve tree form and wood quality, or increase resistance to disease and insect pests, depend primarily on planting trees with desirable genetic characteristics. Therefore, the potential for genetic improvement is greater for silvicultural systems that use artificial regeneration. The clearcutting, group selection, and shelterwood systems (if artificial regeneration is used) have the greatest potential for improving the genetic quality of forest trees. The single-tree selection system, with its natural regeneration and higher rates of inbreeding, has the least potential.

## **Risk of Major Wildfires**

The even-aged systems (clearcutting in particular) are best for reducing the risk of major wildfires because the greater control of fuel distribution makes wildfire prevention and suppression easier and less costly. The single-tree selection system is least desirable because fires burn intensely and are more difficult to control. Openings which can serve as fuel breaks occur less frequently in forests or stands managed by this system. Also, the multiple tree layers create "ladders", permitting ground fires to spread into the crowns of the large trees. Crown fires are more destructive and more difficult to control than ground fires. Finally, the use of controlled fires to reduce the risks of large wildfires is most difficult and costly in the single-tree selection system. Since the 1940's, over 50,000 acres of plantations have been established after such fires on the Forest.

## **Risk of Significant Pest Damage**

Silvicultural treatments reduce risks by selecting appropriate tree species, by diversifying within and among stands, and by maintaining tree vigor. Diversification within stands is increased through use of multiple species or uneven-aged silvicultural systems. Vigor is promoted by preventing the trees and other plants from becoming too dense. Competing plants also provide habitat for animal pests such as pocket gophers and rabbits. Well-managed stands in all systems reduce the risk of significant pest damage. However, there are significant exceptions.

Risk of significant insect or disease damage to trees increases if the trees have been wounded. Many wounds occur during silvicultural treatments. Accidental scarring can be caused by felling nearby trees, or by bumping them with machines or logs moving through the forest. Risk increases with frequency of stand treatments, particularly cutting. Cutting frequency is much higher for the single-tree selection system than for others, so the risk of significant insect and disease damage is highest.

The Modoc budworm is a major defoliator present in white fir on the Forest. Outbreaks have occurred about every 10 years and are becoming more severe. The dense, multi-layered stands of shade-tolerant white fir are the primary precipitating factor. These conditions can be reversed by an even-aged management system which can bring greater diversity of species, age class, and density than is capable with uneven-aged management.

Two serious diseases, dwarf mistletoes and some root rots, can be difficult, costly and, in some cases, impossible to control under selection systems. Damage from these

diseases is most easily controlled by managing entire stands. Dwarf mistletoe plants can project seeds down on trees within about 100 feet horizontally, thereby infecting nearby susceptible species. Even-aged systems allow the manager to control damage from this pest through cutting treatments.

Many root disease fungi infect susceptible trees by root-to-root contact. Some root diseases start at harvest time and spread to other trees in the stand. Control may require killing trees in a zone around the infected area. Uneven-aged management, particularly the single-tree selection system, can perpetuate root disease "centers" and spread infection.

Generalizations about wildlife pest damage and silvicultural systems are difficult. The major potential wildlife pests in the Region include pocket gophers, deer, porcupines and rabbits. These animals feed in vegetation dominated by grasses, forbs, shrubs, or tree seedlings. Use of the even-aged or group selection systems can create large areas temporarily dominated by this kind of vegetation. This can cause higher densities of potential pests, which increases the risk of significant damage to potential crop trees. However, often the actual damage levels are not increased where this occurs.

## **Production of Livestock Forage and Browse**

Even-aged systems and the group selection system are best for livestock production. Grasses, forbs, and shrubs used by livestock occur in the greatest quantity in openings. Management efficiency increases in large forage areas because livestock control and access is easier and less costly.

## **Protection of Cultural Resources**

There should be no significant differences among the silvicultural systems in their risk of damage to undetected cultural resources. Damage depends more on the intensity and frequency of management treatments than on the kind of silvicultural system, particularly when large machines are used.

## **Effects on Fisheries and Wildlife Habitat**

Fisheries habitat is most easily protected where the water quality is high, stream temperatures are kept moderate through shading, and where the runoff quantity is sufficient to maintain spawning areas. The single-tree selection or group selection systems are usually more advantageous than the even-aged systems for managing the vegetation in streamside management zones and riparian areas. However, the silvicultural systems used



outside these zones does influence the amount of sediment in the water (see the discussion in the section titled Risks of Adverse Effects on Watersheds and Soils.)

The choice of silvicultural systems to best manage wildlife habitat depends on which species are to be emphasized. Regardless of which treatment is used in a stand, some species will benefit and others will not. Most wildlife species are adapted to thrive in specific structures and species of forest vegetation. For example, the use of the even-aged or group selection systems favors deer, quail, and rabbits that use herbaceous and shrubby

vegetation most abundant in large openings in the forest. The single-tree selection system may favor animals that need vertical diversity, such as spotted owls and tree squirrels.

Almost all forest wildlife species could use a particular young-growth stand at some time in its development regardless of the silvicultural system. (The exceptions are the few species that may be totally dependent on very large, decadent trees for habitat.) The kind of system

<b>Table P - 2. Major Silvicultural Systems by Key Managerial Attributes</b>					
<b>Managerial Attribute</b>	<b>Clear-Cutting</b>	<b>Shelterwood</b>	<b>Seed-Tree</b>	<b>Group Selection</b>	<b>Single-Tree Selection</b>
<b>Overall Public Acceptance</b>	■	‡	‡	‡	□
<b>Natural Appearance</b>	■	‡	‡	‡	□
<b>Soil Protection in Stands</b>					
Soil Stability where soils have high erosion potentials	■	‡	‡	■	□
<b>Scientific Knowledge Base and Management Experience</b>	□	‡	‡	‡	‡
<b>Wood Production</b>					
Cost efficiency of treatments:					
– General (based on treatment unit size)	□	□	□	■	■
– Regeneration	‡	‡	‡	‡	‡
– Feasibility of aerial application of herbicides	□	□	□	■	■
– Harvesting	□	‡	‡	‡	■
Potential for regulating the forest, while maintaining harvest levels	□	‡	□	■	■
Administrative efficiency (planning, contracting, and record keeping)	□	‡	‡	■	■
Need for control of competing vegetation	□	□	□	□	□
Potential for retaining vigor and value of residual trees <sup>1</sup>	□	□	□	‡	‡
Potential for genetic improvement of trees by planting	□	□	□	‡	‡
<b>Controlling Wildfires in a Forest</b>					
Potential for controlling major wildfires	□	□	□	□ <sup>2</sup>	■ <sup>3</sup>
Potential for using controlled fires to manage fuels	□	□	□	‡ <sup>2</sup>	■ <sup>3</sup>

**Table P - 2. Major Silvicultural Systems by Key Managerial Attributes (continued)**

Managerial Attribute	Clear-Cutting	Shelterwood	Seed-Tree	Group Selection	Single-Tree Selection
<b>Risk of Significant Pest Damage</b>					
Potential for controlling damage from dwarf mistletoes and certain tree root diseases	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/> <sup>2</sup>	<input checked="" type="checkbox"/>
<b>Livestock Production Potential in a Forest</b>					
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	‡ <sup>2</sup>	<input checked="" type="checkbox"/>
<b>Streamside Management Zones</b>					
Potential for protecting fish habitat	<input checked="" type="checkbox"/>	‡	<input checked="" type="checkbox"/>	‡	<input type="checkbox"/>
<b>Wildlife Habitat in a Forest</b>					
Potential for deer, rabbits, and quail	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/> <sup>3</sup>
Potential for spotted owls and tree squirrels	‡	‡	‡	<input type="checkbox"/>	<input type="checkbox"/>
Potential for soaring hawks and eagles	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	‡	<input checked="" type="checkbox"/>

☐ is Good, Excellent, or Many

‡ is Moderate or Few

☒ is Poor or None

<sup>1</sup> Assumes gentle slopes; otherwise "Moderate", but "Poor" for the Group and Single-tree selection systems.

<sup>2</sup> Assumes openings of about 1-2 acres; "Poor" is smaller.

<sup>3</sup> Assumes highly productive land; otherwise "Moderate" or "Good".

would influence the proportions of species and when and how they could use the stand as habitat. A significant exception is single-tree selection management applied to large areas. The absence of large openings could prevent

use by wildlife adapted to this kind of habitat, such as soaring hawks. Overall, a mix of the silvicultural systems in the forest would probably best achieve most wildlife management objectives.

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## Appendix Q

### Visual Quality Objectives and Program Levels

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This appendix briefly describes visual quality objectives (VQOs) and the program levels used in the alternatives.

#### Definitions

Visual Quality Objectives are standards for the visual management of all Forest lands. They have been assigned to each acre of the Forest based on public concern for scenic quality as well as diversity of natural features. For a description of the process used to arrive at these objectives, see the DEIS Visual Resources Affected Environment, Chapter 3. The five VQOs are:

##### Preservation (P)

Only ecological changes are permitted. Most management activities are prohibited. Trails, trail bridges, and other trail-related improvements are designed and located to be visually unobtrusive.

##### Retention (R)

Management activities result in a natural appearing landscape. Activities may occur but are not visually evident to the casual observer. Activities repeat form, line, color, and texture found frequently in the characteristic landscape. Changes in the qualities of size, amount, intensity, direction, and pattern should not be evident. Reducing contrast in form, line, color, and texture to meet retention should be accomplished during operation or immediately thereafter.

##### Partial Retention (PR)

Management activities remain visually subordinate to the characteristic landscape. Activities and structures may repeat form, line, color, or texture common in the characteristic landscape. Activities and structures may also introduce form, line, color or texture which are found infrequently or not at all in the characteristic landscape. Reducing contrast in form, line, color, and texture to meet partial retention should be accomplished as soon as possible after project completion or within the first year.

##### Modification (M)

Management activities may dominate the original landscape. However, activities of vegetative and land

form alteration must borrow from naturally established form, line, color, or texture so completely and at such a scale that its visual characteristics are those of natural occurrences within the surrounding area or character type. Reducing form, line, color, and texture contrast to meet modification should be accomplished in the first year.

##### Maximum Modification (MM)

Management activities of vegetative and land form alterations may dominate the characteristic landscape. However, when viewed as background, the visual characteristics must be those of natural occurrences within the surrounding area or character type. When viewed as foreground or middleground they may not appear to borrow from naturally established form, line, color, or texture. Alterations may also be out of scale or contain detail that is incongruent with natural occurrences as seen in foreground or middleground. Reducing form, line, color, and texture contrast to meet maximum modification should be accomplished within five years.

#### Meeting Visual Quality Objectives

Many design principles used to develop VQOs can also be used on project level activities to minimize impacts and help meet the visual quality objective. General guidelines for meeting retention and partial retention are found in the Visual Retention and Timber-Visuals Prescriptions, respectively (Chapter 4). Modification and VQO guidelines are found in the Even-Aged Timber and Timber-Forage Prescriptions. More detailed guidance is found in the visual resource management handbooks:

- USDA Handbook Number 434, National Forest Landscape Management Volume 1.
- USDA Handbook Number 462, National Forest Landscape Management Volume 2. Chapter 1, The Visual Management System.
- USDA Handbook Number 559, National Forest Landscape Management Volume 2. Chapter 5, Timber.

## Forest Visual Resource Program Levels

Many areas of the Forest are managed for special purposes and have been assigned a specific VQO which does not vary by alternative. They are:

Areas	VQO	Acres
South Warner Wilderness	Preservation	70,385
Burnt Lava Flow (SIA)	Preservation	8,760
Glass Mtn. Glass Flow (SIA)	Preservation	4,210
Medicine Lake Glass Flow (SIA)	Preservation	570
Devil's Garden (RNA)	Preservation	800
Riparian Areas	Partial Retention	9,274
Bald Eagle Management Areas	Partial Retention	52,111

Semi-primitive areas are managed to achieve recreation objectives, but are included here to protect their visual quality. Semi-primitive non-motorized areas are managed for a retention VQO, and semi-primitive motorized areas are managed for partial retention VQO. The acres vary by alternative and, in some cases, overlap with the above areas.

High, medium, or low levels of resource management are used, depending on the theme of the alternative. General definitions of the program levels follow.

*Low:* In addition to preservation and partial retention areas that do not vary by alternative, manage 384,300 acres for retention or partial retention VQO to protect distinctive scenery adjacent to major travel routes and semi-primitive areas.

*Medium:* In addition to preservation and partial retention areas that do not vary by alternative, manage 608,700 acres for retention or partial retention VQO to protect all distinctive scenery and all areas adjacent to major travel routes and semi-primitive areas. Some areas seen at background distances will also be protected.

*High:* In addition to preservation and partial retention areas that do not vary by alternative, manage 1,004,600 acres for retention or partial retention VQO to protect all distinctive scenery, all lands seen from major travel routes, and semi-primitive areas. Land immediately adjacent to secondary travel routes are also protected.

Figure Q-1 identifies attributes of lands managed for particular VQOs. Figure Q-2 and Table Q-1 show major and secondary travel routes.



**Figure Q - 1. Program Levels for Visual Quality Objectives**

**Inventoried VQOs**

	Sensitivity Level						
	fg1	mg1	bg1	fg2	mg2	bg2	3
Variety Class A	R	R	R	PR	PR	PR	PR
Variety Class B	R	PR	PR	PR	M	M	M
Variety Class C	PR	PR	M	M	M	M	M

**“High”  
Visual Program  
AMN Alternative**

	Sensitivity Level						
	fg1	mg1	bg1	fg2	mg2	bg2	3
Variety Class A	R	R	R	R	PR	PR	PR
Variety Class B	R	R <sup>3</sup>	PR	R <sup>1</sup>	PR <sup>3</sup>	M	M
		PR <sup>4</sup>		PR <sup>2</sup>	M <sup>4</sup>		
Variety Class C	R	PR	PR	PR <sup>1</sup>	M	M	M
				M <sup>2</sup>			

**“Medium”  
Visual Program  
RPD, CUR, PRF  
Alternatives**

	Sensitivity Level						
	fg1	mg1	bg1	fg2	mg2	bg2	3
Variety Class A	R	R	R	PR	PR	PR	PR
Variety Class B	R <sup>1</sup>	PR	PR	PR <sup>1</sup>	M	M	M
	PR <sup>2</sup>			M <sup>2</sup>			
Variety Class C	PR	PR <sup>3</sup>	M	M	M	M	M
		M <sup>4</sup>					

**“Low”  
Visual Program  
RBU, IND  
Alternatives**

	Sensitivity Level						
	fg1	mg1	bg1	fg2	mg2	bg2	3
Variety Class A	R <sup>1</sup>	R <sup>3</sup>	PR	PR <sup>1</sup>	M	M	M
	PR <sup>2</sup>	PR <sup>4</sup>		M <sup>2</sup>			
Variety Class B	R <sup>1</sup>	PR	M	M	M	M	M
	PR <sup>2</sup>						
Variety Class C	PR <sup>1</sup>	M	M	M	M	M	M
	M <sup>2</sup>						

<sup>1</sup> 50% of the mapped zone closest to the road.

<sup>2</sup> 50% of the mapped zone farthest from the road.

<sup>3</sup> Very low and low VAC lands (the ability of the land to absorb impacts is difficult).

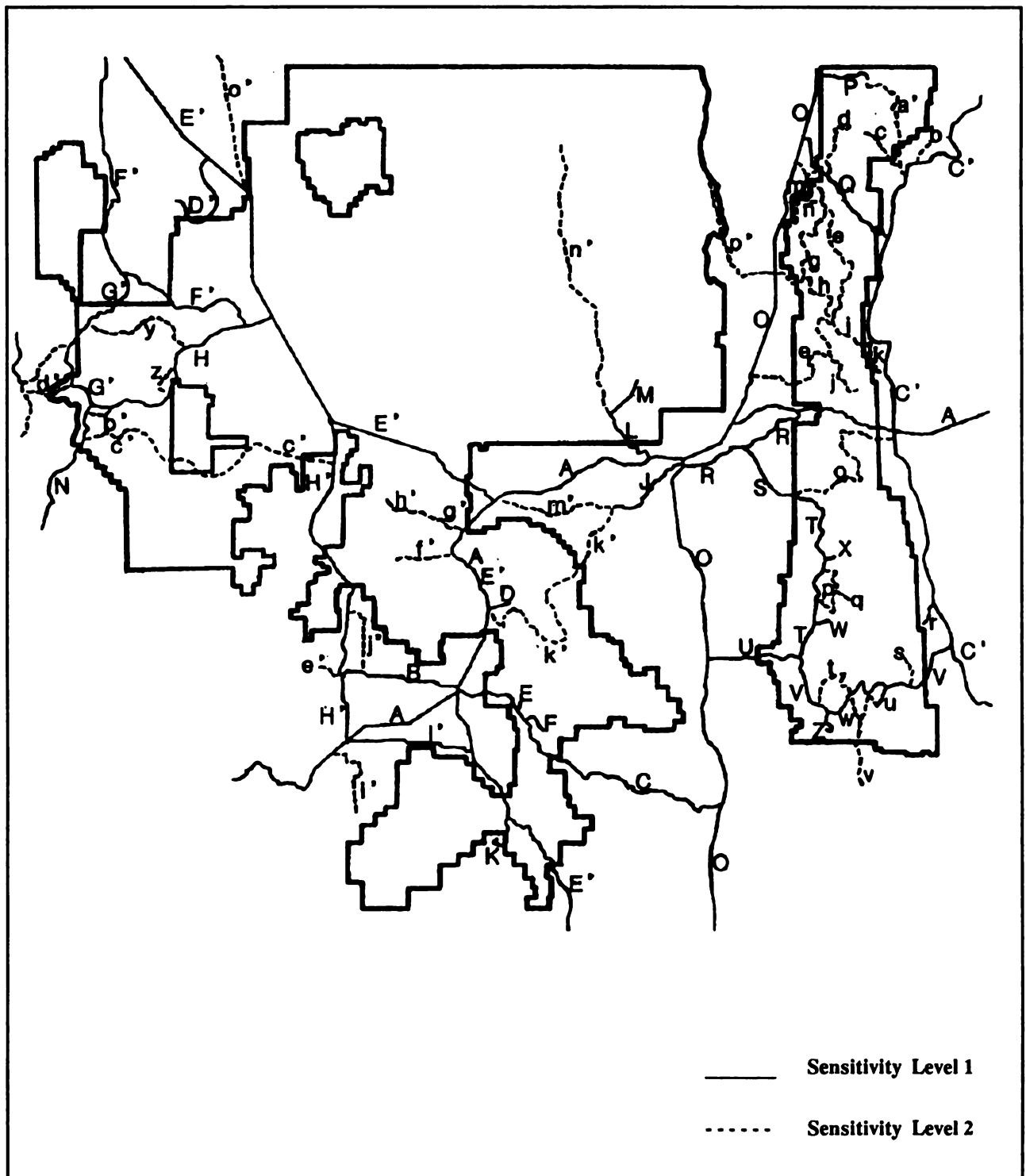
<sup>4</sup> Moderate and high VAC lands (the ability of the land to absorb impacts is easier).

**Table Q - 1. Major (Sensitivity Level I) and Secondary (Sensitivity Level II) Travel Routes.**

Sensitivity Level I Travel Routes:			Sensitivity Level II Travel Routes:		
Road Name	Forest Number	Map Code	Road Name	Forest Number	Map Code
State Highway 299	-	A	Dismal Swamp	48N21	a
County 87	-	B	Lake Annie	Co Rd 4	b
County 527	39N08	C	Mill Creek	46N25	c
Rush Creek Campground	40N05	D	Buck Creek	47N72	d
Hunters Ridge <sup>†</sup>	40N22	E	Lassen Creek	46N30	e
Knox Flat	39N50	F	Cold Creek Spur A	46N06A	f
Manzanita	40N18	G	Cold Creek	46N06	g
Black Mountain - Tionesta	44N17	H	Benton Creek	46N06	h
County 54	-	J	Lake City	44N34	i
Hayden Hill	37N42	K	Warner Summit	44N30	j
County 73 <sup>†</sup>	48N08	L	County 18	-	k
County 180	44N03	M	Plum Valley	45N35	l
County 49 (Siskiyou Co.)	-	N	County 133C	47N05	m
State Highway 295	-	O	Plantation	46N63	n
Highgrade <sup>†</sup>	48N02	P	Deep Creek - Parker Creek	42N31	o
Fandango	47N02	Q	Cherry Creek	40N24	p
County 58	-	R	Soup Spring	40N25	q
County 56	-	S	Emerson Canyon	40N43	r
West Warner	42N05	T	Cold Spring	39N18	s
County 64	42N05 40N46	U	Mahogany Ridge	39N06	t
South Warner	39N01	V	Mosquito Creek	38N07	u
Mill Creek Falls	40N46	W	Long Valley	39N15	v
West Warner Spur B	42N05B	X	Long Valley Ridge	39N12	w
County 42	39N01	Y	Tichnor Cave	44N22	x
Clarks Valley	38N60	Z	Cougar Butte	44N01	y
Blue Lake Campground	38N30	A'	South Connector	43N14	z
Boy Scout Camp	38N32	B'	Highgrade*	48N02	a'
County 1	-	C'	Paynes Springs	43N42	b'
County 120	-	D'	Mud Springs	42N56	c'
State Highway 139	-	E'	Little Mount Hoffman	43N15	d'
Monument	48N04	F'	Shasta Tie	40N03	e'
Medicine Lake	44N75	G'	Stone Coal	41N10	f'
County 91	-	H'	Pit River	41N44	g'
County A2 (Lassen Co.)	-	I'	Hulbert	42N35	h'
			County 417 (Lassen Co)	-	i'
			County 90	-	j'
			Hunters Ridge*	40N22	k'
			Cooley Gulch	41N04	l'
			County 54	-	m'
			Crowder Flat*	48N08	n'
			County 114	-	o'
			West Side	48N19	p'

<sup>†</sup> Section of this road is Sensitivity Level II.  
 \* Section of this road is Sensitivity Level I.

**Figure Q-2. Major (Sensitivity Level I) and Secondary (Sensitivity Level II) Travel Routes**









## Appendix R

### Budgets and Their Relationship to the Forest Plan

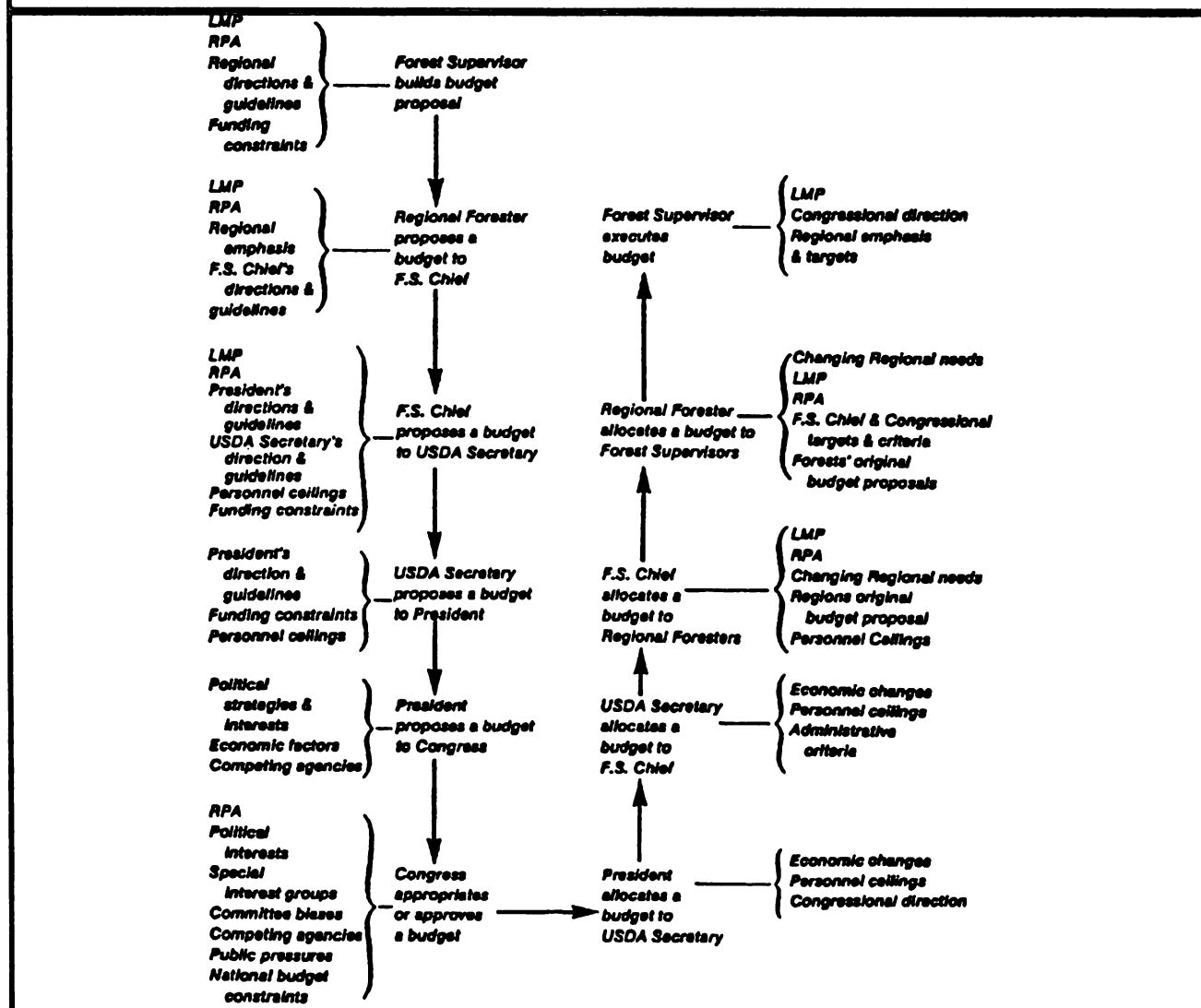
The purpose of this appendix is to explain how the Forest obtains funding and what effect various funding levels will have on implementing the Forest Plan. The appendix explains 1) the federal budget process, 2) alternate sources of funding, 3) Forest priorities, and 4) monitoring for Plan compliance.

#### Federal Budget Process

The federal budget process is lengthy and complex. The Modoc National Forest's budget is combined with

the budgets of the other 17 national forests that comprise Region 5 of the Forest Service. The budgets of the nine Forest Service regions combine to form the Forest Service's budget which is part of the Department of Agriculture's budget. It is reviewed by pertinent Congressional subcommittees. The budget is negotiated at each step. The flow chart in Figure R-1 illustrates the chain of events a Forest budget undergoes on its way to and from Congress.

Figure R-1. Budget Process Flow Chart.



The role of the Forest Plan in this process is to identify for Congress and the public what appears to be the best program and funding level for the Modoc. As seen in the chart, factors influencing the Forest's final budget are many and relatively uncontrollable from the Forest's perspective. The ultimate decision-making power over the budget resides with Congress—the total budget as well as individual budget items (e.g., timber sales, recreation, wildlife). Because they are unpredictable, actual budgets probably will not match the Forest Plan budget. How-

ever, the parties involved in the budget process will likely use the Forest Plan for guidance and long-range direction in deciding budget priorities.

Indicating the Modoc's budget trends and funding priorities, Table R-1 shows Forest funding by appropriation and resource activity for fiscal years 1988, 1989, and 1990. For comparison, equivalent budget items from the preferred alternative (PRF) are also displayed.

**Table R-1. Comparison of the PRF Budget and the Forest Budget for Recent Years.**

Budget Activity	Millions of Dollars				PRF <sup>2</sup>
	1988	1989	1990	AVG (1988-90) <sup>1</sup>	
National Forest System					
Minerals and Geology	117	107	80	101	140
Land Management	54	63	42	53	60
Land Line Location	118	117	97	111	250
Maintenance of Facilities	136	147	168	150	350
Forest Fire Protection	1,091	1,033	1,056	1,060	1,847
Cooperative Law	35	49	39	41	50
Forest Road Maintenance	495	525	580	533	670
Forest Trail Maintenance	37	24	20	27	100
Timber Sale Admin. & Mgt.	740	900	1,212	951	1,510
Reforestation & TSI	122	440	257	273	1,070
Recreation Use	315	306	416	346	597
Wildlife & Fish Habitat Improv.	331	344	365	347	451
Range Mangement	410	386	409	402	1,250
Soil, Water, and Air Qual. Mgt.	133	154	134	140	140
General Administration	868	900	810	859	1,023
Total National Forest System	5,002	5,495	5,685	5,394	9,508
Construction					
FA&O Construction	0	0	0	0	300
Recreation Construction	50	0	0	17	120
Forest Road Construction	440	473	291	401	500
Forest Trail Construction	0	98	35	44	80
Total Construction	490	571	326	462	1,000

<sup>1</sup> Budget average for FY 1988, 1989 and preliminary 1990 budgets.

<sup>2</sup> Funding is inflated from the 1982 dollars presented in the FEIS to 1989 dollars for comparison.



**Table R-1. Comparison of the PRF Budget and the Forest Budget for Recent Years.  
(continued)**

Budget Activity	Millions of Dollars				PRF <sup>2</sup>
	1988	1989	1990	AVG (1988-90) <sup>1</sup>	
<b>Range Betterment Funds</b>	37	36	36	36	110
<b>Total Appropriated Funds<sup>3</sup></b>	<b>5,529</b>	<b>6,102</b>	<b>6,047</b>	<b>5,893</b>	<b>10,618</b>
<b>Permanent Appropriations</b>					
Brush Disposal	223	295	447	322	483
Timber Salvage Sales	251	172	10	144	30
<b>Total Permanent Appropriations</b>	<b>474</b>	<b>467</b>	<b>457</b>	<b>466</b>	<b>513</b>
<b>Cooperative Work</b>					
CWKV--Timber <sup>4</sup>	1,574	1,258	1,796	1,543	3,252
CWKV--Other <sup>4</sup>	592	380	610	527	694
CWFS--Fire <sup>5</sup>	132	153	140	142	150
CWFS--Other <sup>5</sup>	405	122	83	203	150
<b>Total Cooperative Funds</b>	<b>2,703</b>	<b>1,913</b>	<b>2,629</b>	<b>2,415</b>	<b>4,246</b>
<b>Total Budget</b>	<b>8,706</b>	<b>8,482</b>	<b>9,133</b>	<b>8,774</b>	<b>15,377</b>

<sup>3</sup> Appropriated funds are comprised of National Forest System funds, construction, and range betterment funds.

<sup>4</sup> CWKV--Timber funds are for planting and thinning projects.

CWKV--Other is for wildlife, range, and other resource improvement projects.

<sup>5</sup> CWFS--Fire is for cooperative fire work with the State.

CWFS--Other is for wildlife, range, and other resource improvement projects.

**Figure R-2. Comparison of the PRF Budget and the Average Budget for FY 1985 through 1987.**

**Total Budget:**  
**\$8,774,000**

**Total Budget:**  
**\$15,377,000**

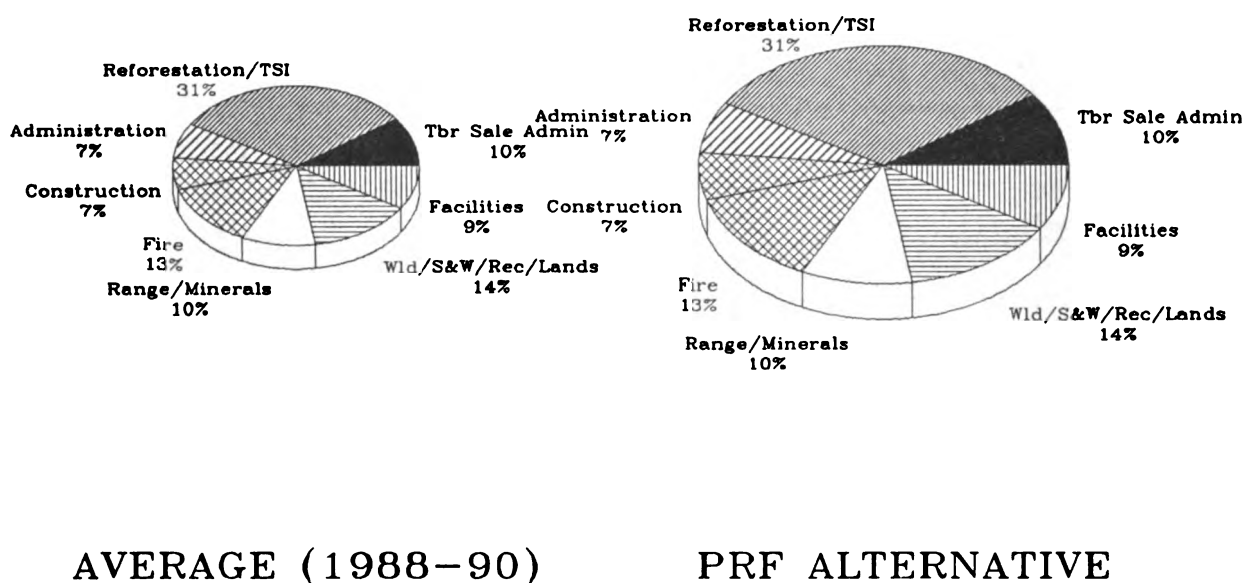


Figure R-2 displays the PRF budget and the average budget for 1988 through 1990 as pie charts divided into broad resource categories. The charts are proportional, indicating a larger PRF budget. However, both charts show a similar distribution of funds to major resource areas.

### Alternate Sources of Funding

Congress gives the budget to the Forest Service, authorizing it to spend both appropriated and trust funds. While the budget is paramount in allowing a forest to function, other factors come into play. Forests also receive money and services from many other sources which are becoming increasingly important.

Cooperators and permittees often aid in accomplishing needed work. In managing their grazing allotments, grazing permittees do range improvement work, such as fencing. The Forest receives funds from the State for wildlife improvement projects and cooperative fire suppression. Modoc, Siskiyou, and Lassen counties maintain 374 miles of public roads on the Forest. Volunteers are playing an increasingly large role on national forests. Older American, job training, and youth programs recruit volunteers who help with office work and field activities. In FY 1990, various contributions added \$709,000 worth of accomplishments toward Forest objectives.

## Forest Priorities Under the Plan

While output levels listed in the Plan are tied to budget levels, they are not the sole or even the primary product of the Plan. The Forest Plan establishes management direction for the Forest including minimum management requirements (MMRs), minimum implementation requirements (MIRs) (see Chapter 2), and standard and guidelines (see Chapter 4 of the Forest Plan). The Plan delineates which activities are appropriate for each section of the Forest. Areas managed as semi-primitive non-motorized are managed primarily for dispersed recreation with no road building or timber harvesting. Other areas are managed for range, wildlife, or timber production as their primary function.

PRF shows the maximum potential the Forest can achieve (the amount of timber which can be sold, the number of cattle grazed, etc.) within the bounds of management direction the Forest sets for itself. Outputs produced and number of activities and projects implemented depend on actual funding.

Should Congress provide a budget below levels required for plan implementation, management intensity and production levels will be lower than projected. Regardless of funding levels, the Forest will implement MMRs and MIRs contained in the Plan. MMRs and MIRs are necessary for maintaining a healthy Forest, and are not negotiable. Implementing Forest standards and guidelines, however, will be affected by budget levels.

Generally, standards and guidelines fall into two categories: 1) those associated with project mitigation, and 2) those which will maintain or may enhance the Forest environment.

Standards and guidelines are not relaxed simply to meet production levels. Under the National Environmental Policy Act (NEPA), an environmental analysis is conducted for every project that affects other resources. If an environmental analysis shows that a project cannot be accomplished without violating standards and guidelines, the project is modified to comply with them. If analysis discloses that the guidelines should be modified, then the Forest Plan will be amended.

Some standards and guidelines address maintenance and enhancement of the environment but are not tied to specific projects. Budget levels determine rates of project accomplishment. For example, the Forest has a guideline to provide a range of trail experiences from "easy for handicapped access" to "difficult for a physical challenge". Without appropriate funding, providing a complete range of trail experiences is unlikely within the timeframe envisioned by the Plan.

## Monitoring

Each Forest Plan includes a monitoring plan to determine whether the Forest has met its goals (Chapter 5 of the Forest Plan). If the Forest does not accomplish its objectives outlined in the Plan, an amendment or revision may be required. However, because Plan objectives are expressed in average annual terms for a ten-year period, accomplishment levels below the annual average will not automatically trigger a plan amendment. The allowed variability for each monitoring item is shown in the monitoring plan. If Forest activities fall outside the allowed variability, a plan amendment or revision could be triggered.







# Appendix S

## The Regional Timber Supply-Demand Situation in California

### Introduction

This appendix was created to address public comment that requested additional information on the broad level timber supply and demand situation in relation to supplies from individual national forests. Existing information from recent RPA assessments, the Pacific Southwest Regional Guide, Forest Service research publications, and the State of California's Forest and Range Resource Assessment Program was used for this purpose.

### Historical Harvests from Public and Private Lands – Statewide

Timber harvest in California has been in a downward trend for over 30 years. In 1955 timber harvest in the State from all lands totaled 6 billion board (BBF) feet. In that year, harvest from private lands was 4.9 BBF and harvest from national forests was 1.0 BBF. Less than 100 million board feet (MMBF) were harvested from other public lands. Since that time, total harvest in the State has fallen steadily. By 1982, at the bottom of the last recession, harvests had fallen to 2.5 BBF. Since then, annual harvests have rebounded to more than 4.5 BBF. Harvest from private lands fell to 1.5 BBF in 1982 and have since rebounded to 2.6 BBF. Harvest from national forests reached a peak of 2.36 BBF in 1968. National forest harvests then trended downward to a low of 0.9 BBF at the bottom of the last recession and have since rebounded to 2.0 BBF. Harvests from other public lands have been relatively stable – near 100 MMBF for the last three decades (Table S-1).

As shown in Table S-1, harvest levels fluctuate widely from year to year rather than following a smooth pattern. Year-to-year variations are influenced primarily by changes in housing markets and general business conditions. Only over the long term do timber inventory and growth levels limit harvests.

**Table S-1. California Timber Harvests by Ownership, 1952-89. (Billion Board Feet)**

Year	Private	Other Public	National Forest	Total
1952	4.40	.05	.61	5.06
1953	5.32	.04	.63	5.99
1954	4.79	.05	.76	5.60
1955	4.93	.06	1.03	6.02
1956	4.69	.08	1.09	5.86
1957	4.36	.07	.92	5.35
1958	4.47	.09	1.11	5.67
1959	4.29	.12	1.48	5.89
1960	3.70	.11	1.33	5.14
1961	3.85	.11	1.38	5.34
1962	4.05	.11	1.38	5.54
1963	3.69	.11	1.66	5.46
1964	3.50	.11	1.86	5.47
1965	3.21	.14	1.92	5.27
1966	2.97	.11	1.93	5.01
1967	3.06	.11	1.89	5.06
1968	2.82	.16	2.36	5.34
1969	2.88	.12	2.00	5.00
1970	2.62	.10	1.84	4.57
1971	2.59	.13	2.06	4.78
1972	2.66	.12	2.22	5.00
1973	2.81	.10	2.01	4.92
1974	2.86	.11	1.73	4.70
1975	2.71	.10	1.52	4.33
1976	2.76	.08	1.89	4.73
1977	2.96	.09	1.74	4.79
1978	2.78	.08	1.80	4.66
1979	2.26	.09	1.73	4.08
1980	1.86	.07	1.51	3.44
1981	1.72	.04	1.09	2.86
1982	1.50	.06	.94	2.50
1983	1.89	.08	1.68	3.65
1984	2.09	.03	1.56	3.68
1985	2.17	.06	1.82	4.05
1986	2.31	.09	1.96	4.36
1987	2.58	.10	1.97	4.65
1988	2.60	.10	2.16	4.86
1989	2.61	.10	2.01	4.72

Sources: California Department of Forestry and Fire Protection; California State Board of Equalization; Bureau of Indian Affairs, USDI; Bureau of Land Management, USDI; Forest Service, USDA.

## **Statewide Demand for Timber Products and The Relationship to Harvest Levels**

With a population that has reached 30 million people and a high level of income per capita, California has one of the largest markets for lumber, wood and paper products in the world. When discussing the relationship between the demand for timber products (lumber, wood, and paper) and the demand for timber harvest (stumpage), one must translate the demand for timber products into its timber harvest equivalent. Expressed in these terms, the demand for timber has been increasing. At a rate about equal to the population growth rate. Per capita consumption of lumber has declined while per capita consumption of paper and reconstituted wood products has increased over the past 40 years. As population in the State grew from 10.6 million in 1950 to 30 million at present, total demand increased from 4 billion board feet annually in 1950 to about 12 billion board feet annually at present.

While the demand for timber has been increasing, timber harvests in the State have been decreasing. The difference between the growing demand and the declining supply has been made up by increased imports to the State—primarily from Oregon, Washington, and Canada. The State has changed from a net exporter to a net importer of timber products over the last three decades.

California now relies on imports for more than 60% of its overall timber product needs. Although California receives only a small proportion of its imports from Canada, Canadian shipments to the U.S. have a significant effect on the State's ability to import timber products from the Pacific Northwest. In contrast to California's reliance on imports, the bulk of the timber products produced in both Washington and Oregon are exported to other States and countries. Increases in Canadian shipments to the eastern half of the U.S. have displaced timber products from the Pacific Northwest. The result has been an increase in the availability of timber products from the Pacific Northwest for California markets. Increased production in the South has also been displacing the Pacific Northwest in eastern markets, which has also increased the availability of products from the Northwest in California markets.

## **Broad Level Socio-Economic Effects**

About 95% of California's population lives in urban areas. For consumers, the primary effect of changes in harvest levels in the State is a change in prices paid for timber products. A reduction in timber harvests in the State reduces competition among suppliers, raises market prices, and leads to increased use of imported prod-

ucts. Econometric analysis done by the Pacific Northwest Forest and Range Experiment Station in 1990 indicates that a 1 BBF change in harvest level would change lumber prices by about 3%. This translates into a \$250 change in the price of the typical new house at current conversion efficiencies. For the U.S. economy as a whole, this would amount to a cost to home buyers of about \$400 million annually. The high level of competition in the market for timber products means that individual national forests or individual private timber owners cannot significantly affect consumer prices. However, national forests or private timber owners in aggregate can significantly affect consumer prices.

Another effect on the urban population is through "indirect and induced" employment. While the employment effect of changes in harvest levels is felt most strongly in communities where logging and sawmilling takes place, some broader level employment effects also occur. This is because most firms that manufacture and supply goods and services to logging and sawmill companies are typically located in major urban centers rather than in rural areas where logging and milling takes place.

Logging and milling alone typically require 4-7 person-years of employment per MMBF processed. Newer, more specialized and automated mills using readily accessible timber are at the bottom of this range, while more labor intensive operations are at the top of this range. This direct employment generates indirect employment in firms that supply goods and services to logging and milling firms, and induced employment in firms and governments providing goods and services to those employed directly and indirectly. In undeveloped rural areas there is little if any indirect and induced effect, because suppliers are located outside of the area; logging and sawmilling employees must "drive into the city" to make major purchases. In addition, on most national forests some of the logs harvested are trucked well outside the primary zone of influence for manufacturing into lumber products.

As a result, total Statewide employment effects of changes in harvest levels are larger than employment effects occurring in the primary zones of influence for individual national forests. Employment effects on a Statewide basis range between 10 and 20 person-years per MMBF of timber harvested. These employment effect estimates were made with input-output models constructed by the Forest Service and the U.S. Department of Commerce. They reflect present technologies. As the trend toward increased timber utilization efficiency continues, employment generated per unit of timber processed is expected to decline.



## The Outlook for Timber Supplies – Private Lands

According to projections completed by the University of California in July 1990, timber supplies from private lands in California can be maintained at over 2.2 billion board feet annually over the 10-15 year life of the Forest Plans (Table S-2). An alternative projection prepared by the California Department of Forestry and Fire Protection in 1988 projected private timber harvests at 1.96 billion board feet annually during the life of the Forest Plans. The primary difference between the two projections is the projected response of non-industrial private owners to higher market demand for their timber. Timber harvests from this ownership are well below the level that can be supported by available timber inventories and growth.

Both projections indicate reduced timber supplies from industrial timberland ownerships and increased supplies from non-industrial timberland ownerships during the life of the Forest Plans. The primary reason for this shift is that harvest levels on industrial ownerships have been at a higher rate than can be sustained by existing timber inventories and growth. By contrast, non-industrial ownership harvests have been well below the level that can be sustained by the timber inventory and growth on these ownerships. Both projections consider the fact that many of the smaller non-industrial owners

do not consider timber harvesting, and the income derived from it, to be a management objective. Neither of the two projections account for harvest restrictions that may be imposed on private harvests as a result of the listing of the northern spotted owl as threatened or passage of initiatives on the November 1990 California ballot. Large reductions in harvesting as a result of increased regulation of private timberlands are possible, but reliable projections are not currently available.

## Outlook for Timber Supplies – Imports

As discussed above, the Pacific Northwest is the primary source of imported timber products in California. Through displacement effects in national markets, Canada and the South also play a major role in determining the supply of timber products from the Northwest that is available to California markets.

According to studies conducted by Forest Service research units, timber supplies from the South are likely to increase, but at a slower rate than experienced over the last 20 years during the life of Forest Plans. A decline in supplies from the South is in prospect for the next century without an increase in investment and timber growth.

Studies conducted in Canada indicate that sawtimber growth and inventory is not expected to restrain exports to the U.S. until after the turn of the century. However,

**Table S-2. Timber Harvest, Growth, and Inventory on Private Land in California.**

Area	Average Annual Harvest, MMBF 1995-2005	Net Annual Sawtimber Growth MMBF, 1995-2005	Saw Timber Inventory BBF, 1995-2005
North Coast	1,100	1,080	39.4
Northern Interior	542	503	18.0
Sacramento	467	413	19.7
San Joaquin	145	148	6.4
All Private Land	2,254	2,144	83.5
Industrial Private	1,760	1,169	41.5
Non-industrial Private	496	974	42.1

Source: Krumland, Bruce, and William McKillop, *Prospects for Supply of Private Timber in California*, University of California, July 1990.

recent tariff and trade negotiations are expected to moderate Canadian exports to the U.S. over the near term.

A decline in timber harvests in the Pacific Northwest over the next 10-15 years is expected. This is due to reduced availability of timber inventories on both public and private lands.

The overall outlook is that imports will continue to grow to support increased demands by California consumers over the next 10-15 years. However, imports will likely increase at a lower rate than over the last 20 years, and may decrease in availability beyond the year 2000.

### **The Outlook for Timber Supplies — National Forests**

The allowable sale quantities (ASQ) set in individual Forest Plans are indicators of future timber supply levels from national forests in California. The ASQ places an upper limit on the average annual amount of green sawtimber from suitable timberlands that can be sold from a national forest in the first ten-year period of the Plan. Nonchargeable timber (dead timber and firewood from either suitable or unsuitable timberlands) is in addition to the ASQ. The addition of nonchargeable volume usually increases the total amount sold by a few percentage points.

The amount of timber offered for sale in an individual year is determined through the budget process. When the amount of timber sold in an individual year is less than the ASQ, sales in future years may be higher than the ASQ, since the ASQ is a limit on the average annual amount that can be sold over a ten-year period.

Over the long term, the volume harvested equals the volume sold. However, over shorter periods the volume harvested can exceed (or fall short of) the volume sold by causing the uncut volume under contract to decline (or increase). In the early 1980's the volume harvested was less than the volume sold, and in the late 1980's volume harvested exceeded the volume sold.

Timber sales projected under the individual Forest Plans in Region 5 total 1.2 billion board feet annually (Table S-3). This projection is based on the allowable sale quantities from completed Forest Plans and projections from information that is currently available for the Plans that have yet to be finalized. These projections assume continued implementation of interim direction of the Regional Forester and the Chief of the Forest Service concerning management of the northern spotted owl. These projections are subject to change as a result of new information that may become available concerning the owl or other topics before the Plans are finalized.

The timber sale volume projected under the Forest Plans is well below the 1.64 billion board foot average annual volume sold over the period 1985-1989. Output under the Plans is also below the 1990 RPA sale offering goal of 1.49 billion board feet for the period 1995-2000. The 1990 RPA goal was based on information developed prior to the publication of the Interagency Scientific Committee's Conservation Strategy for the Northern Spotted Owl and its listing as a threatened species by the U.S. Fish and Wildlife Service.

### **The Subregional Outlook — Overview**

Based on the historical pattern of log flows to mills, the State can be divided into four major timber market areas: North Coast, Northern Interior, Sacramento, and San Joaquin. The Central Coast and Southern California areas are minor producing areas.

Virtually all of the decline in the State's timber harvest that has occurred over the last 30 years has taken place in the North Coast market area on private lands. The outlook now is for relatively stable output from private lands over the 10- to 15-year life of Forest Plans in all major market areas.

The relative contribution of national forests to the timber supply differs markedly between market areas. In the North Coast area where the private timber supply has been falling most rapidly, national forests supply only 13% of the timber. In the Northern Interior and Sacramento areas, national forests supply 50% of the timber. In the San Joaquin area they supply 75%.

Timber outputs under Forest Plans are projected to be sharply lower than average annual sale levels over the last five years in the North Coast, Northern Interior, and San Joaquin areas. Sale offerings in the Sacramento area are projected to be about equal to what they have been over the past five years. Adverse impacts on local economies resulting from implementation of the Plans are projected in all major producing areas except the Sacramento area. Since sawmill capacity exceeds available timber supplies by 25 percent or more in all major producing areas, mill closures are expected to continue in all areas of the State during the life of the Forest Plans.

### **The Subregional Outlook in the North Coast Timber Supply Area**

Timber harvests from private lands in the North Coast area have recently averaged 1.1 billion board feet and are projected to be maintained. Industrial harvests are projected to decline from 900 million board feet to 780 million board feet, while nonindustrial harvests are pro-

**Table S-3. Average Annual National Forest Timber Sales  
Compared to the Allowable Sale Quantity in Forest Plans**

<b>Timber Supply Area</b>	<b>National Forest</b>	<b>1985-89 Average Volume Sold (MMBF)</b>	<b>Forest Plan* ASQ (MMBF)</b>
North Coast	Six Rivers	135	77 PF
Northern Interior	Klamath <sup>1</sup>	205	96 PF
	Modoc	56	46 PF
	Lassen	159	90 PF
	Shasta-Trinity	201	84 PF
Sacramento	Mendocino <sup>2</sup>	89	33 PF
	Plumas <sup>3</sup>	190	266 F
	Tahoe	125	129 F
	Eldorado <sup>4</sup>	136	137 F
San Joaquin	Stanislaus <sup>5</sup>	150	85 PF
	Sierra	116	85 PF
	Sequoia	71	75 F
	Inyo <sup>6</sup>	14	7 F
	San Bernardino	6	5 F
<b>R5 Total</b>		<b>1,643</b>	<b>1,215</b>

<sup>1</sup> Typically, about one-half of the logs from the Klamath National Forest flow into Oregon. Most of the remainder are milled in the Northern Interior area.

<sup>2</sup> Mendocino logs typically flow 30% to the Sacramento area, 30% to the Northern Interior area, and 40% to the North Coast.

<sup>3</sup> Plumas logs typically flow 40% to the Northern Interior area, 60% to the Sacramento area.

<sup>4</sup> Eldorado logs typically flow 60% to the Sacramento area and 40% to the San Joaquin area.

<sup>5</sup> Stanislaus logs typically flow 20% to the Sacramento area and 80% to the San Joaquin area.

<sup>6</sup> Inyo logs typically flow 50% to the San Joaquin area and 50% to the Northern Interior area.

\* Plan status is indicated as follows:

(F) = Final Plan value

(PF) = Projected Final Plan value. Preliminary and subject to change.

(FS) = Final Plan value as projected to be amended per settlement agreement.

jected to increase from 200 to over 300 million board feet annually.

National forests recently have accounted for 170 million board feet or 13 percent of the timber supply in the North Coast. Under the Forest Plans, National Forest

supplies are projected to decline to 90 million board feet annually and comprise only 8 percent of total available supplies. The Six Rivers National Forest provides most of the national forest timber milled in the area, with smaller amounts supplied by the Klamath, Shasta-Trinity, and Mendocino National Forests.

## The Subregional Outlook in the Northern Interior Timber Supply Area

Timber harvests from private lands in the Northern Interior area have averaged 540 million board feet and are projected to be maintained. Industrial harvests are projected to decline from 480 million board feet to 450 million board feet, while non-industrial harvests are projected to increase from 65 to over 95 million board feet annually.

National Forests recently have accounted for 600 million board feet or 53 percent of the timber supply in the Northern Interior. Under the Forest Plans, national forest supplies are projected to decline to about 400 million board feet annually and comprise 42 percent of total available supplies. The Klamath, Modoc, Lassen, Shasta-Trinity, Mendocino, and Plumas National Forests are all major suppliers of timber that is milled in the area. Small volumes from other Forests have also been milled in the area (Six Rivers, Eldorado, Inyo, etc.).

There are 22 sawmills with a combined 8-hour shift capacity of 2.5 MMBF in the Northern Interior area. This

means that mill capacity is somewhat above the available sawtimber supply on an annual basis.

The Modoc is included in the Northern Interior timber supply area. Of the timber harvested from the Forest, 84% is processed in Modoc and Lassen counties. This volume is 34% of all timber processed in the two counties (Table S-4). Timber originating from this Forest and processed in Shasta and Klamath counties amounts to 15% of the Forest harvest. The Forest provides less than 1% to Siskiyou County.

Most timberlands in Modoc, Lassen and Siskiyou counties are managed by the Forest Service (Table S-5). Timber supply is controlled by this Forest in Modoc County, by the Lassen and Plumas National Forests in Lassen County, and by the Klamath and Shasta-Trinity National Forests in Siskiyou County. Forest industry and other private timber growers are the second most important producers.

The demand analysis specifically for the Modoc is displayed in Chapter 3 Section 20 of the EIS.

**Table S-4. Log Flows by Origin and County of Use, 1976.**

County	Total County Use (MMBF)	Timber Originating From Forest (MMBF)	% of Total Use Originating From Forest
Modoc & Lassen <sup>1</sup>	157.76	54.18	34.0
Siskiyou	398.31	0.63	0.2
Other <sup>2</sup>	-	9.64	0.15

<sup>1</sup> Combined to prevent disclosure.  
<sup>2</sup> Includes Shasta County, California, and Klamath County, Oregon.

Source: Pacific Northwest Forest and Range Experiment Station. 1978. California Forest Industry. PNW-80.

Table S-5. Area of Commercial Timberland by County and Ownership <sup>1</sup> . (M Acres)									
County	Total Area	USFS		Other Public Land		Forest Industry & Other Private Timber Growers		Other Farm & Private	
Modoc	636	456	(72%)	2	(1%)	144	(23%)	34	(5%)
Lassen	767	437	(57%)	15	(2%)	277	(36%)	38	(5%)
Siskiyou	2,316	1,581	(68%)	24	(1%)	446	(19%)	265	(11%)
<sup>1</sup> Includes commercial forest land unavailable for harvest, such as land in wilderness areas. Commercial forest land is based on the definition used in the 1975 Timber Management Plan.  Source: Pacific Northwest Forest and Range Experiment Station. 1981. California: Trends, Problems, and Opportunities. Resource Bulletin PNW-89.									

### The Subregional Outlook in the Sacramento Timber Supply Area

Timber harvests from private lands in the Sacramento area have averaged 450 million board feet and are projected to increase slightly. Industrial harvests are projected to remain at about 400 million board feet over the 10-15 year life of the Forest Plans. Non-industrial harvests are projected to increase from 40 to over 50 million board feet annually.

National forests recently have accounted for 380 million board feet or 45 percent of the timber supply in the Sacramento area. Under the Forest Plans, National Forest supplies are projected to increase slightly to 400 million board feet annually and remain at 45 percent of total available supplies. The Plumas, Tahoe, and Eldorado are the dominant national forest suppliers. Smaller volumes from the Mendocino and Stanislaus and some volume from the Lassen and Shasta-Trinity are also milled in this market area.

### The Subregional Outlook in the San Joaquin Timber Supply Area

Timber harvests from private lands in the San Joaquin area have averaged 135 million board feet and are projected to increase slightly. Industrial harvests are projected to increase slightly from about 110 million board feet to nearly 120 million board feet over the 10-15 year life of the Forest Plans. Non-industrial harvests are projected to remain at about 30 million board feet annually.

National forests recently have accounted for 380 million board feet or 74 percent of the timber supply in the San Joaquin area. Under Forest Plans, national forest supplies are projected to decrease to 300 million board feet annually and decrease to 67 percent of total available supplies. The Eldorado, Stanislaus, Sierra, and Sequoia are the dominant national forest suppliers. Minor volume from the Inyo and San Bernardino is also milled in this market area.

## References

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# Appendix T

## Wild And Scenic River Study

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### Introduction

#### Summary of Findings

This appendix presents an evaluation of seventeen streams on the Modoc National Forest for their Wild and Scenic River potential. It includes the following:

- Discussion of the physiographic province in which the streams occur
- Descriptions of the streams that were evaluated
- Eligibility determination for inclusion in the National Wild and Scenic River System
- Description of streams determined to be eligible
- Analysis of alternative classifications
- Interim management measures applied pending suitability determination.

Although suitability is discussed here for information purposes, no determinations of suitability are made in this process.

The evaluation team found that Willow and Boles Creeks have outstandingly remarkable values. As a result, the team recommended these streams as eligible and worthy of further consideration. In addition, the team recommended that the remaining fifteen streams should be dropped from further consideration. In subsequent evaluation efforts, the team determined that Willow and Boles Creeks were most appropriately classified as scenic rivers and should be studied in depth to determine suitability. No assessment or determination of suitability was made in this process. Suitability will be assessed in site-specific studies completed within the first three years of Plan implementation. Standards and Guidelines included in the Forest Plan provide protection for these river areas in the interim.

### Background

In 1968, Congress passed the Wild and Scenic Rivers Act. The purpose of the Act is *"to preserve riverine systems containing certain exceptionally outstanding features such as scenery, recreation, geology, fish and wildlife, and historic and cultural resources. Selected rivers and their immediate environments are to be preserved in a free flowing condition and are to be managed for the benefit and enjoyment of present and future generations."*

In October 1979, the President directed the Department of Interior to inventory all rivers. The message also directed agencies to assess rivers for potential additions to the National Wild and Scenic Rivers System. The Heritage Conservation and Recreation Service (HCRS), USDI (now the National Park Service), conducted a Nationwide Rivers Inventory (NRI).

As part of the Land Management Planning (LMP) process, national forests were directed to assess all rivers that are included in the NRI for suitability for inclusion in the Wild and Scenic Rivers System. In addition, forest planning documents must address all rivers, flowing wholly or partially on National Forest System lands, which are identified as potential Wild and Scenic Rivers (Forest Service Handbook (FSH) 1909.12 Chapter 8).

Because neither Congress nor the Nationwide River Inventory designated any streams on the Forest as candidate streams, the Forest did not include an inventory or discussion of Wild and Scenic Rivers in the Draft Plan or DEIS. However, as a result of public comment, we initiated a comprehensive stream inventory which was completed in 1988. The study team inventoried and evaluated all the streams on the Forest and determined that seventeen have high resource values meriting detailed review. The Forest Interdisciplinary Team evaluated these seventeen and determined that two, Willow and Boles Creeks, are eligible for wild and scenic river designation because they possess one or more outstandingly remarkable values. Further, the team identified the highest eligible classification for both streams as scenic.

## Physiographic Setting

To evaluate each stream segment, the evaluation team discussed them in a context that included other streams of a similar nature. The team felt that candidate stream segments were most appropriately evaluated within the Great Basin section (22a) of the Basin and Range Province. Although several candidate streams do not drain into the Great Basin, they exhibit vegetative, hydrologic, and scenic qualities similar to those streams characteristic of Nevada, portions of southern Idaho, and, to a lesser extent, the Wasatch Mountains of western Utah. This determination coincides with those boundaries displayed in the "Physical Divisions of the United States" prepared by Nevin M. Fenneman in cooperation with the Physiographic Committee of the Geological Survey. Figure T-1 displays these divisions as they apply to the Pacific Southwest Region.

## Description of Studied Rivers

Thirteen of the seventeen stream segments evaluated are located in the Warner Mountains (Figure T-2). Only one, Soldier Creek, is on the east slope of the Warners. Soldier Creek is characterized by steep gradients, precipitous slopes, and limited public access. The stream corridor and surrounding watershed have moderate to high scenic values and contain the remnants of an old timber mill. The vegetation in the Soldier Creek drainage is representative of that generally found on the east slope of the Warners, with sage, bunchgrass, and juniper dominating lower elevations. Higher elevations include alpine meadows, mixed stands of ponderosa and Jeffery pine, lodgepole and western white pine, and white fir with bitterbrush, mahogany, and sage. Soldier Creek contains a trout fishery of moderate quality. No archaeological sites have been identified in the area.

The Davis Creek drainage lies on the west slope of the Warner Mountains north of Cedar Pass, and drains to wetland sinks adjacent to Goose Lake. Davis Creek is representative of the west slope of the Warners with moderate to steep slopes and vegetation dominated by sage, bunchgrass, and juniper in lower elevations. Meadows, ponderosa pine and Jeffery pine, lodgepole and western white pine, and white fir with bitterbrush, mahogany, and sage grow in higher elevations. The stream has moderate scenic values and contains a moderate trout fishery with a small population of redband trout. Accessibility is good with a high quality road system providing access to all three forks. No archaeological sites have been identified in the area.

The remaining stream segments that occur on the Warners lie south of Cedar Pass and drain to the Pit

River. These include Shields Creek, Pine Creek, East Creek, Mill Creek, Parsnip Creek, and the South Fork of the Pit River. To account for substantial differences in scenic and recreational values within a single stream corridor, the evaluation team divided several streams into segments that displayed a common set of values. For example, East Creek was divided into East Creek (outside the Wilderness) and East Creek (inside the Wilderness.)

This group of streams is characterized by moderate to steep gradients and vegetation types common to the west slope of the Warners. Access is generally good in low elevations, with a high quality road system intersecting or running parallel to most of the streams. Stream segments in upper elevations generally are inaccessible except by trail. One notable exception to these generalities is Parsnip Creek. While the upper two segments are readily accessed by the Blue Lake road, the lowest segment, extending from the road crossing to the Modoc National Forest boundary, is isolated and is not serviced by a road or trail maintained by the Forest Service.

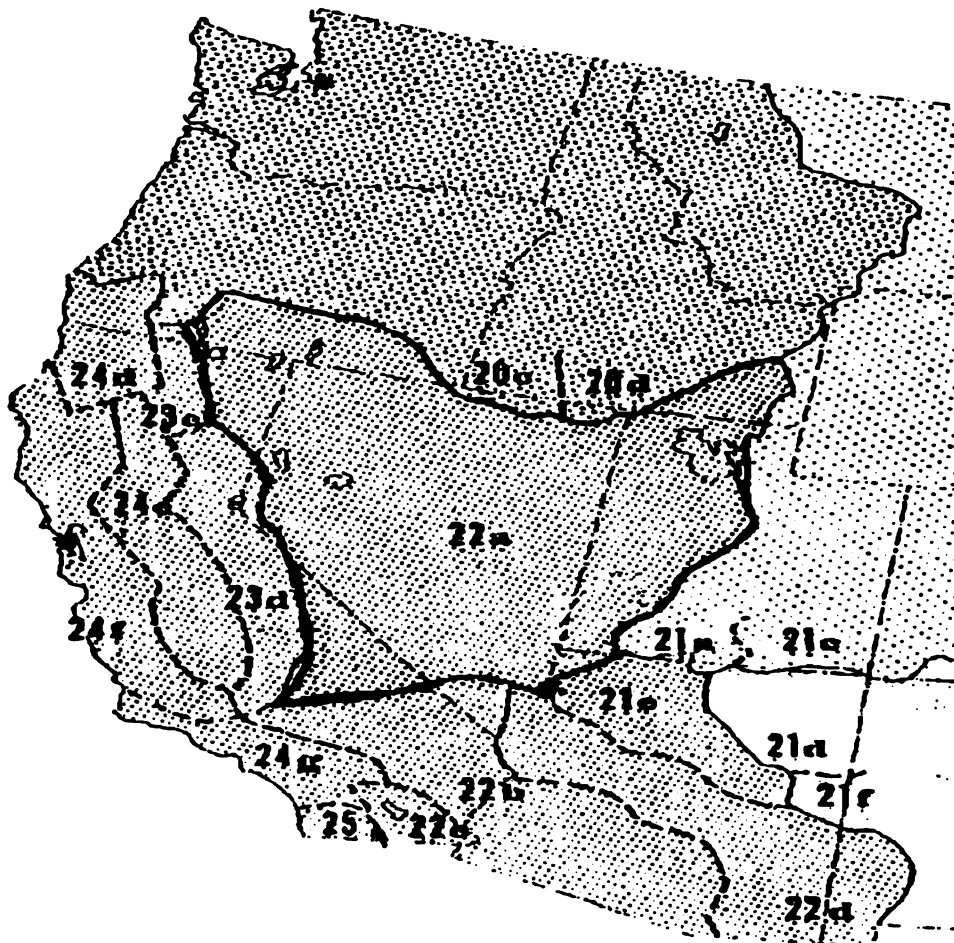
Generally, those stream segments occurring in lower elevations are characterized by moderate to high scenic values, while those that lie within the South Warner Wilderness display high to very high scenic qualities. The 69,500-acre South Warner Wilderness encompasses pleasant beauty with spectacular scenery. The view from the highest peaks in the Wilderness is panoramic, with all of Modoc County and much of Lassen County and northeastern Nevada visible.

Mount Shasta and Mount Lassen stand out majestically in the distance. Tumbling streams, a few small lakes, many springs, and associated small meadows and aspen groves contribute to the overall beauty of the area. Salient points of scenic interest include Mill Creek Falls and Clear Lake in the Wilderness segment of Mill Creek, and Blue Lake in the upper segment of Parsnip Creek.

Moderate to good fisheries exist in most of these streams; several include small populations of redband trout. The exceptions are East Creek (inside the Wilderness) and the segment of Parsnip Creek extending from Blue Lake to the road crossing. Both stream segments have excellent fisheries with that portion of Parsnip Creek standing out as a potential Blue Ribbon trout stream.

Few archaeological sites have been identified in the area. However, an historic tribal "power place" is located in the upper segment of Parsnip Creek; and upper portions of East Creek contain numerous examples of aspen art.

**Figure T-1. Physiographic Boundaries of the Pacific Southwest Region**



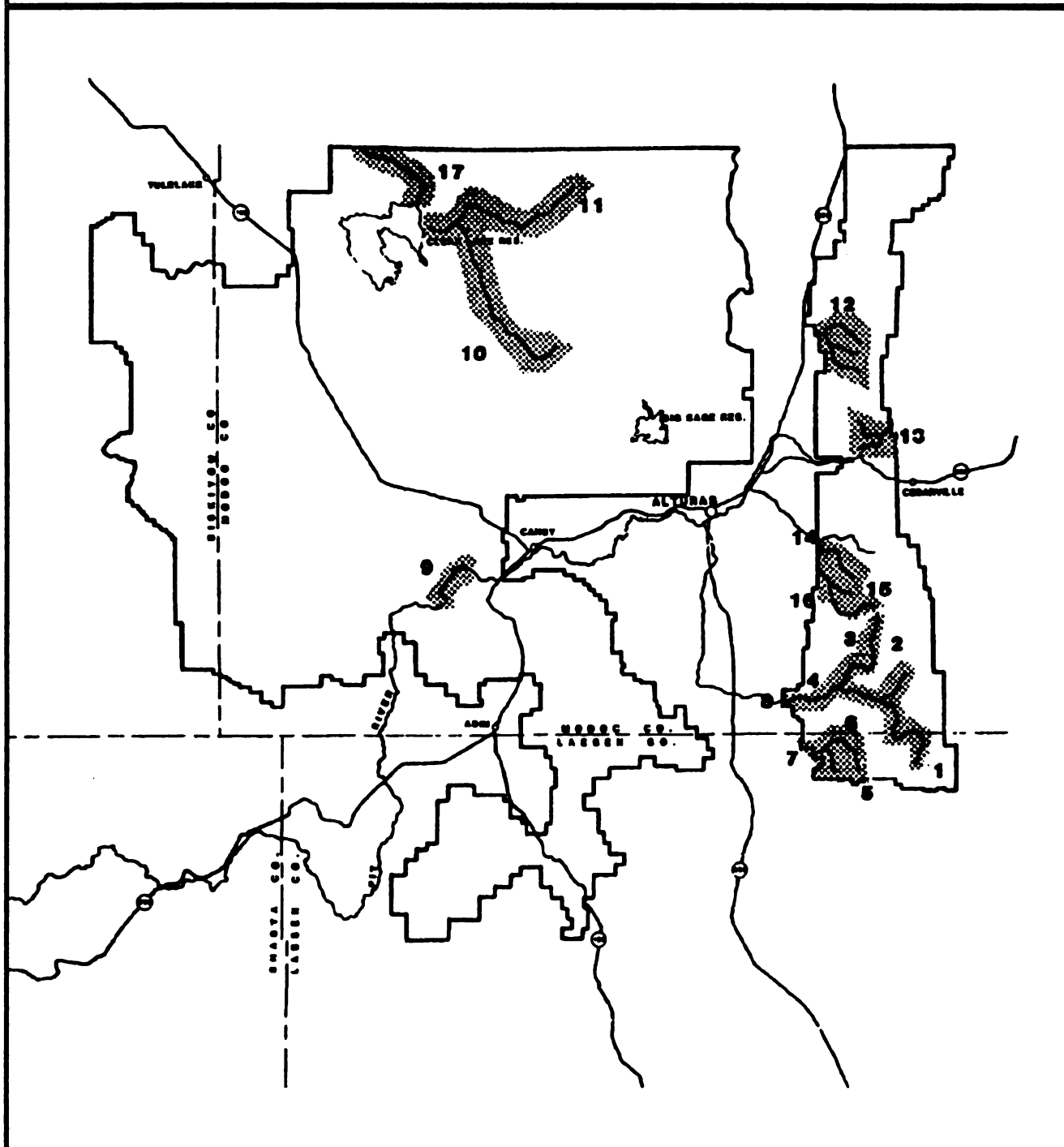
**KEY:**

20c - Columbia Plateaus - Payette Section  
 20d - Columbia Plateaus - Snake River Plain  
 21a - Columbia Plateaus - High Plateaus of Utah  
 21c - Columbia Plateaus - Canyon Lands  
 21d - Columbia Plateaus - Navajo Section  
 21e - Columbia Plateaus - Grand Canyon Section  
 21f - Columbia Plateaus - Datil Section

22a - Basin and Range Province - Great Basin  
 22b - Basin and Range Province - Sonoran Desert  
 22c - Basin and Range Province - Salton Trough  
 22d - Basin and Range Province - Mexican Highland  
 23c - Cascade - Sierra Mountains - Southern Cascade Mountains  
 23d - Cascade - Sierra Mountains - Sierra Nevada  
 24d - Pacific Border Province - Klamath Mountains  
 24e - Pacific Border Province - California Trough  
 24f - Pacific Border Province - California Coast Ranges  
 24g - Pacific Border Province - Los Angeles Ranges  
 25 - Lower California Province

Source: *Physical Divisions of the United States* by Nevin M. Fenneman

**Figure T-2. Modoc National Forest Stream Segments Evaluated  
(Map Key on Following Page)**



*Key to Figure T-2. Stream Segments Evaluated:*

Key	Stream Segment	Segment Length (Miles)	Extent of Segment
1	East Creek (inside Wilderness)	6.0	From the headwaters of the N. Fork to the Wilderness boundary on the S. Fork from the Wilderness
2	East Creek (outside Wilderness)	3.0	From the headwaters of the S. Fork to the Wilderness boundary
3	Mill Creek (inside Wilderness)	7.5	From the headwaters to the Wilderness boundary
4	Mill Creek (outside Wilderness)	.5	From the Wilderness boundary to private land boundary
5	Parsnip Creek (Upper)	1.0	From the headwaters to Blue Lake
6	Parsnip Creek (Middle)	1.5	From Blue Lake to road crossing
7	Parsnip Creek (Lower)	6.0	From road crossing to Forest boundary
8	S. Fork Pit River	4.0	From private land at the confluence of Mill Creek to Forest boundary
9	Pit River	3.0	From private land in Sec. 1, T.41N., R.8E. to Sec. 15, T.41N., R8E.
10	Boles	11.5	From the confluence of Willow Creek to Sally's Camp
11	Willow Creek	14.0	From Clear Lake National Wildlife Refuge boundary to Wilcox Spring
12	Davis Creek	13.0	All three forks from headwaters to Forest boundary
13	Soldier Creek	3.0	Both forks from headwaters to Forest boundary
14	Shields Creek	5.0	Both forks from headwaters to adjacent private land boundary
15	Pine Creek (inside Wilderness)	5.0	From headwaters to Wilderness boundary
16	Pine Creek (outside Wilderness)	7.5	From Wilderness boundary to Forest boundary
17	Lost River	7.0	From Clear Lake National Wildlife Refuge boundary to Forest boundary

The Pit River discussed here refers to a segment which marks the boundary between the Devil's Garden and Big Valley Ranger Districts. It extends from private land approximately four miles below the Canby Bridge for two miles across national forest land to private land at Hanging Rock. The segment is dominated by moderate gradients and precipitous side slopes. The area has moderate to high scenic values with Hanging Rock providing a salient point of interest. This segment is accessed only by trail, and provides a locally unique opportunity for short float trips in a semi-primitive setting.

From its origin in Clear Lake reservoir, Lost River flows downstream for about 75 miles terminating in Tule Lake Sump. The segment defined for this evaluation extends from the Clear Lake Refuge boundary to private land lying adjacent to the Oregon border. Topography, vegetation, wildlife, and fish are described in the narrative provided for the Willow and Boles Creeks drainages. Scenic values are moderate.

Numerous archaeological and cultural sites exist in the area. However, those that have been identified are not as extensive, varied, or in as good condition as those inventoried in the Willow and Boles drainages.

Lying primarily on the Doublehead Ranger District, Willow and Boles Creeks drain to Clear Lake Reservoir. The Forest evaluation team identified them as eligible for inclusion in the National Wild and Scenic River System. These creeks are described in detail later in this appendix.

## River Eligibility

We used the following sources for determining river eligibility for inclusion in the National Wild and Scenic Rivers System:

- The Wild and Scenic River Act of 1968, as amended
- Revised USDA-USDI guidelines for eligibility, classification, and management of river areas dated 1982, which supplements the Act
- Forest Service Handbook guidelines

Two sections of the Wild and Scenic Rivers Act of 1968 apply to eligibility criteria. Section 1 (b) says that if a river is eligible for inclusion, it must be free flowing. Section 2 states that a selected river may become eligible

for designation if it possesses one or more of the following *"...outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values...."*

USDA-USDI guidelines interpret the Act further and develop standards for determining eligibility. Rivers may be divided into segments for ease of study and classification. Although no standard for a minimum segment length has been established, a river segment should be long enough to protect all values determined to be outstandingly remarkable. Flows are considered sufficient if they sustain or complement the values for which the river has been designated. A minimum flow is not required.

Forest Service guidelines (FSH 1909.122, Chapter 8) offer an approach, based on NRI methodology, for identifying river(s) to study for designation. The best river(s) with a recognized value common to a physiographic province or region, but not to the nation or state as a whole, should be assessed for suitability for designation.

The determination that a river segment contains "outstandingly remarkable" values is a professional judgment on the part of the evaluation team. The Modoc study team evaluated seventeen streams in depth, and found that Willow and Boles Creeks have outstandingly remarkable qualities (Tables T-1 and T-2). As such, they are eligible for inclusion in the National Wild and Scenic River System pending classification, further study, and suitability determination.

Table T-1 summarizes the evaluation team's findings by stream segment. Table T-2 provides a detailed explanation for each stream segment and resource value.

Table T-2 describes the interdisciplinary team's evaluation of each stream segment by resource value. A "no" means the team found that the stream segment did not display outstandingly remarkable characteristics in that category, relative to the geographic province that provides the context for the evaluation. Conversely, a "yes" means the team found that the stream segment displayed an outstandingly remarkable characteristic. Superscripts denote the presence of salient, unique, or outstandingly remarkable characteristics; and are explained in the remarks column.

**Table T-1. Wild and Scenic River Eligibility Evaluation Summary**

Stream Segment	Recommendation/Rationale
<b>East Creek (outside Wilderness)</b>	Eliminated because of no outstandingly remarkable values
<b>East Creek (inside Wilderness)</b>	Eliminated because of no outstandingly remarkable values
<b>Mill Creek (inside Wilderness)</b>	Eliminated because of no outstandingly remarkable values
<b>Mill Creek (outside Wilderness)</b>	Eliminated because of no outstandingly remarkable values
<b>Parsnip Creek (Blue Lake to head waters)</b>	Eliminated because of no outstandingly remarkable values
<b>Parsnip Creek (Blue Lake to road crossing)</b>	Eliminated because of no outstandingly remarkable values
<b>Parsnip Creek (road crossing to FS boundary)</b>	Eliminated because of no outstandingly remarkable values
<b>South Fork Pit River</b>	Eliminated because of no outstandingly remarkable values
<b>Pit River</b>	Eliminated because of no outstandingly remarkable values
<b>Boles</b>	Determined to be eligible for further consideration as a wild, scenic or recreational river. Extensive cultural resources along entire segment.
<b>Willow Creek</b>	Determined to be eligible for further consideration as a wild, scenic or recreational river. Extensive cultural resources along entire segment.
<b>Davis Creek</b>	Eliminated because of no outstandingly remarkable values
<b>Soldier Creek</b>	Eliminated because of no outstandingly remarkable values
<b>Shields Creek</b>	Eliminated because of no outstandingly remarkable values
<b>Pine Creek (inside Wilderness)</b>	Eliminated because of no outstandingly remarkable values
<b>Pine Creek (outside Wilderness)</b>	Eliminated because of no outstandingly remarkable values
<b>Lost River</b>	Eliminated because of no outstandingly remarkable values

**Table 2. Wild and Scenic River Eligibility Evaluation.**

Stream Segment	Scenic	Recreational	Geology	W & F	Historic	Cultural	Other	Remarks
East Creek (outside wilderness)	no	no	no	no <sup>1</sup>	no	no	no	1 W&F - The team identified the presence of Goose Lake redband trout, a candidate for potential federal listing, in this stream segment; and feels it was worthy of note. However, the team does not feel that the presence of a candidate species, within the context of the geographic province, alone constitutes an outstandingly remarkable feature. All other values are considered common within the geographic province.
East Creek (inside wilderness)	no <sup>1</sup>	no <sup>2</sup>	no	no <sup>3</sup>	no	no	no	1 Scenic - The evaluation team identified this segment as high in scenic quality, but typical of that associated with high elevation wilderness throughout the geographic province. Therefore, the team feels that this feature, though notable, is not outstandingly remarkable. 2 Recreational - The segment provides a high quality setting for semi-primitive recreation associated with the wilderness. The evaluation team feels, however, that the recreational opportunities are typical of high elevation settings throughout the province, and not outstandingly remarkable. 3 W&F - The team noted the presence of Goose Lake redband trout, but does not feel that the presence of a candidate for federal listing is an outstandingly remarkable feature. All other values are considered common within the geographic province.
Mill Creek (inside wilderness)	no <sup>1</sup>	no <sup>2</sup>	no	no	no <sup>3</sup>	no <sup>4</sup>	no	1 Scenic - The evaluation team considers this segment high in scenic quality with Mill Creek Falls as a salient point of interest. However, the team feels that although the segment does provide a high quality setting, the scenic values are not outstandingly remarkable within the geographic province. 2 Recreational - The segment provides a high quality setting for semi-primitive recreation, with Mill Creek Falls providing a point of interest for recreationists. The evaluation team feels that although this segment and surrounding area provides high-quality semi-primitive recreational opportunities, the recreational values are typical within the geographic province and are not outstandingly remarkable. 3 Historic - The evaluation team identified a small dam that exists at the outlet of Clear Lake. The team feels that it is worthy of note from a local history standpoint, but that it does not constitute an outstandingly remarkable feature for the geographic province.



**Table T-2. Wild and Scenic River Eligibility Evaluation (cont'd).**

Stream Segment	Scenic	Recreational	Geology	W & F	Historic	Cultural	Other	Remarks
Mill Creek (inside wilderness) - cont'd.								4 Cultural - The evaluation team found that Mill Creek Falls might have been a special site in local tribal lore. However, no archaeological evidence currently supports that theory. Therefore, the team feels that the segment does not exhibit cultural values that could be considered outstandingly remarkable. All other values are considered as common within the geographic province.
Mill Creek (outside wilderness)	no	no	no	no	no	no	no	All values in this segment are considered common within the geographic province.
Parsnip Creek (Blue Lake to head waters)	no	no <sup>1</sup>	no	no <sup>2</sup>	no	no <sup>3</sup>	no	1 Recreational - Recreational opportunities are focused on Blue Lake Campground and the fishing and boating Blue Lake offers. The evaluation team feels that although these values are unique locally, they do not consider them outstandingly remarkable for the province. 2 W&F - The evaluation team identified the presence of a bald eagle roost adjacent to Blue Lake. Although worthy of note, the team does not feel that this is an outstandingly remarkable feature. 3 Cultural - Portions of this segment may have been "power sites", i.e., areas where local Indians isolated themselves for vision quests. However, no substantive records or physical archaeological evidence supports this. Consequently, the team does not feel that this segment is outstandingly remarkable from a cultural standpoint. All other values in this segment are considered common within the geographic province.
Parsnip Creek (Blue Lake to road crossing)	no	no <sup>1</sup>	no	no <sup>2</sup>	no	no	no	1, 2 Recreational and W&F - This segment is noted locally as a good to excellent fishery. However, the evaluation team does not feel that it is outstandingly remarkable within the geographic province. All other values in this segment are considered common within the geographic province.
Parsnip Creek (Road crossing to FS boundary)	no	no	no	no	no	no	no	All values in this segment are considered common within the geographic province.
South Fork Pit River	no <sup>1</sup>	no <sup>2</sup>	no	no <sup>3</sup>	no <sup>4</sup>	no	no	1 Scenic - The evaluation team feels that this area is moderate to high in scenic quality, but is not outstandingly remarkable. 2 Recreational - Recreation opportunities center on day-use fishing on this segment. Road access and pleasant setting make it particularly attractive locally. However, the evaluation team feels that the segment is not outstandingly remarkable when considered within the context of the entire geographic province. 3 W&F - The segment contains a good fishery. However, the evaluation team does not feel that it is an outstandingly remarkable feature.

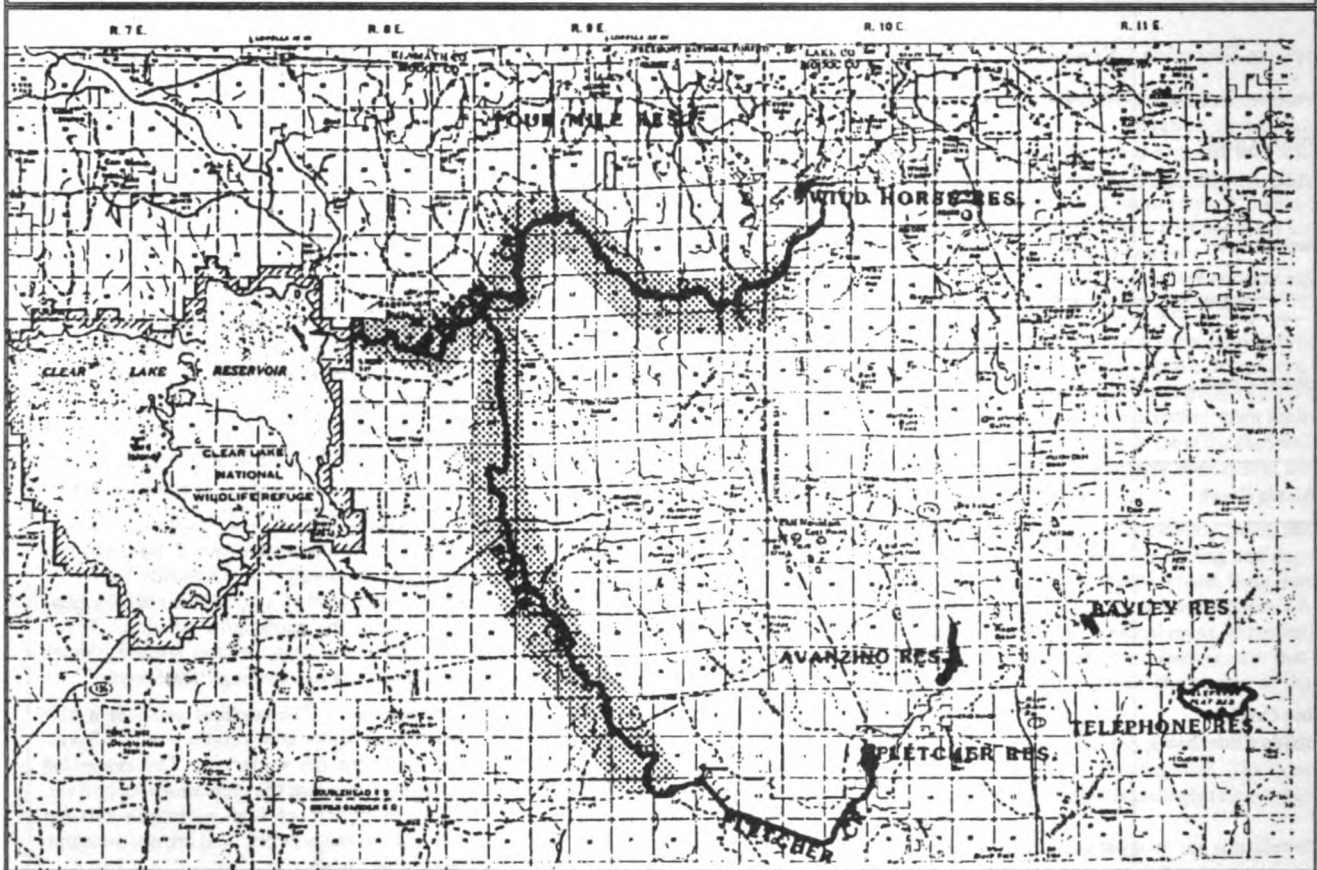
**Table T-2. Wild and Scenic River Eligibility Evaluation (cont'd).**

Stream Segment	Scenic	Recreational	Geology	W & F	Historic	Cultural	Other	Remarks
South Fork Plt River - cont'd.								4 Historical - An historical irrigation ditch exists in this segment. No evidence suggests that it is historically significant or of unique construction which would make it a point of interest. Therefore, the evaluation team feels that this is not an outstandingly remarkable feature. All other values in this segment are considered common within the geographic province.
Plt River	no <sup>1</sup>	no <sup>2</sup>	no	no <sup>3</sup>	no	no	no	1 Scenic - The area provides a visual quality setting conducive to semi-primitive recreation. Hanging Rock provides a salient point of interest for the segment. The evaluation team feels that the scenic features are notable for the local area, but are not outstandingly remarkable for the geographic province. 2 Recreation - From a recreation standpoint, the segment is used primarily for fishing and day-long float trips. The evaluation team feels that this segment provides recreational opportunities that are unique to the local areas. However, the team does not feel these features are outstandingly remarkable within the context of the geographic province. 3 W&F - The team noted the presence of a bald eagle nest adjacent to this segment. The does not feel that this is an outstandingly remarkable feature. All other values in this segment are considered common within the geographic province.
Boles	no	no	no	no <sup>1</sup>	no <sup>2</sup>	yes <sup>3</sup>	no	1 W&F - Shortnose and Lost River suckers inhabit Boles Creek. Both species have been federally listed as endangered. Although worthy of note, the team does not feel that the presence of an endangered species is an outstandingly remarkable feature within the geographic province. 2 Historical - Carrs Wall and the Applegate Emigrant Trail are historical features adjacent to the Boles drainage. The evaluation team feels that these are unique features locally, but are not outstandingly remarkable within the geographic province. 3 Cultural - The evaluation team found that Boles Creek is exceptionally rich in archaeological and cultural values. Recent inventories indicate that this area is potentially eligible for nomination to the National Register of Historic Places. The team feels that the variety, quality, and density of cultural sites—continuous over this large area—is unique and exceptional for the province. Therefore, the team determined that this segment is outstandingly remarkable from a cultural resource standpoint. All other values in this segment are considered common within the geographic province.

**Table T-2. Wild and Scenic River Eligibility Evaluation (cont'd).**

Stream Segment	Scenic	Recreational	Geology	W & F	Historic	Cultural	Other	Remarks
Willow Creek	no	no	no	no <sup>1</sup>	no <sup>2</sup>	yes <sup>3</sup>	no	1, 2, 3 W&F, Historical, and Cultural - Same as Boles.
Davis Creek	no	no	no	no <sup>1</sup>	no	no	no	1 W&F - The Team noted that this drainage contains redband and Goose Lake trout. The teams feels that this is notable for the local area, but not an outstandingly remarkable feature.
Soldier Creek	no	no	no	no	no <sup>1</sup>	no	no	1 Historical - The team noted the presence of an abandoned timber mill in this drainage. The team feels that this is not an outstandingly remarkable characteristic. All other values in this segment are considered common within the geographic province.
Shields Creek	no	no	no	no	no	no	no	All values in this segment are considered common within the geographic province.
Pine Creek (inside wilderness)	no <sup>1</sup>	no <sup>2</sup>	no	no	no	no	no	1 Scenic - The evaluation team determined that this segment is high in scenic quality, but typical of that associated with high elevation wilderness throughout the geographic province. Therefore, the team feels that this feature, though notable, is not outstandingly remarkable. 2 Recreational - The segment provides a high quality setting for semi-primitive recreation associated with the wilderness. The evaluation feels, however, that the recreational opportunities are typical of high elevation settings throughout the province, and are not outstandingly remarkable. All other values in this segment are considered common within the geographic province.
Pine Creek (outside wilderness)	no	no	no	no	no	no	no	All values in this segment are considered common within the geographic province.

**Figure T-3. Willow Creek Drainage System on the Modoc National Forest**



### Description of Eligible Rivers

Although Willow and Boles were evaluated as separate stream segments in the eligibility determination, for the purpose of this description they are discussed as a single stream system.

Willow Creek is a major drainage system in the eastern portion of the Doublehead Ranger District. North Fork Willow Creek, Boles Creek and Rock Creek are primary tributaries on the District. Hidden Valley Creek, which empties into Willow Creek, drains the northwestern portion of the Devil's Garden Ranger District (Figure T-3).

The Willow Creek system lies on the Devil's Garden Plateau—a high, semi-arid plateau in the northeastern corner of California. The elevation ranges from 4,500 to 4,900 feet, and precipitation averages 12 to 25 inches a year. The site occupies a broad alluvial flat broken up by patches of exposed surface rock (scab rock flats). The soil is deep except in the scab rock flats, and is generally a clay to clay-loam texture. The stream channel is en-

trenched where it has eroded through alluvial deposits. Stream banks vary from very low to 12 feet high where the stream has down cut. Stream banks have been measured as 35.9% unstable.

Four stream channel types characterize Boles and Willow Creeks: F4, C2, B2, and C3. Channel type definitions follow:

- **F4** - This stream type represents systems that are deeply incised inside weathered bedrock or in depositional materials. The flood channel is totally confined. Little or no floodplain development exists; therefore, these streams have a small increase in width with flow. Stream gradient is less than 1%. F4 stream types are generally high sediment supply streams. Because high flows cannot spread over a floodplain, relatively high stream power is available for sediment transport. Width/depth ratios are 10-40. Channel materials are sand with smaller amounts of silt and gravel.

- C2 - This stream type represents systems that have overfit cobble bed channels. These channels have been oversized by an historical geomorphic event. Stream gradient is 0.3-1.0%. Width/depth ratios are greater than 10. Channels are moderately entrenched and well confined.
- B2 - This stream type represents systems with a moderate gradient; they are stable and have bed and banks primarily composed of large cobble. Stream gradients are 1.5-2.5%. Width/depth ratio is 8-20. Channels are moderately entrenched and well confined.
- C3 - This stream type represents systems with a low gradient; they are unstable and have gravel bed channels. Stream gradient is 0.5-1.0%. Width/depth ratio is greater than 10. Channels are moderately entrenched and poorly confined.

Recent changes in stream channel, particularly in channel type C3, are side cutting of banks and downcutting of the channel bottom. These changes gradually result in a wider, shallower stream channel.

The stream is subject to extreme variation in flow. Flow peaks during spring runoff, and is lowest in autumn before storms recharge the watershed. Flows are stable during summer months.

Sediment loads in the stream also vary throughout the year. High spring flows carry heavy sediment loads from the surrounding watershed. As flows diminish, sediment loads are reduced. Summer cattle grazing in the creek causes turbidity.

Habitat types in the area range from aquatic to dry upland plant communities. Aquatic plants grow along the stream. Wet meadow species of forbs, rushes, sedges and grasses grow along stream edges. Dry meadow species and silver sagebrush (*Artemisia cana*) occupy adjacent streambanks and flats which are subject to flooding and a high water table. Dryland grasses, including squirreltail (*Sitanion hystrix*), Sandberg's bluegrass (*Poa sandbergii*), and Idaho fescue (*Festuca idahoensis*), occupy adjacent uplands. A shrub component grows on the dry uplands of big sagebrush (*Artemisia tridentata*) or low sagebrush (*Artemisia arbuscula*). Big sagebrush is typically found in deeper soils. Low sagebrush is found on shallow soils and scab rock flats. Shrubs typically associated with riparian areas, such as willow, are noticeably absent.

The riparian ecosystem in the expanse of dry upland areas attracts a wide variety of birds, mammals and reptiles. Threatened, endangered, or sensitive wildlife and fish species inhabit the area: Lost River sucker (*Catostomus luxatus*), shortnose sucker (*Chasmistes brevirostris*), and bald eagle (*Haliaeetus leucocephalus*).

Other fish known to inhabit the Willow Creek system are speckled dace (*Rhinichthys osculus*), largemouth bass (*Micropterus salmoides*), Sacramento perch (*Archoplites interruptus*), brown bullhead (*Ictalurus nebulosus*), blue chub (*Gila coerulea*), tui chub (*Gila bicolor*), marbled sculpin (*Cottus klamathensis*), and bluegill (*Lepomis macrochirus*).

Several other wildlife species of interest in the Willow and Boles Creeks riparian areas include mule deer, pronghorn, and a variety of nongame wildlife.

The Willow Creek system is located in the Interstate Deer Herd range. Primary season of use is spring and/or fall when deer migrate between summer ranges in Oregon and winter ranges in California. The area also serves as summer range for a few resident deer. In addition, this area is in the Clear Lake Pronghorn Herd boundary. The area is summer range for pronghorn that winter west and north of Clear Lake Reservoir.

Willow and Boles Creeks are both exceptionally rich in archaeological and cultural values. Recent inventories indicate both areas are potentially eligible for nomination to the National Register of Historic Places. Numerous rock art panels have been found on the canyon walls bordering Boles Creek and Willow Creek. Petroglyphs predominate, but pictographs are present as well. Associated with rock art are rock stacks, large rock circles with massive walls, and a variety of other rock features. Lithic scatter, food processing stations, temporary camps, rock shelters, and summer base camps line stream banks and canyon rims.

Willow and Boles Creeks are popular areas for hunting (waterfowl, mule deer, and pronghorn), and wildlife observation. Few fishing opportunities are available from the creeks. Scenic values are low to moderate.

## Classification

If a river meets the eligibility test, its outstandingly remarkable values noted in screening can be combined with existing patterns of land use and infrastructure to determine classification. The Wild and Scenic Rivers Act specifies three classification categories for eligible rivers: wild, scenic, and recreational. USDA-USDI guidelines provide classification criteria. These criteria and the resulting assessment are shown in Table 3. The team evaluated Willow and Boles Creeks and identified the highest eligible classification for both segments as scenic. Actual classification will be determined in the suitability evaluation.

**Table T-3. Wild and Scenic River Study - Classification Analysis**

<b>Classification</b>	<b>Existing Conditions</b>	<b>Willow Creek</b>	<b>Boles Creek</b>
<b>Wild</b>	Free of impoundments?	yes	yes
	Generally inaccessible except by trail?	no	no
	Watershed/shoreline essentially primitive?	yes	yes
	Waters unpolluted?	no	no
<b>Scenic</b>	Free of impoundments?	yes	yes
	Inaccessible or only accessible in a few places by road?	yes	yes
	Watershed/shoreline largely primitive and largely undeveloped?	yes	yes
<b>Recreation</b>	Are past impoundments or diversions unobtrusive?	yes	yes
<b>Tentative Classification</b>		<b>Scenic</b>	<b>Scenic</b>

*Note:* To qualify for the **Wild** classification, there must be four yes's in the Wild block.  
 To qualify for the **Scenic** classification, there must be three yes's in the Scenic block.  
 To qualify for the **Recreation** classification, there must be a yes in the Recreation block.

## Suitability

The final step in river assessment is determining suitability, which is the basis for recommending or not recommending designation of the river. Because of the extensive study and analysis required for suitability determination, this analysis does not address suitability.

We will initiate suitability studies for Willow and Boles Creeks during Plan implementation, and complete them within three years. A separate report and environmental document will be prepared at that time. Should the rivers

be included in the National Wild and Scenic river system, we will amend the Forest Plan to reflect this.

## Interim Management

If study of suitability is deferred rather than addressed in the Forest Plan, the Forest Service Handbook directs that the Plan will document the protection provided the subject rivers, pending a decision on suitability. Interim protection for Willow and Boles Creeks is provided by standards included in the management direction for Management Area 66.









## Appendix U

### Summary of Public Response to the DEIS and Draft Plan

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#### Introduction

The Modoc NF distributed about 740 copies of its Draft Environmental Impact Statement (DEIS) and proposed Forest Plan to individuals; special interest groups; elected officials; and local, state, and other federal government agencies. Copies of the documents were also available for review at local libraries and neighboring national forests. We invited the public to express its opinions on the documents during the comment period which began November 2, 1987 and ended March 7, 1988.

#### Public Response Profile

The Forest received written and oral comments from more than 1,400 respondents, many of whom sent in multiple responses. Of the total respondents, 105 testified at two public hearings, one held in Alturas and the other in Adin. Oral testimony was recorded verbatim and transcribed by a certified court reporter.

After reading all letters and oral testimony, a team of Forest employees analyzed and coded nearly 4,300 com-

ments. Coders categorized respondents by identification number, form of response, interest affiliation, number of signatures, and zip code. They categorized each comment by the resource it addressed. All demographic and comment codes were manually entered in grid blocks stamped on copies of the letters and transcriptions. We considered multiple responses from the same person as one response.

Another team of employees entered and stored the coded information into a computerized data base. We developed reports and statistics through queries available in a software program.

#### Demographic Summary

Most respondents (84%) were individuals speaking on their own behalf. Persons representing commodity (4%), permittee (3%), and environmental (2%) interests together comprised almost 10% of the respondents. The remainder were scattered among the other categories shown in Table U-1.

**Table U-1. Respondent Profile**

<b>Respondent Category</b>	<b>Number of Respondents</b>	<b>% of Total Respondents</b>	<b>Number of Comments</b>	<b>% of Total Comments</b>
Individual	1,188	84	2,158	51
Permittee	41	3	250	6
Public Agency - Local	14	1	79	2
Public Agency - State	7	1	271	6
Public Agency - Federal	8	1	133	3
Elected Official - Local	10	1	38	1
Elected Official - State	1	- <sup>1</sup>	11	-
Elected Official - Federal	1	-	8	-
Conservation/Environmental Group	23	2	433	10
Academic Group	1	-	3	-
Professional Society	2	-	69	2
Civic Group	7	-	24	-
Business Group	19	1	77	2
Commodity Interest	63	4	509	12
Service Interest	1	-	1	-
Motorized Recreation Interest	4	-	30	1
Riding, Hiking Interest	2	-	6	-
Hunting and Sports Groups	3	-	35	1
Tribal Government	1	-	4	-
Other	7	1	62	1
Forest Service Employee	8	1	63	1
<b>Total</b>	<b>1,411</b>	<b>100</b>	<b>4,264</b>	<b>100</b>
<sup>1</sup> Less than 1%				

Most of the comments (51%) came from individuals; and almost one-fourth came from commodity and environmental groups. The remaining 25% of all comments were scattered among the other categories.

Most comments came from California (84%), with Oregon a distant second. Table U-2 displays the source of comments and respondents grouped by geographic areas:

**Table U-2. Geographic Profile**

Geographic Profile	Number of Responses	% of Total Respondents	Number of Comments	% of Total Comments
Northern California (north of Sacramento)	884	63	2,435	57
California (remainder of State)	230	16	1,143	27
Oregon	104	7	300	7
Nevada	17	1	118	3
Other states not listed above	145	11	219	5
Unknown	31	2	49	1
<b>Total</b>	<b>1,411</b>	<b>100</b>	<b>4,264</b>	<b>100</b>

Most respondents (76%) submitted form letters or modified form letters, i.e., letters which contain the same or virtually the same information with slight modifications. Fifteen percent of the respondents submitted individual letters and post cards, while 7% offered testimony at public hearings.

Fifty-eight percent of the comments came from a combination of individual letters, post cards, and letters with enclosures (Table U-3). Because coders considered form letters as one comment per individual, 15% of the comments were derived from form letters with another 19% from modified form letters, despite the high number of respondents submitting them. Comments from oral testimony comprised 8% of all comments.

**Table U-3. Form of Response Profile**

Form of Response	Number of Respondents	% of Total Respondents	Number of Comments	% of Total Comments
Letter or Postcard	221	15	1,899	45
Letter with Enclosure	16	1	547	13
Form Letter	644	44	639	15
Modified Form Letter	480	33	815	19
Petition	1	. <sup>2</sup>	2	-
Resolution	5	-	20	-
Oral Comments from Public Hearings	105	7	342	8
<b>Total</b>	<b>1,472<sup>1</sup></b>	<b>100</b>	<b>4,264</b>	<b>100</b>

<sup>1</sup>Because many people offered multiple responses (e.g. one person may have submitted a letter, form letter, oral testimony, and signed a petition), the number of respondents in Table U-2 differs from that in the Table U-3.

<sup>2</sup> Less than 1%

## Comment Summary

During comment analysis, coders grouped individual comments into one or more resource element codes. Most comments addressed issues associated with wildlife, range, timber, social environment and economics, recreation, water, planning process and data, and public involvement.

Form letters and modified form letters are discussed at the end of this section. Comments from these forms of response are not included in the following tables.

Issue	% of Total Comments
Wildlife	15
Range	14
Timber	13
Social Environment and Economy	9
Recreation	9
Water	9
Planning Process and Data	7
Public Involvement	5
Other Issues	19
<b>Total</b>	<b>100</b>

Table U-4 displays numbers of all comments by resource category. If a respondent addressed multiple resources in a single comment, the comment was assigned one to six resource codes. As a result, the total number of comments in the table below reflects multiple coding.

**Table U-4. Comments by Resources**

Resource Code	Definition	Number of Comments <sup>1</sup>	% of Total Comments
010	Social Environment	17	- <sup>2</sup>
020	Economics, General	71	2
021	Economic Value of Forest	55	1
022	Receipts to Counties	53	1
023	Budget, Forest	44	1
024	Community Stability	59	1
025	Local Economy, Jobs	95	2
030	Resource Management, General	74	2
031	Commodity Production	32	1
040	Air Quality	5	-
050	Diversity, Vegetative and Biological	41	1
051	Old Growth Forests	58	1
052	Seral Stage Modelling	6	-
060	Facilities, General	9	-
061	Forest Service Roads	34	1
062	Road Construction	13	-
063	Road Maintenance	2	-
065	Trails	25	1
066	Road and Gate Closures	13	-
070	Fire and Fuels General	37	1
072	Prescribed Burning	30	1
080	Wildlife, General	126	3
081	Fish, General	68	1
084	Management Indicator Species	65	1
085	Other Wildlife Species	16	-
086	Goshawks, Raptor Rx	26	1
087	Modoc Sucker	53	1
088	Bighorn Sheep	21	1
089	Viable Populations	17	-
092	Threatened & Endangered, Rare Species	54	1
096	Sensitive Plants	45	1
098	Snags, Cavity-Nester Habitat	122	3
100	Deer Management	66	1
101	Deer Forage Allocation	34	1
102	Timber-Forage Rx	12	-
103	Deer on Private Lands	51	1
110	Forest Pest Management	15	-
111	Herbicides, Pesticides	28	1
120	Geology	4	-

<sup>1</sup> Form and modified form letters not included.<sup>2</sup> Less than 1%

**Table U-4. (continued)**

Resource Code	Definition	Number of Comments <sup>1</sup>	% of Total Comments
121	Soil, General	39	1
122	Soil Productivity	5	-
123	Soil Compaction	2	-
125	Landslides	2	-
126	Best Management Practices (BMPs)	12	-
130	Cultural Resources and Historic Sites	50	1
140	Energy, General	22	1
150	Lands, Adjustments, Exchanges	13	-
151	Power Transmission Corridors	39	1
153	Other Special Uses	7	-
154	Over-the-Horizon Backscatter (USAF Radar)	6	-
155	Right-of-Way and Easements	6	-
165	Law Enforcement	8	-
170	Minerals and Mining	48	1
171	Oil and Gas	11	-
172	Geothermal Activity	35	1
180	Range, General	369	8
181	Juniper Management	52	1
184	Grazing Fees	9	-
185	Transitory Range Use	15	-
186	Animal Unit Months (AUMs)	94	2
187	Forage Utilization	77	2
188	Wild Horses	20	1
190	Recreation, General	44	1
191	Developed Recreation	11	-
192	Dispersed Recreation	20	1
193	Off-Road/Off-Highway Vehicle Use (ORV/OHV)	48	1
194	Medicine Lake Highlands	15	-
195	South Warner Wilderness	52	1
196	Roadless Areas	119	3
198	Recreation Opportunity Spectrum (ROS)	42	1
201	Interpretive Services	13	-
210	Special Interest Areas & National Natural Landmarks (SIAs and NNLs)	21	1
211	Research Natural Areas (RNAs)	18	-
230	Timber Management, General	59	1
231	Silvicultural Methods	13	-
234	Timberland Suitability	59	1
235	Timber Values in Roadless Areas	2	-
237	Logging Systems	9	-
238	Utilization, Salvage	9	-
239	Salvage and the Snag Issue	10	-

**Table U-4. (continued)**

Resource Code	Definition	Number of Comments <sup>1</sup>	% of Total Comments
240	Reforestation	23	1
242	Long-Term Sustained Yield	12	-
244	Firewood	28	1
246	Timber Output Allowable Sale Quantity (ASQ)	122	3
247	Yield Tables	21	1
248	Even-age Management (includes clearcutting)	98	2
249	Uneven-age Management	31	1
250	Inventory	23	1
262	Big Valley Federal Sustained-Yield Unit	67	1
263	Vegetation Management (R5 EIS)	3	-
264	< 20 Timberlands (< 20 cu. ft./yr./ac.)	5	-
265	> 20 Timberlands	1	-
270	Visual Resource	42	1
271	Visual Quality Objectives (VQOs)	37	1
280	Water, Watershed	52	1
281	Water Quality, Sediment	71	2
283	Water Quantity, Production, Yield	9	-
289	Ground water	2	-
291	Water Rights	7	-
292	Lakes, Reservoirs	5	-
293	Meadows	6	-
295	Riparian Areas	190	4
297	Streamside Management Zones (SMZs)	34	1
298	Wetlands	22	1
299	Cumulative Impacts	16	-
300	Wild and Scenic Rivers	9	-
350	Public Involvement	118	3
355	Unresponsive to Public, Influenced by Special Interest Groups	107	2
370	Other - NEPA Regulations, No-Action Alt., Misc.	214	5
371	Environmental Concerns, General	26	1
372	Cumulative Effects, Except Water	3	-
373	Minimum Management Requirements (MMRs) Timber	2	-
374	MMRs, Wildlife	9	-
377	MMRs, Water and Soil	2	-
400	Plan Implementation	48	1
401	Data Base, FORPLAN	62	1
<b>Total</b>		<b>4,628</b>	<b>100</b>

The Forest received five types of form or modified form letters which we labeled F1 through F5. The coding team treated each form letter or modified form letter as one comment addressing many resources. Most form letters (84%) supported a commodity interest alterna-

tive called Save Our Communities (SOC), while the remainder (16%) favored the Conservationist Alternative which emphasizes environmental values. Table U-5 highlights the main points of each form letter.

<b>Table U-5. Form Letter Profile</b>			
<b>Form Letter</b>	<b>Number Received</b>	<b>% of Total Form Letters</b>	<b>Highlights</b>
F1	709	64	Maintain range forage allocation at or above current levels; maintain timber harvest levels at or above 75MMBF annually; obtain additional field data; manage land adjacent to wilderness and special areas under multiple use principles; discontinue snag recruitment; maintain T&E species; increase other (particularly game) species for economic benefit to dependent communities; improve recreation by developing campsites and fish and waterfowl habitats; do not clearcut near state highways; involve citizens in planning.
F2	38	3	Protect local community stability; maintain harvest levels at or above 75MMBF annually.
F3	174	16	Protect various roadless areas from logging, road construction and other development activities; do not clearcut; use single tree and group selection in harvesting; protect old growth eastside pine from harvest; use no herbicides; reduce grazing in riparian areas and South Warner Wilderness; protect critical habitat for several wildlife species; designate Medicine Lake Highlands as a recreation area; inventory and protect all archaeological sites.
F4	170	15	Maintain harvest levels at or above 75MMBF annual; discontinue snag recruitment; reinstate salvage harvesting; collect data addressing yields from selective harvest vs. clearcutting.
F5	20	2	Manage the Forest to protect the local economy; use Coordinated Resource Management Planning (CRMP) in forest management; rewrite riparian standards and guidelines; do not move T&E species to the Forest without assessing local impacts; maintain harvest level at 75MMBF annual; manage all areas with multiple-use principles except in cases where irreparable damage would occur; discontinue snag recruitment; monitor range trend to assess current allotment management; use a citizens' committee to formulate Forest Plan.
<b>Total</b>	<b>1,111</b>	<b>100</b>	



## Summary of Issues and Public Comments

The interdisciplinary team synthesized public comments to identify eight major issues: wildlife, range timber social environment and economy, recreation, water, planning process and data, and public involvement. Each issue consists of several facets. A summary of those issues and facets follows.

### Wildlife

*Individual species, groups dependent on similar habitat, computer modelling, monitoring, and Forest Service policy regarding habitat management.*

**Individual Species** - A few respondents recommended we include forage allocation for pronghorn at the EIS/Plan and allotment management planning levels. Concern was raised over the decline of the Likely Tables herd: respondents asked for causes and remedies. Some suggested wetland developments have contributed to decreases in sage grouse and pronghorn populations. Concern over the decline of sage grouse prompted a few respondents to suggest that other species requiring similar habitat may also decline.

Some people expressed concern that management activities are allowed within bald eagle habitat. Comments from commodity-oriented groups suggested that management constraints for goshawks were excessive, while others felt they were inadequate. While some people felt we are not managing enough habitat and snags for the pileated woodpecker, others felt that the species is not an ecological indicator for old growth.

Several comments on fish management came from State agencies and sport fishermen groups. Some suggested that fisheries are not managed at the same levels as other resources and that they should be managed at or near historic levels. Some said the procedure for monitoring fish habitat is insufficient. Many respondents heatedly opposed the Modoc sucker and rejected direction to eliminate existing fisheries to promote their habitat, particularly in Willow Creek. However, several people said we do not emphasize management of Lost river and shortnose suckers, and wanted stronger monitoring guidelines. Goose Lake redband trout concerned some respondents who felt that we should handle this fish as a sensitive species.

Several people wanted the sandhill crane included as a MIS (management indicator species), and provided guidelines for its habitat and range management prac-

tices which allow successful reproduction. Many expressed support for managing California bighorn sheep in the Warner Mountains. Most comments stated that bighorn and domestic sheep are incompatible and requested that we remove livestock from bighorn ranges. Permittees suggested we use the Experimental Stewardship Program to resolve conflicts. *[In late 1987 and early 1988, all bighorn sheep in the Warners died from a bacterial pneumonia, probably transmitted by domestic sheep or goats.]*

**Deer and Livestock Forage** - Permittees and the California Department of Fish and Wildlife contributed several opinions on forage allocations between livestock and deer. Some respondents felt the direction is not adequate to meet forage requirements for deer. Others felt that the information is insufficient to determine whether competition is a problem. Livestock grazing interests criticized the deer forage allocation computer model as an inadequate tool for displaying forage requirements. Other organizations and individuals supported the model but felt the allocations for deer are insufficient.

In a related issue, individuals and permittees heatedly complained of deer on private land. A representative comment said, "The reduction of livestock grazing privileges on the Forest to increase deer numbers would also result in increased deer depredation of alfalfa fields during the winter months."

**Snags** - Some organizations and individuals questioned assumptions made in snag computer modelling. Others asked for the source of minimum management requirements (MMRs) and questioned their validity. The timber industry strongly opposed snag management because they felt the volume lost and the cost are too high to warrant the program. In particular, many opposed creating snags from live trees, although a few individuals and organizations supported this direction.

**Wetlands** - While one group opposed livestock grazing in wetlands because of potential adverse impacts to species dependent on them, another group felt that grazing reductions should be balanced with livestock needs.

**Diversity** - Respondents said that diversity requirements are not sufficiently addressed for non-commercial forest and range vegetation communities. They believed management prescriptions would alter existing stands of sagebrush, bitterbrush, juniper, and other species to

younger seral stages. Some felt that the requirement to maintain a minimum of 5% of major wildlife habitat relationship timber types in each seral stage and size class is excessive. Conversely, other respondents said this level of management is insufficient to maintain viable populations of species dependent on those habitats.

**Old Growth Habitat** - Some people felt that requirements and allocations of old-growth habitats for species which depend on them are vague. They were concerned that no guidelines are offered for MMRs for species dependent on old growth habitat. A few stated that declines in old growth and associated species are a violation of federal law. Several respondents said old growth allocations are excessive, while others held the opposite view.

**Viable Populations** - Many comments from environmentalists and CDFG said decreases in populations of some species would endanger their viability. Some suggested that viability should include both spatial distribution and population size as factors to insure against loss of a species through catastrophic events.

**MIS Concept** - Some respondents said using management indicator species is an inadequate tool for assessing habitat conditions for other species. Several individuals and organizations suggested changes and additions to the current MIS list.

## Range

*Deer and livestock forage allocation, range condition, juniper management, grazing fees, forage utilization, and wild horses.*

**Deer and Livestock Forage Allocation** - Permittees, State agencies, and commodity interest groups were among the most vocal concerning forage allocation. A consultant hired by range interests disputed our deer forage requirements and dietary overlap assumptions. Many respondents charged that the Forest is managing for deer herd objectives and the expense of livestock grazing. In contrast, the Oregon State Department of Fish and Wildlife suggested that livestock grazing on deer winter range should be discontinued after June 30. The Resources Agency of California charged that wildlife associated recreation does not receive forage allocations commensurate with its benefits to the public. They argued further that we indicated a bias toward livestock and against wildlife, which is not in the best public interest.

Environmentalists said pronghorn and deer should be managed for improved habitat trend rather than for forage allocation. Some were concerned that our efforts

to improve ecological range condition would likely decrease the very species important to the deer diet (e.g., mahogany, lupine, and cheatgrass), and thereby decrease the carrying capacity of deer spring ranges.

**Range Condition** - Permittees preferred that range condition improve through structural and non-structural improvements rather than at the expense of livestock reductions. They insisted that forage allocation remain at current levels. In direct opposition to that philosophy, environmentalists, the California Native Plant Society, and CDFG said that reductions in grazing must be enforced to bring all riparian and range areas up to good condition. In even stronger language many concluded that we must vigorously improve range conditions by excluding all livestock from riparian and wilderness areas. In addition to improving range condition in the Wilderness, environmentalists said that only exclusion in that area will eliminate conflict with recreation and bighorn sheep. [Note: since the draft documents were issued, the entire bighorn sheep herd in the South Warner Wilderness died of bacterial pneumonia.] From another perspective, one permittee said that some wilderness users menace livestock and ranchers by harassment and vandalism.

Several respondents concluded that the key to range management is through allotment management plans (AMPs). But environmentalists felt that the public has as much right as permittees and state agencies to participate in management decisions outlined in AMPs, and they demanded that the Forest develop a process to involve the general public. Others recommended we use the Experimental Stewardship Program, technical review teams, or coordinated resource management planning to develop AMPs.

Several comments faulted us for omitting site-specific range improvement proposals and criteria for resolving conflicts between livestock and other uses.

**Juniper Management** - Almost exclusively a local concern, some respondents said we should increase and encourage juniper cutting for firewood, wildlife needs, and forage production.

**Grazing Fees** - Of those who made comments on grazing fees, all suggested that the current fee system subsidizes a few individuals at taxpayers expense. They suggested permittees should pay market value for grazing privileges, and costs to the government should be covered by fees.

**Forage Utilization** - Range interests felt that the standards and guidelines for forage utilization are too stringent and infeasible. Permittees said that the Forest

Service should provide water sources in uplands before excluding livestock from riparian areas. One consultant questioned our data and disputed our assumptions about range condition and forage production.

**Wild Horses** - Virtually all comments on wild horses opposed current management. If allotments within horses territories are in the worst ecological condition of any on the Forest, as stated in the documents, then numbers of animals should be reduced commensurate with the ecosystem they are affecting.

## Timber

*Inventory and yield tables, even-age vs. uneven-age management, salvage and firewood, allowable sale quantity (ASQ), and suitable timberland.*

**Inventory and Yield Tables** - Supporters of the SOC alternative believed that inventory plots are insufficient and, therefore, produce inaccurate yield tables. In particular, they felt that the sample size is too small and requested better accounting of age class distribution. While a few commented that a 52MMBF annual ASQ exceeds the long-term sustained yield capability of the Forest, many others said that 75MMBF or even 90MMBF is possible. One commented that the Plan fails to meet Congressional mandates for sustained yield.

**Even-age vs. Uneven-age Management** - Virtually no one thinks the Forest Service should clearcut, because they believe it destroys visual quality, wildlife habitats, waterways, meadows, genetic diversity, and old growth trees; it is inappropriate in recreation areas; it violates the principle and intent of the Big Valley Federal Sustained-Yield Unit; it encourages erosion; and it creates tree farms of sterile even-age stands. A few people favor clearcutting to increase deer forage.

Some expressed opposition to establishing conifer plantations, and others said reforestation (especially on the east side of the Warner Mountains) would be unsuccessful. Another person felt that the timber-forage prescription would not work because site preparation was not thorough and we need to meet other resource objectives on every acre.

Most respondents favored single-tree or group selection because they believe it insures stand health and sustained productivity; it is more attractive than clearcutting and plantations; and it maintains diversity, growth, and yield. Those who opposed uneven-age man-

agement questioned the Forest's data, and suggested that applications should be site-specific.

**Salvage and Firewood** - Respondents who favored reinstating the salvage program believe that it is compatible with snag retention. They feel that trees unsuitable for lumber should be used for chips and firewood; they consider snags left for wildlife values as a waste and a fire hazard. Respondents who opposed salvage harvesting believe that cutting trees for firewood reduces shelter and food for cavity-dependent wildlife. They also said firewood burning could become a pollution concern, so its use should not be encouraged. Some commented that the Plan should include biomass harvest standards.

**ASQ** - Comments ranged from one extreme of allowing no logging to the other of harvesting every available acre on the Forest. Those on the conservative end are upset that the Forest would propose standards and guidelines creating bare mineral soil, windrowing and yarding culls. They want all timber production zones to be managed for old growth, and they question why the Modoc can harvest < 20 lands when other forests do not.

Respondents favoring a high ASQ want all possible acres managed intensively for timber production, including < 20 lands. Instead of managing < 20 lands for old growth, they said < 20 lands are ideally suited for uneven-age stands and should be so managed to contribute to the total ASQ. Some people said they did not want below-cost timber sales, and that each sale must produce net public benefit. Others are concerned a species mix favoring mixed conifer over eastside pine will reduce revenues to the counties.

**Suitable Timberland** - Many comments suggested that our prescriptions are too restrictive because of the suitable timberland base we have reserved for other resource values. They feel that diversity and a high ASQ are compatible if harvest systems are logically applied. They complained that the Forest Service is more concerned with visual quality than is the general public. Several people refuted our contention that withdrawing suitable land around wilderness areas and proposed historic sites, and for visual and dispersion benefits, is worth the foregone volume of several million board feet of timber. Others do not trust data base information, nor the solutions generated by FORPLAN. Some respondents said that the Forest cannot implement the Plan because several prescriptions are technically infeasible (e.g., cable logging, broadcast burning, retention requirements) for the terrain for which they are prescribed.

## Socio-Economic

### *Social groups and economics within the Forest's sphere of influence.*

Individual respondents, commodity interests, permittees, elected local officials, and public agencies contributed the most comments on social and economic issues. Reviewing the social analysis, some respondents said the Plan fails to accommodate hunters, anglers, and sightseers while overracting to the few users who want only solitude. Some charged that we emphasize non-local recreationists at the expense of local jobs; and others added that most of the recreation dollars are spent in urban areas before the recreationists reach the Modoc area. They felt that tourist dollars could never make up the money lost from timber and businesses supported by that industry. In an opposing view, one comment charged that despite the fact that recreation provides the highest economic benefit, we give it little consideration in comparison to timber and livestock. Some disagreed with our conclusions that alternatives would benefit or negatively impact particular social groups.

Most people commenting on our economic analysis or the affect of the Plan on the local economy were overwhelmingly opposed to all alternatives, including the Boards of Supervisors for Modoc, Lassen, and Siskiyou Counties, and the Alturas City Council. Many respondents complained that we do not analyze the various alternatives' effects on the local economy, and others offered their assessment that the Plan would create economic hardship and destroy community stability. They were particularly concerned that reduced AUMs would force ranchers to terminate small livestock operations, and that reduced harvest levels would threaten timber-related businesses and severely curtail receipts to counties.

While some respondents felt that the Plan is weighted in favor of wildlife at the expense of social and economic issues, others felt that if the value of wildlife were fully realized, this would exceed monies obtained by other resource practices. Several felt that the data are too old or inaccurate to reflect the current situation or project credible impacts resulting from Plan implementation. Specific comments reflecting objections to our analysis suggested that (1) the value of the grazing permit to the rancher is never considered; (2) it is deceptive to combine willingness-to-pay values with cash receipts in a public net benefit analysis; and (3) 1982 should not have been used as the base year.

## Recreation

### *Dispersed and developed recreation, off-highway vehicles (OHV), roadless and roaded areas, and the South Warner Wilderness.*

*Developed and dispersed recreation* - Several people said developed sites are suffering from overuse and environmental degradation, and others wanted a more aggressive program for developed recreation. Comments regarding dispersed recreation outnumbered comments on developed recreation. Respondents wanted us to ensure that dispersed recreation sites are protected, that environmental quality is preserved, and that pleasure driving opportunities along scenic driving routes are increased. General comments on recreation expressed concern for the quality rather than the quantity of recreational experience. One respondent asked us to discourage competitive recreational events on national forest lands.

*OHV Use* - On one hand, respondents from four-wheel drive and OHV clubs asked us to keep the status quo or open more parts of the Forest to OHV use; and a couple respondents commented that opportunities for mountain bike travel is not addressed in the Plan. On the other hand, environmentalists asked us to take a stronger stand in controlling OHV use and to protect the fragile environment from indiscriminate and uncontrolled use. Other comments said that neither the narrative nor the OHV map is explicit.

*Roaded vs. Roadless Areas* - Exhibiting no middle ground on this facet, respondents either opposed roadless areas of any sort or asked us to preserve all existing semi-primitive non-motorized areas.

*South Warner Wilderness* - A few respondents asked us to designate more wilderness areas and expressed a growing desire for more primitive and semi-primitive recreation opportunities. Some wanted more direction concerning wildfire and prescribed burning in the South Warner Wilderness, including effects on air quality, watershed, and visual quality. Several respondents discussed grazing livestock in the Wilderness, most overwhelmingly against this practice. People also commented that management activities outside the Wilderness boundary could affect the environmental quality within.

## Water

### *Riparian areas, water quality, watershed.*

**Riparian Areas** - We received nearly 200 comments on riparian areas, most of which came from individuals, permittees, State agencies, and conservation groups. Several respondents felt that timber harvesting, oil and gas development, firewood cutting, and grazing within riparian areas should be prohibited. Others suggested improvement methods, such as placing juniper in gullies, constructing small rock check dams, and excluding livestock by fencing. While one group thought that fencing is the best way to improve riparian resources, another group viewed fencing as unsatisfactory and preferred improved grazing strategies.

Some charged that Forest objectives for riparian areas are inadequate. Numerous respondents generally disagreed with the Plan's direction to improve riparian areas while continuing to allow grazing. They particularly disagreed with the riparian prescription and standards and guidelines: one group felt they are too lenient, and another too restrictive. Some respondents asked us to clarify or redefine riparian areas and streamside management zones.

Several respondents oppose vegetation type conversions within riparian areas to enhance riparian-dependent species. Others felt that the Plan should include many more miles of streams which require riparian prescription protection.

**Water Quality** - Many respondents were interested in water quality, particularly local and State agencies, and conservationist and commodity groups. One comment suggested that logging debris could be substituted for natural woody debris. Another asked us to include benthic invertebrate and stream embeddedness sampling in our monitoring plan. Several respondents felt that wildlife, fish, and downstream water users would be adversely affected as the Forest applies for new water rights. Some people thought that requirements for shade on intermittent streams should only be applied to perennial streams.

Many respondents want us to meet State water quality objectives within one or two decades versus the proposed four decades. A respondent said the State Water Quality Board objectives do not apply to non-point source pollution, such as grazing. Another said that our data do not support the claim that 37% of the Forest's water does not meet State water quality objectives.

**Watershed** - Of the respondents commenting on watershed, local, State, and federal agencies were very vocal. Some respondents felt that Best Management

Practices (BMPs) would not adequately protect lands with a high potential for erosion. One person said that if the Forest allows diversions from streams or releases from reservoirs, fisheries would be degraded. Several others were concerned that only timber activities are constrained by cumulative watershed impacts, and not grazing. Some felt that individual watersheds and water quality will not be adequately protected or given priority for recovery. One respondent said we have not adequately considered impacts to sensitive watersheds because we modelled cumulative watershed impacts by management area instead of by watershed.

One respondent suggested rock riprapping should be used very sparingly for stream bank stabilization, while another said water bars should be installed every 100 linear feet Forest-wide. One comment asked us to ensure that excavated material is kept out of live streams.

## Planning Process and Data

### *NEPA requirements, FORPLAN and other computer models, data base.*

**NEPA** - Most comments on the planning process came from individuals, local agencies, environmentalists, and commodity interests. Several people charged that we failed to meet NEPA or NFMA requirements because we did not develop a No Action alternative reflecting "the current level of goods and services provided by the unit and the most likely amount of goods and services expected to be provided in the future if current management direction continues" (36 CFR 219.12(f)(7)). Our Current Management (CUR) alternative uses the same yield tables, minimum management requirements (MMR) constraints, and timberland suitability requirements as all other alternatives. However, respondents wanted us to use assumptions and production levels required by the 1975 Timber Plan. Connected with this issue is the overwhelming concern that 1982 should not have been used as the base year in analyzing the CUR alternative. Because 1982 was a depressed year for the timber industry, respondents felt that using this year made all other alternatives look better than they would have against an historical average.

Commodity interests were particularly vocal about MMRs, suggesting that they are neither required or necessary, and that their application narrows the range of alternatives and resource outputs.

Most people commenting on monitoring stressed the importance of this phase of planning, or questioned feasibility in an era of decreasing budgets. One person asked us to emphasize both surveying and monitoring of

sensitive species and communities. Another asked us to add provisions for monitoring wildlife habitat in firewood use areas. Modoc County Cattlemen's Association suggested that individual areas should be managed on a case-by-case site-specific basis.

*FORPLAN, Other Computer Models, Data Base* - Commodity interests and consultants criticized our FORPLAN and other computer models. They charged that constraints imposed on the models (PNV, budget, Big Valley Federal Sustained-Yield Unit harvest level, visual quality objectives, and dispersion) as well as "hardwired" values (old growth, visual retention acres and uneven-aged management acres) skewed solutions and rendered them worthless. They were concerned that we included constraints in models for wildlife and recreation, but not for local timber and livestock uses.

They believe that data from yield tables and inventories are flawed, as well as the data base itself. They said we needed to assess the cumulative economic affects of timber programs on adjacent national forests and private land. And they requested that we compare the SOC alternative with all other alternatives proposed in the DEIS.

CDFG and hunting and sports groups said that using demand cutoffs for valuing wildlife, wildlife and fish user days, and recreation visitor days biases the planning process in favor of commodity production. They said we should have used the number of applicants for deer hunting permits as a measure of demand. By using num-

bers of deer numbers as a measure of supply, we prematurely triggered demand cutoff.

## Public Involvement

*Use of public opinion during planning; local versus national considerations in forest management.*

Many respondents were concerned, disappointed, or angry that the Forest did not involve them or solicit their opinions throughout the planning process and in developing the DEIS and Plan. Permittees and other commodity-oriented groups were especially vocal on this subject. Many suggested we aggressively seek their participation in developing the final documents. Others asked us to work with Modoc Cares (a local organization comprised of commodity, government, and education groups) and local communities; offer workshops; or form committees to resolve issues through consensus, resolution or negotiation.

Local needs versus national desires is another facet of public involvement. Some people believed the Draft Plan emphasizes commodities (particularly timber harvest and livestock grazing) over amenity and environmental values (cultural resources, wildlife, scenic values, protection of soil and water and recreation). Others expressed the opposite conclusion. Some respondents reminded us that national forests are for all the people and, therefore, national needs should be satisfied first. Others demanded we consider local needs over national desires.

## **List of Respondents**

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## Respondent Names and Identification Numbers

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(In alphabetical order)

1363	Aberle, Walt	0711	Atkins, Deborah	1128	Beck, Jon S.
0845	Acker, Newton	0087	Audubon Society, Mt. Shasta	1126	Beck, Teresa
1307	Adams, Jerry	1018	Audubon Society, National	0815	Beck, Tom
0045	Adams, Lois	0545	Audubon Society, Wintu Chapt.	0546	Becker, Stephen
0663	Adelee, C.	0453	Babushkin, Michael	0686	Beckwith, Eric
0890	Adin Building Materials	0095	Bacher, Mrs. F. A., Jr.	0989	Bedeur, B.
0758	Adkins, Alan	1053	Bailey, Cliff	1405	Beeman, Fred
0759	Adkins, Sharon	0858	Bailey, Ed	0497	Beeson, C. Dwight
0831	Albaugh, Albert & Elizabeth	0807	Bailey, Paul	0532	Beeson, Joanne
0327	Albaugh, Allen	0503	Baird, Bill	0855	Behning, Terry
1084	Albaugh, Barbara	1232	Baker Ruth	0811	Bell, Luanne
1072	Albaugh, Dale	0059	Balcomb, J.B.	1256	Bendix, Gerald
0080	Albaugh, Ed	1197	Baley, Rose	1102	Bendix, Gerhart
0747	Allan, David	0760	Balkonek, Gregory	1101	Bendix, Louie
1402	Alliance For Env and Resources	0877	Baltierra, Kim	1199	Bendix, Ursula
1045	Almanor Forest Products	0635	Bannlas, Kurt	0257	Bendsen, Vern
0122	Alosi, Jeanette	0675	Barbuck, Walter	1122	Benner, Jack
0755	Amen, Ralph	0775	Barlese, Jerri	1083	Benner, William
0896	Amen, Sturges, Jr.	1205	Barnard, Dale	0488	Bennett, Beatrice
1216	American Rivers	1341	Barnes, Robert A.	0535	Bennett, Larry
1062	Amrhein, K.	1061	Barnett, Melody	0368	Bennett, Nathan
0034	Andaloro, Louis	0506	Barrera, Julia	0465	Bennett, Robert
0167	Anderson, Byron	1312	Barron, Frank	0882	Benolt, Darlene
0254	Andresen, Don	0979	Barry, Patricia	0273	Benson, Arlene
0850	Angus, Casey	0236	Base, Jerry	0439	Berau, Donald
1303	Applebaker, Dan	0398	Bates, James	0883	Berenson, Jeff
0223	Arias, Marilyn	1169	Bates, Marty	0118	Berrier, E.a.
0853	Arixele, S.	0231	Bates, Michael	0942	Berryessa, Eduard
1327	Armone, Wayne	1027	Bath, Amy	0769	Bethel, Skeeter
1246	Arms, K. Paul	0988	Bath, Fred and Shirley	1141	Bettendorff, Craig
0963	Armstrong, Arthur	0735	Batista, Margarite	0089	Beyeler, Edward
1187	Armstrong, David	0471	Bavetta, Alan	0338	Bicycle Trails Council
1182	Armstrong, George	0628	Bayer, Matthew	0600	Bidwell, Brooke
1111	Armstrong, William	1339	Bd. of Spvrs., Santa Cruz Co.	1391	Bidwell, Gene
1186	Armstrong, Yvonne	1340	Bd. of Spvrs., Siskiyou Co.	0602	Bidwell, Greg
0502	Arreche, Frank	0268	Bd. of Supervisors, Lassen Co.	0772	Bidwell, Jeff
0659	Arrow Laminates, Inc.	1251	Bd. of Supervisors, Modoc Co.	1385	Bidwell, Marsha
0562	Arviri, Robert	1294	Bd. of Supervisors, Shasta Co.	0483	Bidwell, Meridean
0457	Ashbrook, Robert, Jr.	1203	Bean, Bill	0601	Bidwell, Pam
		1127	Beck, E. Andrew	0598	Bidwell, Ross
		1129	Beck, Erik A..	0487	Bidwell, Sarah

0599	Bidwell, Victoria	0272	Brooks, Paul	0709	Calif. Cattlemen's Assn.
0481	Bidwell, Wallace	0297	Brouillard, Edward	1057	Calif. Licensed Foresters Assn
0690	Bieber, Lillian	0974	Brown, Ann	1214	Calif. Native Plant Society
0219	Big Valley Lumber	1244	Brown, Chet	1295	California Trout
0993	Big Valley Lumber Co., Sales	0384	Brown, Darrell	0250	Camara, Tom
1069	Big Valley Lumber, Amrhein	0243	Brown, Eleanor	0581	Camarata, Chris
1358	Big Valley Unified School Dist	0031	Brown, Eugene	0426	Camp, Leonard
0179	Binderup, Charles	1231	Brown, Gary	0622	Campau, Michelle
0561	Binflowspef, S.	0771	Brown, Ronald	0288	Canada, Dayle
0830	Bird, Ben	0412	Bruce, Ed and Pauline	0053	Cannon, E. A.
1075	Bird, Karen	0171	Bruce, Joe	1191	Cantrall, Loyd
1360	Bird, Ken	0898	Brunnemer, Dave	0498	Cantrall, Mrs. Walter
0829	Bird, Stu	0697	Bucher, Doug	1322	Carey, J. Peter
0583	Bishop, C. M.	0169	Buckley, John	0158	Carlton, Alan
0290	Blakely, Floyd	1310	Buffum, Nancy	1347	Carr, Brian
0185	Blanc, Gary	0097	Bulger, Debbie	1137	Carr, Helene
0633	Blasko, Lawrence	1245	Bureau of Land Management	0932	Carrick, Rollie
0079	Bliss, Thomas	0704	Burk, Frank	0046	Carroll, Nancy
0931	Blizzeard, Richard & Waundra	0533	Burk, Joyce & Peter	1400	Carter, Craig
0491	Blust, Dale	0634	Burke, James	1046	Carver, Jim
0383	Bluy, Tim	0066	Burkhardt, Leonard	0403	Cash, June
0195	Board of Education, Modoc Co.	1372	Burnette, Robert	1154	Caster, Paul
0040	Bogaard, Joe	1414	Burnette, Robert	1140	Cates, Clifford
0456	Boluolshi, Kenneth	0639	Burns, E. A.	1139	Cates, Joan
0454	Bonewitz, Susan	0130	Busby, Stuart	0510	Cervantes, Anthony Sr.
1352	Bonneville Power Adminis.	0319	Bushey, Bob	0511	Cervantes, Frances
0054	Boss, Bruce	0637	Buth, Gary	0578	Cervantes, Jesse
0681	Bouquin, David	1285	Byrne, Daniel	0577	Cervantes, Jorge
0766	Bouse, James	1272	Byrne, Elizabeth	0357	Cervantes, Maxia
0164	Boyer, Karen	0104	Byrne, Kathleen	0358	Cervantes, Tony, Jr
0431	Bradberry, Kenneth	1403	Byrne, Michael (Byrne Co.)	1383	Chace, Lesley
1288	Bradshaw, Lloyd T.	0364	CA - Resources Agency of,	0521	Chacon, Trinidad
1162	Bradshaw, Roy	0672	CA Board of Forestry	0869	Chady, Michael
0432	Brail, Robert	0549	CA Mining Assn.	0048	Chamber of Commerce, Adin
0277	Brear, David	0548	CA Sportfishing Protect. Allia	1399	Chamber of Commerce, Bieber
0177	Breuer, Sheryl	0947	Cagle, Robert	0091	Chamber of Commerce, Fall Riv.
0856	Brewer, Diana	0400	Cain, J. W.	0920	Chamber of Commerce, Modoc Co.
1052	Bridenstine, Mitch	1095	Cain, Pat	0982	Chamber of Commerce, Modoc Co.
0030	Bridges, George A.	0303	Calandor Pine Corp.	0067	Chamber of Commerce, Tulelake
0033	Brigham, John N.	0478	Caldwell, Donna	0202	Chamberlain, R. H.
0736	Brock, Calvin	1176	Caldwell, Phyllis	0948	Chapin, James
0765	Brock, Randy	0391	Caldwell, Richard	0292	Charon, Dennis
0196	Broda, Margaret	0410	Calfarm Insurance, Alturas	0626	Cheney, Dorothy
1037	Brooks, Anthony	1267	Calfarm Insurance, Tulelake	0683	Chiappara, Corrinne
0857	Brooks, Michael	1235	Calif. Assn. of 4WD Clubs, Inc	0421	Chism, Betty

0422	Chism, Harold	0793	Country Store, Saunders	0836	Darst, Tony
0084	Choate, Leonard	0041	Coury, Linda	0727	Dart, Bill
0961	Choban, Sally	0518	Cox, Alvin	0117	Davidson & Horwitz, Lella & An
1271	Christian, Dorothy	0206	Cox, Douglas	1337	Davis Creek Mercantile
0188	Chrysler, Barbara	0768	Craig, Gary	0538	Dayan, Tom
0374	Chrysler, Jim	0935	Craig, Gary L.	0782	Dayton, Harold
1269	Citizens Comm to Save Public	0157	Craig, Julia	0110	De Cocto, Anthony, Jr.
0135	City Council, Alturas	0934	Craig, Mary	0776	Deatley, Tom
0886	Cialla, Bob	0796	Crane, Barbara	0224	Deaton, Robert
0094	Clark, Ann	0799	Crane, Carolyn	0904	Decolto, Katy
0706	Clark, Gerald	0779	Crane, Gregory	0905	Decolto, Tim
0028	Clark, Kelley D.	1301	Crane, John	1410	Dederick, John
1079	Clark, Patricia	0797	Crane, Michelle	0800	Dedmon, Doug
1078	Clark, Richard	1298	Crane, Ray	0941	Dedmon, Virginia
1160	Clearwater, Donald	1311	Crane, Robert	0944	Dedmon, William
0475	Clement, Allison	0790	Crane, Terry	0274	Defenders Of Wildlife
0937	Clifton, Wm. J.	1005	Crawford, Clad	0646	Degra, David
1225	Clough, Janice	0986	Crawford, Patricia	0595	Dehtley, Richard
0133	Coad, Ardythe	0946	Crawford, William	0636	Delbondro
1040	Cochrane, Guy	0743	Cren, Shiela	0901	Delose, Errol
0748	Cockrell, Will J.	1180	Crenshaw, David	0874	Denesian, William
1292	Code, Karen	0843	Crenshaw, Karen	0565	Denney, Ed
1051	Coffelt, Burr	0276	Criss, Alice	1089	Dennis, Jennifer
0641	Cole, Byron	0275	Criss, Lloyd	1086	Dennis, Michael
0271	Collins Pine Company	1370	Criss, Lonnie	0002	Department Of Agriculture
0390	Collins, Cecil	0787	Criss, Ronald	0997	Dept. of Energy, Western Area
1149	Columbia Plywood	0463	Criss, Sharon	1317	Dept. of Fish & Wild., Oregon
0572	Contreras, Anastacio	0788	Criss, Tracy	0370	Derner, Fred
0573	Contreras, Teresa	1394	Cron, John	0945	Derner, John
1382	Cook, Carolyn	0082	Crossley, Jean	0090	Deutschman, Elaine
0376	Cook, Lonnie	0702	Crowell, James	0369	Dewitt, Floyd
1237	Cook, Walter	0147	Crum, Donald	0852	Derwarte, Steven
1254	Cook, Wesley	0154	Cullins, Vaudine	0490	Dillard, Jane
1153	Coop. Exten. Service, Delmas	0655	Culpepper, Larry	0136	Dillard, Joe
0703	Coop. Exten. Service, Savage	0694	Cunnison, R.	0492	Dillard, Joseph H.
0647	Cooper, Dufur	0132	Curran, Denny	0235	Dillon, Philip
1398	Copp, Jim	1190	Curry, William	1096	Ding, Steven
1144	Copp, Paula, K.	0477	Curtis, Edward	0550	Dixon, Clevon And Anola
1145	Copp, Tim	0123	Curtis, Ray	0229	Doan, Greg
1224	Coppedge, Evelyn	0190	Da Silva, Peggy	1200	Dodge, Rodney
0676	Corbin, Beth Lowe	0798	Daniel, Crane	0710	Dollarhide, Dee
0714	Cores, Bill	0967	Daniels, Jennifer	1007	Dolmage, William
0166	Cornelius, Al	1335	Darby, Thomas	1342	Donnelly, Bernard
0344	CORVA (Calif ORV Assn)	1270	Darnell, Charles	0404	Dooley Lumber Co.
0228	Cory, Russell	0597	Darrow, Glen	0638	Dooley, Joe

1359	Doolittle, Senator	0263	Eppler, Gail	0786	Fulfer, Jeff
0408	Doss, Ronald	0958	Erquiaga, Alex Jr.	1221	G. Warrens Trust
0424	Dougherty Lumber	0745	Erquiaga, Bonnie	0013	Galley, Mark S.
0159	Dougherty, Raymond	0576	Erquiaga, John	1338	Gain, John
0298	Dowell, Waylon	0897	Eslingar, Bob	0953	Ganes, Glenn
0230	Doyon, Lorraine	1296	Espil, Tom	0405	Garate, Johnny
0720	Dragoo, Clyde	0698	Estill, Jack	0306	Garbutt, Geraldine
0718	Dragoo, Tanya	0540	Evans, David	0305	Garbutt, Phillip
0719	Dragoo, Theresa	0729	Fairchild, J. W.	1041	Gardiner, Ken
0960	Droscher, Paul	0011	Fall River - B.V. Cattleman's	0430	Garfield, Richard
0819	Dubal, Bob	0096	Faria, Tony	1396	Gaylord, Bill
0726	Duffy, Jerry	0980	Farm Advisor, Modoc Co.	0349	Geblock, Val
0957	Duncan, Bill	0930	Farm Bureau, Modoc Co.	0356	Gee, Calvin
1001	Duncan, Michael	0039	Felthouse, James W.	0547	Gee, Linda
0644	Dunham, Mike	0199	Fetters, Harold	0300	Gee, Warren
0868	Dunivin, Ray	1009	Fibreboard Corp.	0140	Gerig, Gertrude
0112	Dunn, K. W.	0249	Fischer, Lawrence E.	0142	Gerig, Janell
1173	Dunn, K. W.	1330	Fischer, Nancy	0144	Gerig, Oral
0434	Durch, Linda	0155	Fischer, Shirley	0699	Gerig, Peter N.
0208	Dustin, Tony	0749	Fish, Game, & Rec., Modoc Co.	0146	Gerig, Robert
1112	Eades (unreadable)	0813	Fisher, Fred	0141	Gerig, Tina
1247	Eades, Arlo	0127	Fisher, Judy	0143	Gerig, Vicky
1117	Eades, Edna	0925	Fisher, Marion	1274	Gerstung, Eric
1113	Eades, Katie	0833	Flackes, Dave	0061	Gerton, Les
1118	Eades, Lennie	0865	Flackes, Della	0873	Getke, Bob
1116	Eades, Scott	0191	Fleming, Harold	0429	Giblock, Edward
0656	Earley, Kathy	0322	Fleming, Marian	0688	Gibson, Jay
1397	Earnest, John	0192	Fleming, Phyllis	1021	Giffen, Craig
1306	Earnest, Marjorie	1206	Fletcher, Kenneth	0476	Gilgun, Michael & Linda
0480	Easley, Shirley	1376	Flournoy, Bill	0413	Gill, Kent
0197	Eaton, Perry	0919	Flournoy, Mrs. Donald	0247	Glan, Paul
0385	Economon, George	0805	Foley, Rick	0687	Glass Mtn. Pumice, Inc.
0396	Economon, Suzanne	0072	Foote, Donna	0381	Glenn, Dennis
1291	Edge, Nick	0674	Ford, Cheryl	0700	Gnibus, Laurie
0205	Edwards, Bob	0757	Forman, Mike	0965	Gomer, Colleen
1234	Elander, Eleanor	0153	Forno, John	1321	Gonzales, Cynthia
0312	Ellenberger, Derald	0016	Foster, Doug	1320	Gonzales, Darrell
0316	Ellenberger, Kathy	0362	Francis, Marc	1262	Good, Ron
0804	Ellenberger, Larry	1226	Frank & Majer, Ellen & Joseph	0417	Goodfellow, Mildred
0823	Elliott, Lloyd	1356	Frank, Alex & Abby	0418	Goodfellow, William
1290	Elzea, Chris	0038	Freitag, Fritz & Elizabeth	0705	Gorzell, Jean
1131	Elzea, Gerta	0029	Freitas, Ed & Phyllis	0940	Gorzell, Keith
1130	Elzea, Junior	1309	French, Thomas	0732	Gorzell, Wilson
0894	Elzea, Lisha	1249	Friends of The River	0926	Gould, Delbert
0173	Fmmerson, Mark	0623	Fryz, Daniel	0927	Gould, Mayella

0022	Graves, Edward	0844	Harry H?	1164	Honzel, Drew
0519	Gray, Pat	0077	Hasbrouck, Richard	0189	Hoover, Victoria
0125	Green, Jack	1175	Hathaway, Abe	0371	Hope, Paul
0970	Greenbank, Clinton	1194	Hawkins, C. Delmer	1100	Hopkins, D.
0992	Grigsby, Roger E.	1188	Hawkins, Leanna	1157	Hord, Cliff & Donna
1277	Grohs, Phillip	0482	Hawkins, Margaret	1219	Hot Springs Valley Irrig. Dist
0324	Grokenberger, Callie	1388	Hawkins, Mike	0348	Howard, Harold
0323	Grokenberger, Metta	0111	Hawkins, Norman	0120	Howard, Rich
0246	Grooms, Carl	1189	Hawkins, Russ	0209	Howard, W.
1042	Groper, Maureen	0826	Hayes, Herbert	0606	Hoxsey, Andrew
0841	Groth, Ernest	0553	Haynes, Marcella	1066	Hoxsey, David
0840	Groth, Marian	0302	Hays, Jim	0450	Hoysak, Roger
0839	Grove, Cathy	0469	Heard, Bob	1038	Humphrey, Kevin
1032	Grove, David	0950	Heard, Kennon	1229	Hunt, Cleo
0838	Grove, George	1004	Heard, Richard	0044	Hunt, Thomas
0722	Grove, Joseph	0441	Hedgeman, Robert	0734	Hunter, Edith
0388	Gurrola, Paul	0522	Heim, Sarah	0990	Hurd Lumber Company
1124	Guttry, Carrie	0086	Heller, Clarence	0534	Hurd, John
1125	Guttry, Evan	0728	Hemphill, Joe & Rhonda	0899	Hurd, R. V.
0938	Gutzelt, Art	0630	Henry, Jean	1147	Hurlbust, Don
0820	Hadfield, Michael	0631	Henry, Michael	1067	Hussa, John
0810	Haage, William	0566	Henry, Paul	0050	Hyman, Willie
1022	Halderman, Helen	0115	Henson, Steven	0459	Iaccec, William J.
1308	Haley, B. J.	0587	Herbert, Terry	0193	Ingram, Jennifer
0954	Hall, Norman	1331	Herzog, Kurt	0567	Inosprn, Dennis
0495	Halsell, Jesse	1092	Hetherwick, James	0818	Iverson, Anna
0695	Hamel, Richard	0607	Hewitt, John	0001	Iverson, Wayne D.
0052	Hamilton, Francis	0411	Hi Valley Fire Equip. Co.	0342	Ivey, Sandy
0588	Hamilton, J. K.	1374	Hiatt, Dick	0402	Jackman, Charlie
1369	Hampton, Chuck	0509	Hicks, Calvin	0026	Jackson, Ernie
0337	Hanks, Lloyd	0746	Hicks, Steve	1035	Jacobs, Linda
0414	Hanna, Rebekah	0508	Hicks, Verdle	0537	Jacobs, Mildred
0520	Hanson, Hap	1028	Hill Enterprises	0055	Jacobson, Don
1409	Hapgood, Norma	0964	Hill, Alan	0609	Jacquín, Beverly
1362	Harian, Paul	1393	Hill, Brian	0888	Jacquín, Donna Ann
1406	Harian, Paul	0321	Hill, David	0317	Jacquot, David
1132	Harper, Elmer	0234	Hill, Irvin	0325	Jacquot, Rose
0103	Harper, Jack & Fern	0106	Hill, Michael & Jane	0372	James W?
0389	Harrigan, Chris	0315	Hill, Ora	0184	James, Aaron
0178	Harrington, Jerry	0433	Hins, David	0842	James, Aaron B.
0825	Harris, Ed	1134	Hironymous, Mary	0180	James, Homer, Jr.
0971	Harris, Harold & Phyllis	1030	Hodge, Tina	0183	James, Jeanne
1071	Harris, Joe	1031	Hodge, William	0182	James, Katie
0580	Harris, Lindsey	0222	Honea, Darell	0181	James, Michelle
1233	Harris, Virginia Jane	0542	Honsberger, John	1015	Janes, Marvin Sr.

1016	Janes, Veronica	1120	Kerr, John	0329	Lake, Thomas
0824	Jefferies, Ken	0911	Ketchum, Allen	0186	Lamb-Bang, Gayna
1377	Jellison, Larry	0912	Ketchum, Kathleen	1344	Lance Forest Products
0653	Jensen, Bob	0129	Keye, Bill	1334	Lance, Arthur E.
0076	Jensen, Bruce	0817	Kimsey, Randy	0137	Landrith, Richard
0256	Jensen, Gerald	0237	Kindle, Jeanette	0114	Langell Valley Irrigation Dist
0741	Jerashen, Carolyn	0253	Kingsbury, James	1033	Langley, Scott
1121	Jobe, Glenn	0654	Kinsley, Kenneth	0105	Lannigan, David
1357	Joerger, Sue	0025	Kinyon, Carey	0785	Lapton, Jerry
0489	John C?	0386	Kinyon, Devin	0835	Larsen, Leonard
0301	John Solus Logging	0399	Kinyon, Leslie	0078	Larson, Norman
1155	Johnson, Dennis	0640	Kirk, Brent	0999	Lassen Forest Products
0382	Johnson, Merlin	0151	Kirk, Dennis	1000	Lassen Forest Products
0354	Johnson, Norman	1050	Kirk, Jerita	1110	Latham, Claude & Gail Lynn
1392	Joiner, Barbara	1003	Kirk, Leo	1002	Latka, Dave
1181	Joiner, Bill & Barbara	1279	Klamath Tribe	0998	Latka, Donna
1123	Joiner, Craig	1278	Klasson, Barbara Jo	0065	Lauer, Kurt
0470	Jones, Delbert	0320	Klenke, Orval	1287	Lava Beds Res. Conserv. Dist.
0696	Jones, Janis	0569	Klevin, Tim	1136	Laxague, Catherine
0149	Jones, Leo	0075	Klunk, Stephanie	1135	Laxague, Frieda
1023	Jones, M. W.	0350	Knight, Geoff	1133	Laxague, William
1119	Jones, Maurice	0214	Knight, Kenneth	1227	Lee, Vicki
0212	Jones, Newman	0419	Knighton, Duanna	0783	Lehman, Fred
0032	Jones, Rick	0866	Koble, Bill	0296	Lemke, Jenifer
0226	Jones, Ronald	0847	Koble, Billy Jr.	0299	Lemke, Paul
0156	Kallman, George	0876	Koble, Debra	1297	Lemke, Robin
0625	Kaminski, Richard	0448	Koble, Norb	0220	Lemmel, George
1282	KARE	0428	Komyatt, Keith	1087	Leonard, Francis
0270	Karem, Richard	0863	Kornger, James	0795	Leonard, Gary
0915	Kaufman & McDonald	0347	Kotuki, Eugene	1088	Leonard, Wilma
0764	Kaunph, Alex	0949	Koza, Don	0444	Lepem, Raymond
0808	Kaupanger Logging	0493	Kresge, Edna	1146	Lequieu, Jerry
1039	Keefer, Carol	0365	Kresge, Elizabeth	0613	Lerfeld
1093	Keefer, Kathleen	1099	Kresge, Jerry	0353	Lesica, Andrew
0962	Keene, Richard	1098	Kresge, Lorene	1195	Leue', Herb
1212	Keeney, Ken	0366	Kresge, Owen	0744	Leventon, Dean
1014	Keller, Richard & Eva	0781	Kroon, David	0928	Leventon, Donald
0058	Kelly, Patrick	0069	Kruth, Gerald	0258	Lewis, Audrey
1373	Kelly, Skip	0642	Kuehl, John	0260	Lewis, Donald
1168	Kelsey, Tom	0043	Kuehnert, Grayson	0259	Lewis, Lisa
0207	Kennedy, John	0262	La Place, Nellie	0854	Lind, Michael
1202	Kenny, John	0355	La Porta, Rose Marie	0248	Lilburn, Randy
1215	Kenobbie, David	1192	Lafazio, Frank	0435	Lindsay, Michael
0452	Kerley, Lisa	0629	Lake, Debra	0571	Lisher, Sara
1170	Kerns, Jim	0662	Lake, Michael	0081	Long, Charlotte

0994	Lookout Fire Protection Dist.	0975	Mason, Scott	1345	McNicholas, Thomas
1384	Lookout Grange	1329	Mason, Tad	0501	McQuillan, Rod
1241	Lookout Pest Abatement Dist.	0394	Mason, Tom	0148	Mead, Christine
0611	Lopez, Joe	0933	Matias, Freddie	0861	Messena, Paul
0784	Lopus, Joseph	0425	Mattl, James	0007	Metzger, Harry
0660	Loria, Frank	0221	Mauil, Tony	0723	Michaels, Sally
1105	Losekoot, Frank	0889	Maye, Patrick	1213	Middleton, Robert
1163	Loveness, Ron	0020	Mayhue, Karen Lisa	0751	Miller, H.
1026	Loveness, V. Alan	0862	Mazzone, June	0070	Miller, Jerome
0423	Lowness, Rochy	0281	McAlerney, Matt	0012	Miller, John
0821	Luedtke, Larry	1150	McAndrews, Kathy	1156	Miller, Paul
0225	Luond, Leon	0563	McAnn, Gerald	1210	Miller, Paul
0121	Lydon, Phillip & Gerda	0092	McArthur, Roderick	0420	Miller, Suzanne
0088	Lyon, Max	0083	McCarthy, Betsy	0816	Millican, Beth
0981	Lyons, Kathy	0238	McCartny, John	0917	Milton, Russell
0443	MaCavey, Gerald	0291	McCass, Dennis	0916	Milton, Vonda
0731	MacDonald, Kathryn	0378	McCloughan, Bryan	0860	Minto, Jerry
1103	MacDonald, Lana	1044	McClure, Jim	0859	Minto, Lynne
0752	MacFarlane, Patricia	0340	McConnell, Ann	0210	Mitchell, Darrell
0505	Madrigal, Cipriano	0138	McCullough, Jeanne	1412	Mix, Bruce
0507	Madrigal, Martha	1259	McDaniels, Audrey	1283	Modoc Co. Cattleman's Assn
0328	Madsen, Robert	1281	McDermott, Mary	1413	Modoc Co. Community Programs
0037	Malda, Nino	1115	McDonald, Robert C.	1010	Modoc Co. Fire Dist. Assn
0251	Main, Andrew	1114	McDonald, Robert S.	1034	Modoc Co. Historical Society
0126	Main, Bruce	0871	McDonald, Teddy	0701	Modoc Co. Horsemen's Assn.
1198	Main, Diane	1365	McGarr, Dennis	0552	Modoc Co. Off. of Emerg. Svcs.
0803	Main, Jonathan	0345	McGarva, Dixie	1242	Modoc Co. Road Dept.
0677	Main, Rocky	1255	McGarva, Duane	1404	Modoc Co. Schools
1395	Main, Steve	0991	McGarva, Jacqueline	0101	Modoc County Planning Dept.
0438	Malley, Vic	1411	McGarva, Ken	0693	Modoc Joint Unified School
1201	Maloney, Ed	1065	McGarva, Ross	1151	Modoc Lumber Co., KF
0049	Mangels, F.	1063	McGarva, Shane	0479	Mohr, Catherine
0872	Manus, Denton	0326	McIndoo, Jim	0204	Mohr, Cindy
0379	Marble, Michael	1074	McInnis, Douglas	0203	Mohr, Eddie
0239	Marble, Randy	1354	McIntire Timber Services, Inc.	0557	Mohr, Walter
0556	Marcin, Thomas	1020	McIntire, Mark	0145	Monge, Mike
0415	Mark, Valerie	1350	McIntire, Teresa	1236	Moore, John K.
0289	Marks, Jim	0216	McKean, Robert	0232	Moore, Karen
0887	Marsh, Bobbi Jean	0555	McKnight, Robert	0233	Moore, R. E.
0139	Marsh, Wendy	0162	McLaughlin, Robert	0691	More, Glenn
0134	Marshall, David	1326	McLean, Doug	1386	Morehouse, Michele
0652	Marshall, Frank	1318	McLean-Carey, Carolyn	0648	Morgan, Mark
0996	Martin, Neva	0884	McNamara, Doris	1047	Morgan, Mitchell
0767	Martin, Scoop	1319	McNeil, Joseph	0447	Morris, Leslie
0172	Marty, Chris	1323	McNeil, Vivian	0921	Morris, Marie

0922	Morris, Thomas	0309	Olsen, Jessica	0837	Phillips, Roy
1222	Morrison, David	0310	Olsen, Susan	0304	Pierce, J. D.
0664	Morrison, Michael	1029	Olson, Karl	0995	Pierce, Jenny
0124	Mountjoy, Shelley	0558	Oregon Hunter's Assn.	0624	Pilatt, Ed
0060	Muir, Brian	0551	Organ. Sportsment of Modoc Co.	1090	Pingel, Bernard
0062	Murdock & Nichols, Bill & Rhon	0056	Osypowski, Tom	1138	Pingel, Vera
0462	Murray, Marcus & Pat	1177	Otrin, Ron	0568	Pippen, Victoria
0116	Murry, Jack	1289	Owen, Wes	0564	Pitnan, Michael
0334	Muttersbach, Pete	1250	Pacific Power & Light Company	0019	Placer Co. Conservation Force
1257	Natural Res. Defense Council	0952	Pacific Wood Fuels Co.	0455	Pochatek, Donald
0661	Nature Conservancy	1025	Page, Ray	0460	Porki, David
0615	Nee, Gregory	0570	Pallany, Harold	0878	Porter, Craig
0285	Nelson, Alan	0161	Palley, Meg	0286	Porter, Donald
0284	Nelson, Kathie	0828	Palmer, Marion	0713	Porter, John A.
0283	Nelson, Laura	1366	Palmer, Robert	0717	Posostostz, Jom
0416	Nelson, Mariys	0387	Palmer, Ronald	1104	Potter, A. Dee
1082	Nelson, Stephen	1152	Pappas, Deb	0175	Potter, Rick
0150	Nemanic, Joan	0294	Parish, Yvonne	0377	Powers, David
0494	Nemanic, T. R.	1387	Parks, Jerry	1286	Preschutti, John
0684	Nestrick, Valerie, Dr.	0293	Parrish, E. J.	0596	Price, Tom
0027	Neuman, Beverly	0461	Paskowski, Michael	0742	Primorac, Forrest
0295	Newby, Suzanne	1211	Patten, Marty	0445	Quinn, G. A.
0754	Newman, Valerie	0375	Patterson, Chester	1054	Quinsey, Mrs. Robert L.
0671	No. CA Counc. Fed of Fly Fish	0792	Pauley, Robert	0658	Ramirez, Linda
1349	No. Cal. Co. Spvrs. Assn.	1185	Pauly, Deena	0466	Ray, Bobby G.
0914	No. Cal. Log Scaling Bureau	0523	Peery, Milton	0834	Ray, Michael
1171	Nork, Alice	0071	Pell, Tom	0708	Rechtlin, Julie
0085	Norris, Frank	0618	Pence, John	1049	Reddig, Randy
0880	Norris, S.G.	0645	Pengelly, Sam	0789	Reed, Con
0530	North Cal-neva Rc&da	0023	Perlman, Steven	0582	Reese, Paul
0512	Northrup, Arthur Jr.	0436	Perrymond, Joann	0330	Reeves, Randel
0504	Northrup, Charlene	0543	Perske, Douglass	0331	Reeves, Virginia
0680	Northrup, Sherri	0174	Petal Pushers, Kathy Corder	1217	Resource Concepts, Inc.
0240	Norvell, Robert	1166	Peterson (unreadable first name)	0363	Resource Economics Int'l, Inc.
0005	Nw Fed. of Mineralogical Soc.	0524	Peterson, Delbert	1240	Reuck, Bruce
0721	O'Connor, John	1299	Peterson, Howard	0380	Rewer, Gerald
0539	O'Quinn, Michael	0969	Peterson, Jim	0360	Reynolds, James
1209	Oakes, John	0335	Peterson, Margaret	1351	Rhodes, Phillip
0689	Off. of Education - Shasta Co.	1275	Peterson, R. Russ	0525	Rice, Don
1316	Off. of Environ. Proj. Review	0685	Petition - William Patterson	0679	Rice, Katherine
0332	Office of Educ., Siskiyou Co.	0867	Petrolonis, Raymond	0401	Rice, Mike
0575	Oller, Clayton	0707	PG&E, San Francisco	0468	Rice, Tom
0269	Olander, J. C.	0851	Philhauer, Monica	1265	Rich, David G.
0021	Olsen, Bruce	0864	Philhower, Michael	0951	Rich, Fred
0308	Olsen, Eric	0806	Phillips, M.	1300	Richten, Jack



0211	Ringo, Mike	1174	Schultz, Milton	1142	Simmons, Wilma
0227	Rippetoe, Robert	0649	Schurb, Gary	0666	Simon, Phillip
0152	Roberts, Herbert	0794	Schwebach, Charles	1332	Simpson, Jim
0918	Roberts, Marie	0451	Schwende, Lynn	0777	Simpson, Larry
1401	Robertson, Daniel	0846	Schwindt, Paul	0474	Singleton, Claude
0395	Robertson, Mike	0341	Scott, Jeymie	0692	Siskiyou Fly Fishers
0392	Robertson, Nick	0102	Sealock, Arlene	0977	Skewarek, Richard & Margaret
0282	Robinson, Ray	0314	Sealock, Robert	0650	Slaten, Keith
0170	Rockwell, G.	0213	Sell, Douglas	0651	Slaton, Vern
0008	Rodgers, Thomas L.	0217	Sella, Aldo	0113	Smallridge, Dick
1043	Rogers, Ruth	0406	Senior Citizens Assn., Inc.	1375	Smith, Alice
0801	Rohrbackee, Norman	1036	Shaffer, Gary	0591	Smith, Alice & John
0160	Roland, Raymie	1238	Shaffer, Marilyn	0774	Smith, Craig
0108	Roseburg For. Prod., Anderson	0187	Shapiro & Bateman, Joan & Jim	0100	Smith, Lawrence K.
1059	Roseburg Resources Co.	1258	SHARE	1302	Smith, Leonard F.
1006	Rosemeyer, Dennis	1333	Shasta Co. Pvt. Indust. Coun.	1346	Smith, Leonard W.
0668	Rosenberg, Marvin	0885	Shaughnessy, Sue	1336	Smith, Lori A.
0733	Ross, Daniel	0913	Shaw, Bob & Billie	1348	Smith, Shirley
0526	Roundy, Lee	0929	Shaw, C. M.	0972	Smith, Sydney
0163	Rouse, Ernest & Associates	0311	Shaw, Chuck	0619	Smorul, Donna
0473	Roush, Paul	1314	Shepard, Dave	0773	Snipes, Bill
1073	Rowne, Michael	0333	Sheppard, Sophie	0098	Snyder, Gary
0393	Roy, Bruce	1239	Sherer, Don	0278	Sohus, Glenda
0802	Roybal, J. Steve	1179	Sherer, Juana	0279	Sohus, John
0536	Rural Institute, Inc.	1178	Sherer, Ronald	1107	Sousa, Edward
0051	Russell, Ron	0669	Sherman, Harvey	0024	South Fork Irrigation District
0959	Rutledge, Dave	0780	Shouse, Ken	1108	Souza, Joseph
1223	Sahlgren, Milton	0464	Shriver, Lida	1109	Souza, Margie
0280	Sambol, C. M.	1304	Shumway, Norman (Congress- man)	1343	Spain, Bill
1017	San Diego Gas & Electric	1280	Sierra Cascade Logging Conf.	0753	Speer, Bill
0513	Sanchez, Agripina	1260	Sierra Club, M/L Response	0968	Spooner, Dana
0514	Sanchez, Crispin	0500	Sierra Club, Mother Lode Chap.	1094	Staats, Richard
0909	Sawyer, Linda	0541	Sierra Club, Redwood (Arcata)	1064	Stahl, Don
0910	Sawyer, Mike	0009	Sierra Club, Redwood Chapter	0244	Stanley, John
0359	Scates, Kathryn	0198	Sierra Club, S.F. Bay Chapter	1204	Stark, Diane
1248	Scenic Shoreline Pres. Conf.	0107	Sierra Club, Tolyabe Chapter	0446	Staruch, Joann
1313	Schadler, Jean	0010	Sierra Club, Yaki Group	1161	Staub, Ed
0870	Schell, Jeffrey	0218	Sierra Pacific Ind., Susanville	0584	Stayton, Kenneth
0467	Schluter, Robert	0004	Sierra Pacific Power Company	1407	Steinhagen, Daniel
1305	Schneider, Asa	0128	Sill, Marjorie	1408	Sternes, Farrel
0361	Schneider, David	0042	Silver State Mining Corp.	0893	Stevenson, Frank
1268	Schouest, Gary	0589	Simmons, Charles	0367	Stevenson, Judith
1378	Schreiber, John	1143	Simmons, Enoch	1167	Stevenson, Kacie
0458	Schrembeck, Daniel, Jr.	0590	Simmons, Gail	0895	Stevenson, Karen
0924	Schroeder, Mary			0891	Stevenson, Mark

0892 Stevenson, Sandy	0313 Taylor, Susan	1355 U.S. Environ. Protection Agency
1208 Stevenson, Vickie	0670 Teague, Mr. & Mrs. Donald	0003 USAF, Environmental Planning
0241 Steward, Michael	0093 Teel, David	1353 USAF, HQ Electronic Sys. Div.
0073 Stewardship Comm., Modoc/Washoe	0966 Tenney, Eugene	0620 Vanek, Ed
1381 Steyer, Dick	0809 Terry, John	0617 Vanek, Terry
0442 Stine, Glenn	0409 Thew, Janet	0560 Vant, Mabel
0716 Stircula, Frank	1266 Thomas Lumber Co.	0339 Vauari, Nick
0985 Stockton, Ken	0215 Thomas, William	1172 Vaughan, Trudy
1218 Stokes, James	0265 Thomason, Bill	0242 Vaught, Sylvia
0531 Stokes, Tim	0267 Thomason, Karrie	0678 Vazquez, Anthony
1048 Stone, Jeff	0264 Thomason, Lois	1207 Vestal, Thomas
0559 Stone, Tina	0266 Thomason, Ronnie	0987 Vick, Marjorie
0943 Stopp, Clarence	0907 Thompson Ron I.	1077 Victorine, Joe
0119 Stott, Barbara	0593 Thompson, Ameer	1196 Victorine, Mary Carol
0131 Stoutamore, Wanda	0200 Thompson, Larry	0006 Virginia Four Wheel Drive Assn
1060 Stovr, Charles	1097 Thompson, Mark	0832 Viscotta, Dan
0665 Strauss, George	0592 Thompson, Robert	1106 Voget, Gordon
1243 Studinski, George	0906 Thompson, Robert, Jr.	1193 Volrich, Donald
0900 Studinski, Yvonne	0594 Thompson, Rose Marie	0063 Voth, Gregory
0791 Suess, Marland	0908 Thompson, Susan	0099 Wald, Frannie
0035 Suk, Tom	0984 Thompson, William and James	0346 Walker, Bill
0614 Sullivan, Mike	1371 Thorn, William	0586 Walker, Le Roy
0849 Sumner, Annette	0643 Tibbits, Robert	0287 Walker, Mildred
0848 Sumner, Joseph	0528 Tiehm, Harold	0352 Waller, Ronald
1328 Superior CA Develop. Council	0603 Tillott, Brian	0616 Walton, Nancy
1056 Surprise Valley Elec. Corp.	0036 Tipping, Gerald	0554 Ward, Glenn
0336 Sustersu, Marianne	1159 Toler, Brett G.	0351 Ward, Ronald
0437 Svoboda, Mary Ann	1158 Toler, Irvin	1008 Warner, Iva
0427 Svoboda, Richard	1085 Toler, Mary	0516 Warren, Darrell
0605 Svoboda, Richard E.	0973 Tourism Committee, Alturas	0955 Washburn, Dan
0527 Swafford, Jesse	1273 Townsend, Stanley	0956 Washburn, Wendy
0014 Swanson, John R.	1264 Transmission Agency of No. Calif	0015 Water Qual Bd - Central Valley
0109 Swarm, Beverly	1148 Tritch, John	0194 Water Qual Bd - North Coast
0318 Swarm, Robert	1081 Tschirky, Paul	1068 Water Qual. Cont. Bd, Lahontan
0740 Swiney, Audrey	0397 Tuck, Jim	1364 Watkins, Frank
0739 Swiney, Leroy	0778 Tucker, Bob	0449 Watt, John
0632 Szryelski, Joseph	0812 Tulelake Grange No. 468	1230 Wayland, Brian
1253 Tabor, Steve	0255 Tyler, Pat	0245 Wears, Jacob
0881 Talma, Lee	0737 Tyrrell, Bonnie	0064 Webb, Donald & Natalie
1361 Taylor, Barry	0738 Tyrrell, Norman	1012 Weber, Andy
0983 Taylor, Chris	0673 U.S. Pumice Company	1019 Weber, Cindy
0373 Taylor, Elwood	0715 Ulle, Frank	1013 Weber, John
0939 Taylor, Ival & Mary	0201 Underwood, Karen	0978 Weber, Warren
0604 Taylor, Richard	0814 Ungern, Kristian	1076 Wedam, Jeri
	1315 UNOCAL Geothermal Division	0529 Wehde, Mike

1261	Weidert, Carl	0756	Wilbourn, Babette	0486	Wissmath, Lena
1293	Weidert, Stan	0472	Wilderness Society, CA/NV Reg.	0485	Wissmath, Sherry
1379	Weidner, Beverle	0682	Wilkinson, Louis	0168	Witzel, Sam
1380	Weidner, Georgia	0165	Wilkinson, Robert	0608	Wolak, Mark
1389	Weigand, Glorianne	0827	Will, Wade	0621	Wolak, Sdelly
1390	Weigand, Stan	1276	Willard, Dwight	0440	Wolf, Gregory
0579	Weigand, Stan & Glorianne	1184	Williams, Alice	0496	Wolf, Joann
0730	Weigel, George	1183	Williams, Charles	0017	Woods, Nancy
0068	Weissburg, Muriel	0261	Williams, Florence	0018	Woods, Virginia
0612	Weils, Donald	0762	Williams, Greg	0923	Woods, Winifred
0712	Weils, June	0976	Williams, Howard	0515	Wright, Gary
0610	Weils, Sandra	0763	Williams, L. C.	0544	Wunner, Bob
0667	Welsh, Don	1091	Williams, Lucy	0057	Yankauskes, Virginia
0047	West, Charles	0407	Willmes, Gerald	1165	Yarborough, Kelli
0902	Western Cascade Lumber	0936	Willmore, Larry	1325	Young, Barbara
1070	Western Forest Industries Assn	1080	Wilson, Bill	1324	Young, James
1263	Western Timber Assn.	0574	Wilson, Bob	0307	Young, R. D.
1252	Western Wood Products Assn.	1011	Wilson, John	0725	Younger, John & Evelyn
0074	Weston, Scott	0585	Wilson, Kerry & Cheryl	0627	Zabariadin, Andru
0176	Wheeler, Darlene	1368	Wilson, Kerry D.	0343	Zachary, Steve
0822	Wheelock, Darren	0517	Wilson, Mrs. Bob	0499	Zacher, Edward
0252	White, Hugh	0770	Winegarden, Grant	0657	Ziegle, Tom
0761	White, Larry	0750	Winkie, Steve		
1228	White, Lester O.	0724	Winnop, Hiram		
1058	Whitehorn, Stephen	0875	Wirta, Mike		
1284	Whitsett, Douglas, D.V.M.	0903	Wirth, Jeff, Mr. & Mrs.		
1367	Wickenden, Robert	0484	Wissmath, Angela		

**(in numeric order)**

0001	Iverson, Wayne D.	0043	Kuchnert, Grayson	0087	Audubon Society, Mt. Shasta
0002	Department of Agriculture	0044	Hunt, Thomas	0088	Lyon, Max
0003	USAF, Environmental Planning	0045	Adams, Lois	0089	Beyeler, Edward
0004	Sierra Pacific Power Company	0046	Carroll, Nancy	0090	Deutschman, Elaine
0005	Nw Fed. of Mineralogical Soc.	0047	West, Charles	0091	Chamber of Commerce, Fall Riv.
0006	Virginia Four Wheel Drive Assn	0048	Chamber of Commerce, Adin	0092	McArthur, Roderick
0007	Metzger, Harry	0049	Mangels, F.	0093	Teel, David
0008	Rodgers, Thomas L.	0050	Hyman, Willie	0094	Clark, Ann
0009	Sierra Club, Redwood Chapter	0051	Russell, Ron	0095	Bacher, Mrs. F. A., Jr.
0010	Sierra Club, Yaki Group	0052	Hamilton, Francis	0096	Faria, Tony
0011	Fall River - B.V. Cattlemen's	0053	Cannon, E. A.	0097	Bulger, Debbie
0012	Miller, John	0054	Boss, Bruce	0098	Snyder, Gary
0013	Gailey, Mark S.	0055	Jacobson, Don	0099	Waid, Frannie
0014	Swanson, John R.	0056	Osypowski, Tom	0100	Smith, Lawrence K.
0015	Water Qual Bd - Central Valley	0057	Yankauskes, Virginia	0101	Modoc County Planning Dept.
0016	Foster, Doug	0058	Kelly, Patrick	0102	Sealock, Arlene
0017	Woods, Nancy	0059	Balcomb, J.b.	0103	Harper, Jack & Fern
0018	Woods, Virginia	0060	Muir, Brian	0104	Byrne, Kathleen
0019	Placer Co. Conservation Force	0061	Gerton, Les	0105	Lannigan, David
0020	Mayhue, Karen Lisa	0062	Murdock & Nichols, Bill & Rhon	0106	Hill, Michael & Jane
0021	Olsen, Bruce	0063	Voth, Gregory	0107	Sierra Club, Toiyabe Chapter
0022	Graves, Edward	0064	Webb, Donald & Natalie	0108	Roseburg For. Prod., Anderson
0023	Perlman, Steven	0065	Lauer, Kurt	0109	Swarm, Beverly
0024	South Fork Irrigation District	0066	Burkhardt, Leonard	0110	De Cocto, Anthony, Jr.
0025	Kinyon, Carey	0067	Chamber of Commerce, Tulclake	0111	Hawkins, Norman
0026	Jackson, Ernie	0068	Weissburg, Muriel	0112	Dunn, K.w.
0027	Neuman, Beverly	0069	Kruth, Gerald	0113	Smallridge, Dick
0028	Clark, Kelley D.	0070	Miller, Jerome	0114	Langell Valley Irrigation Dist
0029	Freitas, Ed & Phyllis	0071	Peil, Tom	0115	Henson, Steven
0030	Bridges, George A.	0072	Foote, Donna	0116	Murry, Jack
0031	Brown, Eugene	0073	Stewardship Comm., Modoc/Washoe	0117	Davidson & Horwitz, Leila & An
0032	Jones, Rick	0074	Weston, Scott	0118	Berrier, E.a.
0033	Brigham, John N.	0075	Klunk, Stephanie	0119	Stott, Barbara
0034	Andaloro, Louis	0076	Jensen, Bruce	0120	Howard, Rich
0035	Suk, Tom	0077	Hasbrouck, Richard	0121	Lydon, Philip & Gerda
0036	Tipping, Gerald	0078	Larson, Norman	0122	Alosi, Jeanette
0037	Maida, Nino	0079	Bliss, Thomas	0123	Curtis, Ray
0038	Freitag, Fritz & Elizabeth	0080	Albaugh, Ed	0124	Mountjoy, Shelley
0039	Felthouse, James W.	0081	Long, Charlotte	0125	Green, Jack
0040	Bogaard, Joe	0082	Crossley, Jean	0126	Main, Bruce
0041	Coury, Linda	0083	McCarthy, Betsy	0127	Fisher, Judy
0042	Silver State Mining Co.	0084	Choate, Leonard	0128	Sill, Marjorie
		0085	Norris, Frank	0129	Keye, Bill
		0086	Heller, Clarence	0130	Busby, Stuart
				0131	Stoutamore, Wanda

0132	Curran, Denny	0177	Breuer, Sheryl	0222	Honea, Darell
0133	Coad, Ardythe	0178	Harrington, Jerry	0223	Arias, Marilyn
0134	Marshall, David	0179	Binderup, Charles	0224	Deaton, Robert
0135	City Council, Alturas	0180	James, Homer, Jr.	0225	Luond, Leon
0136	Dillard, Joe	0181	James, Michelle	0226	Jones, Ronald
0137	Landrith, Richard	0182	James, Katie	0227	Rippetoe, Robert
0138	McCullough, Jeanne	0183	James, Jeanne	0228	Cory, Russell
0139	Marsh, Wendy	0184	James, Aaron	0229	Doan, Greg
0140	Gerig, Gertrude	0185	Blanc, Gary	0230	Doyon, Lorraine
0141	Gerig, Tina	0186	Lamb-Bang, Gayna	0231	Bates, Michael
0142	Gerig, Janell	0187	Shapiro & Bateman, Joan & Jim	0232	Moore, Karen
0143	Gerig, Vicky	0188	Chrysler, Barbara	0233	Moore, R. E.
0144	Gerig, Oral	0189	Hoover, Victoria	0234	Hill, Irvin
0145	Monge, Mike	0190	Da Silva, Peggy	0235	Dillon, Philip
0146	Gerig, Robert	0191	Fleming, Harold	0236	Base, Jerry
0147	Crum, Donald	0192	Fleming, Phyllis	0237	Kindle, Jeanette
0148	Mead, Christine	0193	Ingram, Jennifer	0238	McCartny, John
0149	Jones, Leo	0194	Water Qual Bd - North Coast	0239	Marble, Randy
0150	Nemanic, Joan	0195	Board of Education, Modoc Co.	0240	Norvell, Robert
0151	Kirk, Dennis	0196	Broda, Margaret	0241	Steward, Michael
0152	Roberts, Herbert	0197	Eaton, Perry	0242	Vaught, Sylvia
0153	Forno, John	0198	Sierra Club, S.F. Bay Chapter	0243	Brown, Eleanor
0154	Cullins, Vaudine	0199	Fetters, Harold	0244	Stanley, John
0155	Fischer, Shirley	0200	Thompson, Larry	0245	Wears, Jacob
0156	Kallman, George	0201	Underwood, Karen	0246	Grooms, Carl
0157	Craig, Julia	0202	Chamberlain, R. H.	0247	Glan, Paul
0158	Carlton, Alan	0203	Mohr, Eddie	0248	Lilburn, Randy
0159	Dougherty, Raymond	0204	Mohr, Cindy	0249	Fischer, Lawrence E.
0160	Roland, Raymie	0205	Edwards, Bob	0250	Camara, Tom
0161	Palley, Meg	0206	Cox, Douglas	0251	Main, Andrew
0162	McLaughlin, Robert	0207	Kennedy, John	0252	White, Hugh
0163	Rouse, Ernest & Associates	0208	Dustin, Tony	0253	Kingsbury, James
0164	Boyer, Karen	0209	Howard, W.	0254	Andresen, Don
0165	Wilkinson, Robert	0210	Mitchell, Darrell	0255	Tyler, Pat
0166	Cornelius, Al	0211	Ringo, Mike	0256	Jensen, Gerald
0167	Anderson, Byron	0212	Jones, Newman	0257	Bendsen, Vern
0168	Witzel, Sam	0213	Sell, Douglas	0258	Lewis, Audrey
0169	Buckley, John	0214	Knight, Kenneth	0259	Lewis, Lisa
0170	Rockwell, G.	0215	Thomas, William	0260	Lewis, Donald
0171	Bruce, Joe	0216	McKean, Robert	0261	Williams, Florence
0172	Marty, Chris	0217	Sella, Aldo	0262	La Place, Nellie
0173	Emmerson, Mark	0218	Sierra Pacific Ind., Susanvill	0263	Eppler, Gail
0174	Petal Pushers, Kathy Corder	0219	Big Valley Lumber	0264	Thomason, Lois
0175	Potter, Rick	0220	Lemmel, George	0265	Thomason, Bill
0176	Wheeler, Darlene	0221	Mauil, Tony	0266	Thomason, Ronnie

0267 Thomason, Karrie	0312 Ellenberger, Dearth	0357 Cervantes, Maxia
0268 Bd. of Supervisors, Lassen Co.	0313 Taylor, Susan	0358 Cervantes, Tony, Jr
0269 Olander, J.c.	0314 Sealock, Robert	0359 Scates, Kathryn
0270 Karem, Richard	0315 Hill, Ora	0360 Reynolds, James
0271 Collins Pine Company	0316 Ellenberger, Kathy	0361 Schneider, David
0272 Brooks, Paul	0317 Jacquot, David	0362 Francis, Marc
0273 Benson, Arlene	0318 Swarm, Robert	0363 Resource Economics Int'l, Inc.
0274 Defenders of Wildlife	0319 Bushey, Bob	0364 CA - Resources Agency Of,
0275 Criss, Lloyd	0320 Klenke, Orval	0365 Kresge, Elizabeth
0276 Criss, Alice	0321 Hill, David	0366 Kresge, Owen
0277 Brear, David	0322 Fleming, Marian	0367 Stevenson, Judith
0278 Sohus, Glenda	0323 Grokenberger, Metta	0368 Bennett, Nathan
0279 Sohus, John	0324 Grokenberger, Callie	0369 Dewitt, Floyd
0280 Sambol, C. M.	0325 Jacquot, Rose	0370 Derner, Fred
0281 McAlerney, Matt	0326 McIndoo, Jim	0371 Hope, Paul
0282 Robinson, Ray	0327 Albaugh, Allen	0372 James W?
0283 Nelson, Laura	0328 Madsen, Robert	0373 Taylor, Elwood
0284 Nelson, Kathie	0329 Lake, Thomas	0374 Chrysler, Jim
0285 Nelson, Alan	0330 Reeves, Randel	0375 Patterson, Chester
0286 Porter, Donald	0331 Reeves, Virginia	0376 Cook, Lonnie
0287 Walker, Mildred	0332 Office of Educ., Siskiyou Co.	0377 Powers, David
0288 Canada, Dayle	0333 Sheppard, Sophie	0378 McCloughan, Bryan
0289 Marks, Jim	0334 Mutersbach, Pete	0379 Marble, Michael
0290 Blakely, Floyd	0335 Peterson, Margaret	0380 Rewer, Gerald
0291 McCass, Dennis	0336 Sustersu, Marianne	0381 Glenn, Dennis
0292 Charon, Dennis	0337 Hanks, Lloyd	0382 Johnson, Merlin
0293 Parrish, E.j.	0338 Bicycle Trails Council	0383 Bluy, Tim
0294 Parish, Yvonne	0339 Vauari, Nick	0384 Brown, Darrell
0295 Newby, Suzanne	0340 McConnell, . an	0385 Economon, George
0296 Lemke, Jenifer	0341 Scott, Jey	0386 Kinyon, Devin
0297 Brouillard, Edward	0342 Ivey, Sandy	0387 Palmer, Ronald
0298 Dowell, Waylon	0343 Zachary, Steve	0388 Gurrola, Paul
0299 Lemke, Paul	0344 CORVA (Calif ORV Assn)	0389 Harrigan, Chris
0300 Gee, Warren	0345 McGarva, Dixie	0390 Collins, Cecil
0301 John Solus Logging	0346 Walker, Bill	0391 Caldwell, Richard
0302 Hays, Jim	0347 Kotukt, Eugene	0392 Robertson, Nick
0303 Calandor Pine Corp.	0348 Howard, Harold	0393 Roy, Bruce
0304 Pierce, J. D.	0349 Geblock, Val	0394 Mason, Tom
0305 Garbutt, Phillip	0350 Knight, Geoff	0395 Robertson, Mike
0306 Garbutt, Geraldine	0351 Ward, Ronald	0396 Economon, Suzanne
0307 Young, R. D.	0352 Waller, Ronald	0397 Tuck, Jim
0308 Olsen, Eric	0353 Lesica, Andrew	0398 Bates, James
0309 Olsen, Jessica	0354 Johnson, Norman	0399 Kinyon, Leslie
0310 Olsen, Susan	0355 La Porta, Rose Marie	0400 Cain, J.W.
0311 Shaw, Chuck	0356 Gee, Calvin	0401 Rice, Mike

0402 Jackman, Charlie	0447 Morris, Leslie	0492 Dillard, Joseph H.
0403 Cash, June	0448 Kobie, Norb	0493 Kresge, Edna
0404 Dooley Lumber Co.	0449 Watt, John	0494 Nemanic, T. R.
0405 Garate, Johnny	0450 Hoysak, Roger	0495 Halsell, Jesse
0406 Senior Citizens Assn., Inc.	0451 Schwende, Lynn	0496 Wolf, Joann
0407 Willmes, Gerald	0452 Kerley, Lisa	0497 Beeson, C. Dwight
0408 Doss, Ronald	0453 Babushkin, Michael	0498 Cantrall, Mrs. Walter
0409 Thew, Janet	0454 Bonewitz, Susan	0499 Zacher, Edward
0410 Calfarm Insurance, Alturas	0455 Pochatek, Donald	0500 Sierra Club, Mother Lode Chap.
0411 Hi Valley Fire Equip. Co.	0456 Boluoishi, Kenneth	0501 McQuillan, Rod
0412 Bruce, Ed and Pauline	0457 Ashbrook, Robert, Jr.	0502 Arreche, Frank
0413 Gill, Kent	0458 Schrembeck, Daniel, Jr.	0503 Baird, Bill
0414 Hanna, Rebekah	0459 Iacعت, William J.	0504 Northrup, Charlene
0415 Mark, Valerie	0460 Porki, David	0505 Madrigal, Cipriano
0416 Nelson, Marlys	0461 Paskowski, Michael	0506 Barrera, Julia
0417 Goodfellow, Mildred	0462 Murray, Marcus & Pat	0507 Madrigal, Martha
0418 Goodfellow, William	0463 Criss, Sharon	0508 Hicks, Verdie
0419 Knighton, Duanna	0464 Shriver, Lida	0509 Hicks, Calvin
0420 Miller, Suzanne	0465 Bennett, Robert	0510 Cervantes, Anthony Sr.
0421 Chism, Betty	0466 Ray, Bobby G.	0511 Cervantes, Frances
0422 Chism, Harold	0467 Schluter, Robert	0512 Northrup, Arthur Jr.
0423 Lowness, Rochy	0468 Rice, Tom	0513 Sanchez, Agripina
0424 Dougherty Lumber	0469 Heard, Bob	0514 Sanchez, Crispin
0425 Matti, James	0470 Jones, Delbert	0515 Wright, Gary
0426 Camp, Leonard	0471 Bavetta, Alan	0516 Warren, Darrell
0427 Svoboda, Richard	0472 Wilderness Society, CA/NV Reg.	0517 Wilson, Mrs. Bob
0428 Komyati, Keith	0473 Roush, Paul	0518 Cox, Alvin
0429 Giblock, Edward	0474 Singleton, Claude	0519 Gray, Pat
0430 Garfield, Richard	0475 Clement, Alison	0520 Hanson, Hap
0431 Bradberry, Kenneth	0476 Gilgun, Michael & Linda	0521 Chacon, Trinidad
0432 Brail, Robert	0477 Curtis, Edward	0522 Heim, Sarah
0433 Hins, David	0478 Caldwell, Donna	0523 Peery, Milton
0434 Durch, Linda	0479 Mohr, Catherine	0524 Peterson, Delbert
0435 Lindsay, Michael	0480 Easley, Shirley	0525 Rice, Don
0436 Perrymond, Joann	0481 Bidwell, Wallace	0526 Roundy, Lee
0437 Svoboda, Mary Ann	0482 Hawkins, Margaret	0527 Swafford, Jesse
0438 Malley, Vic	0483 Bidwell, Meridean	0528 Tiehm, Harold
0439 Berau, Donald	0484 Wissmath, Angela	0529 Wehde, Mike
0440 Wolf, Gregory	0485 Wissmath, Sherry	0530 North Cal-Neva RC&DA
0441 Hedgeman, Robert	0486 Wissmath, Lena	0531 Stokes, Tim
0442 Stine, Glenn	0487 Bidwell, Sarah	0532 Beeson, Joanne
0443 Macavey, Gerald	0488 Bennett, Beatrice	0533 Burk, Joyce & Peter
0444 Lepem, Raymond	0489 John C?	0534 Hurd, John
0445 Quinn, G. A.	0490 Dillard, Jane	0535 Bennett, Larry
0446 Staruch, Joann	0491 Blust, Dale	0536 Rural Institute, Inc.

0537 Jacobs, Mildred  
 0538 Dayan, Tom  
 0539 O'Quinn, Michael  
 0540 Evans, David  
 0541 Sierra Club, Redwood (Arcata)  
 0542 Honsberger, John  
 0543 Perske, Douglass  
 0544 Wunner, Bob  
 0545 Audubon Society, Wintu Chapt.  
 0546 Becker, Stephen  
 0547 Gee, Linda  
 0548 CA Sportfishing Protect. Allia  
 0549 CA Mining Assn.  
 0550 Dixon, Clewon and Anola  
 0551 Organ. Sportsment of Modoc Co.  
 0552 Modoc Co. Off. of Emerg. Svcs.  
 0553 Haynes, Marcella  
 0554 Ward, Glenn  
 0555 McKnight, Robert  
 0556 Marcin, Thomas  
 0557 Mohr, Walter  
 0558 Oregon Hunter's Assn.  
 0559 Stone, Tina  
 0560 Vant, Mabel  
 0561 Binfiowspef, S.  
 0562 Arviri, Robert  
 0563 McAnn, Gerald  
 0564 Pitnan, Michael  
 0565 Denney, Ed  
 0566 Henry, Paul  
 0567 Inosprn, Dennis  
 0568 Phippen, Victoria  
 0569 Klevin, Tim  
 0570 Pallany, Harold  
 0571 Lisher, Sara  
 0572 Contreras, Anastacio  
 0573 Contreras, Teresa  
 0574 Wilson, Bob  
 0575 Oiler, Clayton  
 0576 Erquiaga, John  
 0577 Cervantes, Jorge  
 0578 Cervantes, Jesse  
 0579 Weigand, Stan & Glorianne  
 0580 Harris, Lindsey  
 0581 Camarata, Chris

0582 Reese, Paul  
 0583 Bishop, C.m.  
 0584 Stayton, Kenneth  
 0585 Wilson, Kerry & Cheryl  
 0586 Walker, Le Roy  
 0587 Herbert, Terry  
 0588 Hamilton, J. K.  
 0589 Simmons, Charles  
 0590 Simmons, Gail  
 0591 Smith, Alice & John  
 0592 Thompson, Robert  
 0593 Thompson, Amee  
 0594 Thompson, Rose Marie  
 0595 Dehtley, Richard  
 0596 Price, Tom  
 0597 Darrow, Glen  
 0598 Bidwell, Ross  
 0599 Bidwell, Victoria  
 0600 Bidwell, Brooke  
 0601 Bidwell, Pam  
 0602 Bidwell, Greg  
 0603 Tillott, Brian  
 0604 Taylor, Richard  
 0605 Svoboda, Richard E.  
 0606 Hoxsey, Andrew  
 0607 Hewitt, John  
 0608 Wolak, Mark  
 0609 Jacquin, Beverly  
 0610 Wells, Sandra  
 0611 Lopez, Joe  
 0612 Wells, Donald  
 0613 Lerfeld  
 0614 Sullivan, Mike  
 0615 Nee, Gregory  
 0616 Walton, Nancy  
 0617 Vanek, Terry  
 0618 Pence, John  
 0619 Smorul, Donna  
 0620 Vanek, Ed  
 0621 Wolak, Sdelly  
 0622 Campau, Michelle  
 0623 Fryz, Daniel  
 0624 Pilatt, Ed  
 0625 Kaminski, Richard  
 0626 Cheney, Dorothy

0627 Zabariadin, Andru  
 0628 Bayer, Matthew  
 0629 Lake, Debra  
 0630 Henry, Jean  
 0631 Henry, Michael  
 0632 Szyrski, Joseph  
 0633 Blasko, Lawrence  
 0634 Burke, James  
 0635 Bannias, Kurt  
 0636 Delbondro  
 0637 Buth, Gary  
 0638 Dooley, Joe  
 0639 Burns, E.a.  
 0640 Kirk, Brent  
 0641 Cole, Byron  
 0642 Kuehl, John  
 0643 Tibbits, Robert  
 0644 Dunham, Mike  
 0645 Pengelly, Sam  
 0646 Degra, David  
 0647 Cooper, Dufur  
 0648 Morgan, Mark  
 0649 Schurb, Gary  
 0650 Slaten, Keith  
 0651 Slaton, Vern  
 0652 Marshall, Frank  
 0653 Jensen, Bob  
 0654 Kinsley, Kenneth  
 0655 Culpepper, Larry  
 0656 Earley, Kathy  
 0657 Ziegler, Tom  
 0658 Ramirez, Linda  
 0659 Arrow Laminates, Inc.  
 0660 Loria, Frank  
 0661 Nature Conservancy  
 0662 Lake, Michael  
 0663 Adelee, C.  
 0664 Morrison, Michael  
 0665 Strauss, George  
 0666 Simon, Philip  
 0667 Welsh, Don  
 0668 Rosenberg, Marvin  
 0669 Sherman, Harvey  
 0670 Teague, Mr. & Mrs. Donald



0671	No. CA Counc. Federation of Fly Fisherman	0715	Ulle, Frank	0760	Balkonek, Gregory
0672	CA Board of Forestry	0716	Stircula, Frank	0761	White, Larry
0673	U.S. Pumice Company	0717	Posostostz, Jom	0762	Williams, Greg
0674	Ford, Cheryl	0718	Dragoo, Tanya	0763	Williams, L. C.
0675	Barbuck, Walter	0719	Dragoo, Theresa	0764	Kaunph, Alex
0676	Corbin, Beth Lowe	0720	Dragoo, Clyde	0765	Brock, Randy
0677	Main, Rocky	0721	O'Connor, John	0766	Bouse, James
0678	Vazquez, Anthony	0722	Grove, Joseph	0767	Martin, Scoop
0679	Rice, Katherine	0723	Michaels, Sally	0768	Craig, Gary
0680	Northrup, Sherri	0724	Winnop, Hiram	0769	Bethel, Skeeter
0681	Bouquin, David	0725	Younger, John & Evelyn	0770	Winegarden, Grant
0682	Wilkinson, Louis	0726	Duffy, Jerry	0771	Brown, Ronald
0683	Chiappara, Corrinne	0727	Dart, Bill	0772	Bidwell, Jeff
0684	Nestrick, Valerie, Dr.	0728	Hemphill, Joe & Rhonda	0773	Snipes, Bill
0685	Petition - William Patterson	0729	Fairchild, J.w.	0774	Smith, Craig
0686	Beckwitt, Eric	0730	Weigel, George	0775	Barlese, Jerri
0687	Glass Mtn. Pumice, Inc.	0731	MacDonald, Kathryn	0776	Deatley, Tom
0688	Gibson, Jay	0732	Gorzell, Wilson	0777	Simpson, Larry
0689	Off. of Education - Shasta Co.	0733	Ross, Daniel	0778	Tucker, Bob
0690	Bieber, Lillian	0734	Hunter, Edith	0779	Crane, Gregory
0691	More, Glenn	0735	Batista, Margarite	0780	Shouse, Ken
0692	Siskiyou Fly Fishers	0736	Brock, Calvin	0781	Kroon, David
0693	Modoc Joint Unified School	0737	Tyrrell, Bonnie	0782	Dayton, Harold
0694	Cunnison, R.	0738	Tyrrell, Norman	0783	Lehman, Fred
0695	Hamel, Richard	0739	Swiney, Leroy	0784	Lopus, Joseph
0696	Jones, Janis	0740	Swiney, Audrey	0785	Lapton, Jerry
0697	Bucher, Doug	0741	Jerashen, Carolyn	0786	Fulfer, Jeff
0698	Estill, Jack	0742	Primorac, Forrest	0787	Criss, Ronald
0699	Gerig, Peter N.	0743	Cren, Shiela	0788	Criss, Tracy
0700	Gnibus, Laurie	0744	Lever-ton, Dean	0789	Reed, Con
0701	Modoc Co. Horsemen's Assn.	0745	Erquiaga, Bonnie	0790	Crane, Terry
0702	Crowell, James	0746	Hicks, Steve	0791	Suess, Marland
0703	Coop. Exten. Service, Savage	0747	Allan, David	0792	Pauley, Robert
0704	Burk, Frank	0748	Cockrell, Will J.	0793	Country Store, Saunders
0705	Gorzell, Jean	0749	Fish, Game, & Rec., Modoc Co.	0794	Schwebach, Charles
0706	Clark, Gerald	0750	Winkle, Steve	0795	Leonard, Gary
0707	PG&E, San Francisco	0751	Miller, H.	0796	Crane, Barbara
0708	Rechtin, Julie	0752	MacFarlane, Patricia	0797	Crane, Michelle
0709	Calif. Cattlemen's Assn.	0753	Speer, Bill	0798	Daniel, Crane
0710	Dollarhide, Dee	0754	Newman, Valerie	0799	Crane, Carolyn
0711	Atkins, Deborah	0755	Amen, Ralph	0800	Dedmon, Doug
0712	Wells, June	0756	Wilbourn, Babette	0801	Rohrbackee, Norman
0713	Porter, John A.	0757	Forman, Mike	0802	Roybal, J. Steve
0714	Cores, Bill	0758	Adkins, Alan	0803	Main, Jonathan
		0759	Adkins, Sharon	0804	Ellenberger, Larry

0805	Foley, Rick	0850	Angus, Casey	0895	Stevenson, Karen
0806	Phillips, M.	0851	Philhauer, Monica	0896	Amen, Sturges, Jr.
0807	Bailey, Paul	0852	Dezwarte, Steven	0897	Eslingar, Bob
0808	Kaupanger Logging	0853	Ariexde, S.	0898	Brunnemer, Dave
0809	Terry, John	0854	Liad, Michael	0899	Hurd, R.V.
0810	Hagge, William	0855	Behning, Terry	0900	Studinski, Yvonne
0811	Bell, Luanne	0856	Brewer, Diana	0901	Delose, Errol
0812	Tulelake Grange No. 468	0857	Brooks, Michael	0902	Western Cascade Lumber
0813	Fisher, Fred	0858	Bailey, Ed	0903	Wirth, Jeff, Mr. & Mrs.
0814	Ungern, Kristian	0859	Minto, Lynne	0904	Decoito, Katy
0815	Beck, Tom	0860	Minto, Jerry	0905	Decoito, Tim
0816	Millican, Beth	0861	Messens, Paul	0906	Thompson, Robert, Jr.
0817	Kimsey, Randy	0862	Mazzone, June	0907	Thompson Ron I.
0818	Iverson, Anna	0863	Kornger, James	0908	Thompson, Susan
0819	Dubal, Bob	0864	Philhower, Michael	0909	Sawyer, Linda
0820	Hadfield, Michael	0865	Flackes, Della	0910	Sawyer, Mike
0821	Luedtke, Larry	0866	Kobie, Bill	0911	Ketchum, Allen
0822	Wheelock, Darren	0867	Petrolonis, Raymond	0912	Ketchum, Kathleen
0823	Elliott, Lloyd	0868	Dunivin, Ray	0913	Shaw, Bob & Billie
0824	Jefferies, Ken	0869	Chady, Michael	0914	No. Cal. Log Scaling Bureau
0825	Harris, Ed	0870	Schell, Jeffrey	0915	Kaufman & McDonald
0826	Hayes, Herbert	0871	McDonald, Teddy	0916	Milton, Vonda
0827	Will, Wade	0872	Manus, Denton	0917	Milton, Russell
0828	Palmer, Marion	0873	Getke, Bob	0918	Roberts, Marie
0829	Bird, Stu	0874	Denesian, William	0919	Flournoy, Mrs. Donald
0830	Bird, Ben	0875	Wirta, Mike	0920	Chamber of Commerce, Modoc Co.
0831	Albaugh, Albert & Elizabeth	0876	Kobie, Debra	0921	Morris, Marie
0832	Viscotta, Dan	0877	Baltierra, Kim	0922	Morris, Thomas
0833	Flackes, Dave	0878	Porter, Craig	0923	Woods, Winifred
0834	Ray, Michael	0879	Occupant	0924	Schroeder, Mary
0835	Larsen, Leonard	0880	Norris, S. G.	0925	Fisher, Marion
0836	Darst, Tony	0881	Talma, Lee	0926	Gould, Delbert
0837	Phillips, Roy	0882	Benoit, Darlene	0927	Gould, Mayella
0838	Grove, George	0883	Berenson, Jeff	0928	Leventon, Donald
0839	Grove, Cathy	0884	McNamara, Doris	0929	Shaw, C. M.
0840	Groth, Marian	0885	Shaughnessy, Sue	0930	Farm Bureau, Modoc Co.
0841	Groth, Ernest	0886	Ciulla, Bob	0931	Blizzard, Richard & Wandra
0842	James, Aaron B.	0887	Marsh, Bobbi Jean	0932	Carrick, Rollie
0843	Crenshaw, Karen	0888	Jacquín, Donna Ann	0933	Matias, Freddie
0844	Harry H?	0889	Maye, Patrick	0934	Craig, Mary
0845	Acker, Newton	0890	Adin Building Materials	0935	Craig, Gary L.
0846	Schwindt, Paul	0891	Stevenson, Mark	0936	Willmore, Larry
0847	Kobie, Billy Jr.	0892	Stevenson, Sandy	0937	Clifton, Wm. J.
0848	Sumner, Joseph	0893	Stevenson, Frank	0938	Gutzeit, Art
0849	Sumner, Annette	0894	Elzea, Lisha	0939	Taylor, Ival & Mary

0940	Gorzell, Keith	0985	Stockton, Ken	1031	Hodge, William
0941	Dedmon, Virginia	0986	Crawford, Patricia	1032	Grove, David
0942	Berryessa, Eduard	0987	Vick, Marjorie	1033	Langley, Scott
0943	Stopp, Clarence	0988	Bath, Fred and Shirley	1034	Modoc Co. Historical Society
0944	Dedmon, William	0989	Bedeur, B.	1035	Jacobs, Linda
0945	Derner, John	0990	Hurd Lumber Company	1036	Shaffer, Gary
0946	Crawford, William	0991	McGarva, Jacqueline	1037	Brooks, Anthony
0947	Cagle, Robert	0992	Grigsby, Roger E.	1038	Humphrey, Kevin
0948	Chapin, James	0993	Big Valley Lumber Co., Sales	1039	Keefer, Carol
0949	Koza, Don	0994	Lookout Fire Protection Dist.	1040	Cochrane, Guy
0950	Heard, Kennon	0995	Pierce, Jenny	1041	Gardiner, Ken
0951	Rich, Fred	0996	Martin, Neva	1042	Groper, Maureen
0952	Pacific Wood Fuels Co.	0997	Dept. of Energy, Western Area	1043	Rogers, Ruth
0953	Ganes, Glenn	0998	Latka, Donna	1044	McClure, Jim
0954	Hall, Norman	0999	Lassen Forest Products	1045	Almanor Forest Products
0955	Washburn, Dan	1000	Lassen Forest Products	1046	Carver, Jim
0956	Washburn, Wendy	1001	Duncan, Michael	1047	Morgan, Mitchell
0957	Duncan, Bill	1002	Latka, Dave	1048	Stone, Jeff
0958	Erquiaga, Alex Jr.	1003	Kirk, Leo	1049	Reddig, Randy
0959	Rutledge, Dave	1004	Heard, Richard	1050	Kirk, Jerita
0960	Droscher, Paul	1005	Crawford, Clad	1051	Coffelt, Burr
0961	Choban, Sally	1006	Rosemeyer, Dennis	1052	Bridenstine, Mitch
0962	Keene, Richard	1007	Dolmage, William	1053	Bailey, Cliff
0963	Armstrong, Arthur	1008	Warner, Iva	1054	Quinsey, Mrs. Robert L.
0964	Hill, Alan	1009	Fibreboard Corp.	1056	Surprise Valley Elec. Corp.
0965	Gomer, Colleen	1010	Modoc Co. Fire Dists. Assn	1057	Calif. Licensed Foresters Assn
0966	Tenney, Eugene	1011	Wilson, John	1058	Whitehorn, Stephen
0967	Daniels, Jennifer	1012	Weber, Andy	1059	Roseburg Resources Co.
0968	Spooner, Dana	1013	Weber, John	1060	Stovr, Charles
0969	Peterson, Jim	1014	Keller, Richard & Eva	1061	Barnett, Melody
0970	Greenbank, Clinton	1015	Janes, Marvin Sr.	1062	Amrhein, K.
0971	Harris, Harold & Phyllis	1016	Janes, Veronica	1063	McGarva, Shane
0972	Smith, Sydney	1017	San Diego Gas & Electric	1064	Stahl, Don
0973	Tourism Committec, Alturas	1018	Audubon Society, National	1065	McGarva, Ross
0974	Brown, Ann	1019	Weber, Cindy	1066	Hoxsey, David
0975	Mason, Scott	1020	McIntire, Mark	1067	Hussa, John
0976	Williams, Howard	1021	Giffen, Craig	1068	Water Qual. Cont. Bd, Lahontan
0977	Skewarek, Richard & Margaret	1022	Halderman, Helen	1069	Big Valley Lumber, Amrhein
0978	Weber, Warren	1023	Jones, M. W.	1070	Western Forest Industries Assn
0979	Barry, Patricia	1025	Page, Ray	1071	Harris, Joe
0980	Farm Advisor, Modoc Co.	1026	Loveness, V. Alan	1072	Albaugh, Dale
0981	Lyons, Kathy	1027	Bath, Amy	1073	Rowne, Michael
0982	Chamber of Commerce, Modoc Co.	1028	Hill Enterprises	1074	McInnis, Douglas
0983	Taylor, Chris	1029	Olson, Karl	1075	Bird, Karen
0984	Thompson, William and James	1030	Hodge, Tina	1076	Wedam, Jeri

1077	Victorine, Joe	1122	Benner, Jack	1167	Stevenson, Kacie
1078	Clark, Richard	1123	Joiner, Craig	1168	Kelsey, Tom
1079	Clark, Patricia	1124	Guttry, Carrie	1169	Bates, Marty
1080	Wilson, Bill	1125	Guttry, Evan	1170	Kerns, Jim
1081	Tschirky, Paul	1126	Beck, Teresa	1171	Nork, Alice
1082	Nelson, Stephen	1127	Beck, E. Andrew	1172	Vaughan, Trudy
1083	Benner, William	1128	Beck, Jon S.	1173	Dunn, K.w.
1084	Albaugh, Barbara	1129	Beck, Erik A.	1174	Schultz, Milton
1085	Toler, Mary	1130	Elzea, Junior	1175	Hathaway, Abe
1086	Dennis, Michael	1131	Elzea, Gerta	1176	Caldwell, Phyllis
1087	Leonard, Francis	1132	Harper, Elmer	1177	Otrin, Ron
1088	Leonard, Wilma	1133	Laxague, William	1178	Sherer, Ronald
1089	Dennis, Jennifer	1134	Hironymous, Mary	1179	Sherer, Juana
1090	Pingel, Bernard	1135	Laxague, Frieda	1180	Crenshaw, David
1091	Williams, Lucy	1136	Laxague, Catherine	1181	Joiner, Bill & Barbara
1092	Hetherwick, James	1137	Carr, Helene	1182	Armstrong, George
1093	Keefer, Kathleen	1138	Pingel, Vera	1183	Williams, Charles
1094	Staats, Richard	1139	Cates, Joan	1184	Williams, Alice
1095	Cain, Pat	1140	Cates, Clifford	1185	Pauly, Deena
1096	Ding, Steven	1141	Bettendorff, Craig	1186	Armstrong, Yvonne
1097	Thompson, Mark	1142	Simmons, Wilma	1187	Armstrong, David
1098	Kresge, Lorene	1143	Simmons, Enoch	1188	Hawkins, Leanna
1099	Kresge, Jerry	1144	Copp, Paula, K.	1189	Hawkins, Russ
1100	Hopkins, D.	1145	Copp, Tim	1190	Curry, William
1101	Bendix, Louie	1146	Lequieu, Jerry	1191	Cantrall, Loyd
1102	Bendix, Gerhart	1147	Hurlbust, Don	1192	Lafazio, Frank
1103	MacDonald, Lana	1148	Tritch, John	1193	Volrich, Donald
1104	Potter, A. Dee	1149	Columbia Plywood	1194	Hawkins, C. Delmer
1105	Losekoot, Frank	1150	McAndrews, Kathy	1195	Leue', Herb
1106	Voget, Gordon	1151	Modoc Lumber Co., KF	1196	Victorine, Mary Carol
1107	Sousa, Edward	1152	Pappas, Deb	1197	Baley, Rose
1108	Souza, Joseph	1153	Coop. Exten. Service, Delmas	1198	Main, Diane
1109	Souza, Margie	1154	Caster, Paul	1199	Bendix, Ursula
1110	Latham, Claude & Gail Lynn	1155	Johnson, Dennis	1200	Dodge, Rodney
1111	Armstrong, William	1156	Miller, Paul	1201	Maloney, Ed
1112	Eades (unreadable)	1157	Hord, Cliff & Donna	1202	Kenny, John
1113	Eades, Katie	1158	Toler, Irvin	1203	Bean, Bill
1114	McDonald, Robert S.	1159	Toler, Brett G.	1204	Stark, Diane
1115	McDonald, Robert C.	1160	Clearwater, Donald	1205	Barnard, Dale
1116	Eades, Scott	1161	Staub, Ed	1206	Fletcher, Kenneth
1117	Eades, Edna	1162	Bradshaw, Roy	1207	Vestal, Thomas
1118	Eades, Lennie	1163	Loveness, Ron	1208	Stevenson, Vickie
1119	Jones, Maurice	1164	Honzel, Drew	1209	Oakes, John
1120	Kerr, John	1165	Yarborough, Kelli	1210	Miller, Paul
1121	Jobe, Glenn	1166	Peterson (unreadable 1st Name)	1211	Patten, Marty

- |                                     |                                     |                                    |
|-------------------------------------|-------------------------------------|------------------------------------|
| 1212 Keeney, Ken                    | 1257 Natural Res. Defense Council   | 1302 Smith, Leonard F.             |
| 1213 Middleton, Robert              | 1258 Share                          | 1303 Applebaker, Dan               |
| 1214 Calif. Native Plant Society    | 1259 McDaniels, Audrey              | 1304 Shumway, Norman (Congressman) |
| 1215 Kenobbie, David                | 1260 Sierra Club, M/L Response      | 1305 Schneider, Asa                |
| 1216 American Rivers                | 1261 Weidert, Carl                  | 1306 Earnest, Marjorie             |
| 1217 Resource Concepts, Inc.        | 1262 Good, Ron                      | 1307 Adams, Jerry                  |
| 1218 Stokes, James                  | 1263 Western Timber Assn.           | 1308 Haley, B. J.                  |
| 1219 Hot Springs Valley Irrig. Dist | 1264 Transmission Agency of No. Cal | 1309 French, Thomas                |
| 1220 Calif. Wilderness Coalition    | 1265 Rich, David G.                 | 1310 Buffum, Nancy                 |
| 1221 G. Warrens Trust               | 1266 Thomas Lumber Co.              | 1311 Crane, Robert                 |
| 1222 Morrison, David                | 1267 Calfarm Insurance, Tulalake    | 1312 Barron, Frank                 |
| 1223 Sahlgren, Milton               | 1268 Schouest, Gary                 | 1313 Schadler, Jean                |
| 1224 Coppedge, Evelyn               | 1269 Citizens Comm To Save Public   | 1314 Shepard, Dave                 |
| 1225 Clough, Janice                 | 1270 Darnell, Charles               | 1315 Unocal Geothermal Division    |
| 1226 Frank & Majer, Ellen & Joseph  | 1271 Christian, Dorothy             | 1316 Off. of Environ. Proj. Review |
| 1227 Lee, Vicki                     | 1272 Byrne, Elizabeth               | 1317 Dept. of Fish & Wild., Oregon |
| 1228 White, Lester O.               | 1273 Townsend, Stanley              | 1318 McLean-Carey, Carolyn         |
| 1229 Hunt, Cleo                     | 1274 Gerstung, Eric                 | 1319 McNeil, Joseph                |
| 1230 Wayland, Brian                 | 1275 Peterson, R. Russ              | 1320 Gonzales, Darrell             |
| 1231 Brown, Gary                    | 1276 Willard, Dwight                | 1321 Gonzales, Cynthia             |
| 1232 Baker Ruth                     | 1277 Grohs, Phillip                 | 1322 Carey, J. Peter               |
| 1233 Harris, Virginia Jane          | 1278 Klasson, Barbara Jo            | 1323 McNeil, Vivian                |
| 1234 Elander, Eleanor               | 1279 Klamath Tribe                  | 1324 Young, James                  |
| 1235 Calif. Assn.4WD Clubs, Inc     | 1280 Sierra Cascade Logging Conf.   | 1325 Young, Barbara                |
| 1236 Moore, John K.                 | 1281 McDermott, Mary                | 1326 McLean, Doug                  |
| 1237 Cook, Walter                   | 1282 KARE                           | 1327 Armone, Wayne                 |
| 1238 Shaffer, Marilyn               | 1283 Modoc Co. Cattleman's Assn     | 1328 Superior CA Develop. Council  |
| 1239 Sherer, Don                    | 1284 Whitsett, Douglas Dvm          | 1329 Mason, Tad                    |
| 1240 Reuck, Bruce                   | 1285 Byrne, Daniel                  | 1330 Fischer, Nancy                |
| 1241 Lookout Pest Abatement Dist.   | 1286 Preschutti, John               | 1331 Herzog, Kurt                  |
| 1242 Modoc Co. Road Dept.           | 1287 Lava Beds Res. Conserv. Dist.  | 1332 Simpson, Jim                  |
| 1243 Studinski, George              | 1288 Bradshaw, Lloyd T.             | 1333 Shasta Co. Pvt. Indust. Coun. |
| 1244 Brown, Chet                    | 1289 Owen, Wes                      | 1334 Lance, Arthur E.              |
| 1245 Bureau of Land Management      | 1290 Elzea, Chris                   | 1335 Darby, Thomas                 |
| 1246 Arms, K. Paul                  | 1291 Edge, Nick                     | 1336 Smith, Lori A.                |
| 1247 Eades, Arlo                    | 1292 Code, Karen                    | 1337 Davis Creek Mercantile        |
| 1248 Scenic Shoreline Pres. Conf.   | 1293 Weidert, Stan                  | 1338 Gain, John                    |
| 1249 Friends of The River           | 1294 Bd. of Supervisors, Shasta Co. | 1339 Bd. of Spvrs., Santa Cruz Co. |
| 1250 Pacific Power & Light Company  | 1295 California Trout               | 1340 Bd. of Spvrs., Siskiyou Co.   |
| 1251 Bd. of Supervisors, Modoc Co.  | 1296 Espil, Tom                     | 1341 Barnes, Robert A.             |
| 1252 Western Wood Products Assn.    | 1297 Lemke, Robin                   | 1342 Donnelly, Bernard             |
| 1253 Tabor, Steve                   | 1298 Crane, Ray                     | 1343 Spain, Bill                   |
| 1254 Cook, Wesley                   | 1299 Peterson, Howard               | 1344 Lance Forest Products         |
| 1255 McGarva, Duane                 | 1300 Richten, Jack                  | 1345 McNicholas, Thomas            |
| 1256 Bendix, Gerald                 | 1301 Crane, John                    | 1346 Smith, Leonard W.             |

1347 Carr, Brian  
 1348 Smith, Shirley  
 1349 No. Cal. Co. Spvrs. Assn.  
 1350 McIntire, Teresa  
 1351 Rhodes, Philip  
 1352 Bonneville Power Adminis.  
 1353 USAF, HQ Electronic Sys. Div.  
 1354 McIntire Timber Services, Inc.  
 1355 US Environ. Protection Agency  
 1356 Frank, Alex & Abby  
 1357 Joerger, Sue  
 1358 Big Valley Unified School Dist  
 1359 Doolittle, Senator  
 1360 Bird, Ken  
 1361 Taylor, Barry  
 1362 Harlan, Paul  
 1363 Aberle, Walt  
 1364 Watkins, Frank  
 1365 McGarr, Dennis  
 1366 Palmer, Robert  
 1367 Wickenden, Robert  
 1368 Wilson, Kerry D.  
 1369 Hampton, Chuck

1370 Criss, Lonnie  
 1371 Thorn, William  
 1372 Burnette, Robert  
 1373 Kelly, Skip  
 1374 Hiatt, Dick  
 1375 Smith, Alice  
 1376 Flournoy, Bill  
 1377 Jellison, Larry  
 1378 Schreiber, John  
 1379 Weidner, Beverle  
 1380 Weidner, Georgia  
 1381 Steyer, Dick  
 1382 Cook, Carolyn  
 1383 Chace, Lesley  
 1384 Lookout Grange  
 1385 Bidwell, Marsha  
 1386 Morehouse, Michele  
 1387 Parks, Jerry  
 1388 Hawkins, Mike  
 1389 Weigand, Glorianne  
 1390 Weigand, Stan  
 1391 Bidwell, Gene  
 1392 Joiner, Barbara

1393 Hill, Brian  
 1394 Cron, John  
 1395 Main, Steve  
 1396 Gaylord, Bill  
 1397 Earnest, John  
 1398 Copp, Jim  
 1399 Chamber of Commerce, Bieber  
 1400 Carter, Craig  
 1401 Robertson, Daniel  
 1402 Alliance for Env and Resources  
 1403 Byrne, Michael (Byrne Co.)  
 1404 Modoc Co. Schools  
 1405 Beeman, Fred  
 1406 Harlan, Paul  
 1407 Steinhagen, Daniel  
 1408 Sternes, Farrel  
 1409 Hapgood, Norma  
 1410 Dederick, John  
 1411 McGarva, Ken  
 1412 Mix, Bruce  
 1413 Modoc Co. Community Programs  
 1414 Burnette, Robert

## **Response to Public Comments**

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## 010 - Social Environment

1. **COMMENT:** Your conclusion (Table 4-2 DEIS) that the IND alternative is "least compatible" to recreationists is highly suspect in view of the fact that hunting and pleasure driving/sightseeing is the most common recreation use of the forests and is highly dependent, in both cases, on roads. (1328)

**RESPONSE:** We believe that the IND alternative is least compatible due to extensive modification of the Forest's visual quality, and the reduction in semi-primitive non-motorized recreation opportunities. See EIS Chapters 2 and 4.

2. **COMMENT:** We believe the Plan fails to understand and accommodate the most popular recreation users — hunters, fishermen, sightseers, etc. — and has over-reacted to the legitimate but relatively small users who want only solitude. (1328)

**RESPONSE:** The Forest Plan provides increased hunting and fishing opportunities and provides a wide-spectrum of recreation opportunities. We believe it is the best balanced alternative. See EIS Chapter 2 and 4.

3. **COMMENT:** The Preferred Alternative does not fully evaluate the impact of these decisions on the region. I recommend the Current Alternative of the Plan be adopted until such time the local needs are more realistically addressed. (703)

**RESPONSE:** The Record of Decision (ROD) displays the rationale for selecting the Preferred Alternative. The EIS displays our evaluation and the impacts of implementing the PRF Alternative.

4. **COMMENT:** How were the social groups selected? You recognize 7. Such a range of selection makes real comparisons difficult, if not meaningless. We would note a significant difference between "non-local" recreationists and locals. Non-local buys most rec. equipment and supplies elsewhere. The local recreationist buys the big items — rifle, boat, 4wd, tent, etc. — right there in the local impact area. Do not overemphasize the importance of non-local recreationists at the expense of jobs for those who spend big recreation money right there! (1263)

**RESPONSE:** We identified social groups to reflect a broad characterization of the Forest's zone of influence (see EIS Chapter 3—*Affected Environment*, section C). Recreationists are characterized by the type of Forest environment they prefer. The difference between local and non-local recreationists' spending habits is incorporated in the economic impact analysis.

5. **COMMENT:** Summary pg.26— Under social section where is data that allows F.S. to generalize a statement

such as "many retirees, second home owners, recreationists and Native American traditionalists find RBU and AMN compatible with their life-styles, attitudes, beliefs, and values." Need to state data that allowed this statement. (126)

**RESPONSE:** Social characterizations are broad in nature. This statement is based on perceptions in dealing with these groups on many projects. No quantifiable data is available, which is why no absolute percentage was assigned in the statement.

6. **COMMENT:** The economic and social impacts on the adjacent communities are not given adequate consideration and the Preferred Alternative would have significant adverse effects. (1282)

**RESPONSE:** The potential effects of implementing the Preferred Alternative, including social and economic effects, are displayed in EIS Chapter 4—*Environmental Consequences*. The Record of Decision explains the rationale for selecting the Preferred Alternative.

7. **COMMENT:** DEIS p. 2-161. The statement that RBU and AMN alternatives "most negatively impact social groups" is biased. AMN may negatively impact some social groups locally, but it is favorable to many others and it is favorable to most of the users of the Forest from other areas. (1)

**RESPONSE:** DEIS 2-161 states that some social groups would find these alternatives compatible. Overall, we believe RBU and AMN may negatively impact more social groups that we identified than other alternatives.

8. **COMMENT:** The tone of the Plan starting with the social environment's description of ranching and farming group is negative towards agriculture, timber and recreation. (930)

**RESPONSE:** We did not intend to describe any group in a negative manner. Rather, we intended to provide a broad level characterization of one of the social groups affected by land use decisions made on the Modoc NF

9. **COMMENT:** You make a very subjective judgment about ranchers on 3-3 (DEIS plan) "The values of this group regarding family, church, and community are traditional and conservative." This is a statement we don't think the Forest Service has the right to make. (984)

**RESPONSE:** We removed this statement from the EIS.

10. **COMMENT:** Summary p. 26: 1st paragraph, refers to "Native American traditionalists." P. 19 identified "Native Americans" as one social group. P. 26 seems to have identified a subgroup, with recognition that not all Native Americans are "traditionalists" for purposes of

your social analysis. This needs further explanation. (1263)

RESPONSE: EIS Chapter 3—*Affected Environment* presents the full description of the Native American Groups, both traditionalist and non-traditionalists.

11. COMMENT: DEIS Fig. 3-5, Table 3-1: provide data through 1980 and 1979, respectively. Surely more up-to-date data are available. Planning this far in the past, especially in view of the economic swings we have had in the interim, is meaningless. (1263)

RESPONSE: This information has been updated.

12. COMMENT: The recreation industry has a direct year-round impact on both the local economy and the Forest itself as Forest users, yet was given a secondary consideration in use. (558)

RESPONSE: We recognize the importance of recreation to the local economy, and we discuss it in EIS Chapter 3. The Forest Plan provides management direction for recreation and a broad spectrum of recreation opportunities.

13. COMMENT: The Forest Plan should recognize the social problems that will accompany decreased harvest levels on the Modoc. Such as increased crime rates, family breakups, child abuse and increased number of welfare cases. (1057)

RESPONSE: The Forest Plan (Preferred Alternative) displays a decrease in timber-related employment and a minor increase in employment and income (Chapter 4). Certain sectors will experience reductions but others will increase. Overall, the economy and social structure should be stable in relation to the factors the Forest Service influences. EIS Chapter 4 describes social effects in terms of social variables.

## 020 - Economics, General

1. COMMENT: Why was such a large population base used? Was there any reason to include all of Siskiyou and all of Lassen in the primary zone of influence? (1283)

RESPONSE: We included Siskiyou and Lassen counties in the primary zone of influence because the Modoc NF contains acreage in each county; and most of the economic and social effects are in those counties. Economic statistics are only available at the county-wide level.

2. COMMENT: The model used by the FS in comparing the effects of the various proposed alternatives cannot possibly take into account the fragility of Modoc County's present economic situation. (1407)

RESPONSE: The limitations of the IMPLAN model are discussed in EIS Chapter 4—*Environmental Consequences* and Appendix B. EIS Chapter 3 points out that the local economy lacks diversity and is, therefore, more sensitive to the business cycle.

3. COMMENT: There is no analysis of the impact of the various alternatives upon Modoc's economy presented within the subject documents. (1407, 1062)

RESPONSE: We expanded the economic impact analysis in EIS Chapter 4—*Environmental Consequences* to provide more details. Effects are shown for the three-county zone of influence: a major portion of those effects occur in Modoc County.

4. COMMENT: I oppose the Plan as it will have a severe affect on our Forest related communities. (275)

RESPONSE: Your concern has been noted and considered. The economic impact analysis in EIS Chapter 4 displays the effects of various alternatives. The Record of Decision provides the rationale for selecting the Preferred Alternative. Effects on local communities are considered in the Record of Decision.

5. COMMENT: Reducing timber and forage outputs is of considerable concern to me. My livelihood is directly and negatively impacted by your Plan. I recommend the timber ASQ be set at 75MMBF as your inventory data shows this is sustainable (DEIS 2-143). (691)

RESPONSE: An allowable sale quantity of 75 MMBF was set by the old timber plan. Benchmarks in EIS Chapter 2 show that the maximum sustainable ASQ is 70.5 MMBF. The Record of Decision provides the rationale for selecting the Preferred alternative which provides for an ASQ of 45.5 MMBF. The Record of Decision also documents effects on timber- and range-related income and employment effects.

6. COMMENT: This Plan as it stands now would create an economic hardship for people in ranching, and create more expenses at a time when fluctuations of cattle prices make ranching a volatile business thus it would create more economic instability for the entire county. (697)

RESPONSE: Economic and social impacts are displayed in EIS Chapter 4—*Environmental Consequences*. Concern for range-related social effects is documented in the ROD and EIS.

7. COMMENT: Is the generated revenue from recreation greater than the many families involved in the ranching and timber industry who live in Modoc County, pay taxes and provide the backbone for the economy of Modoc County? (1019)

**RESPONSE:** Most of the revenue generated on the Modoc NF is from the sale of timber. The economic impacts displayed in Chapter 4 of the EIS indicate the relative impact on various sectors for each alternative.

**8. COMMENT:** USFS thus made the value judgement that their agreement with CDFG was more important than economic stability of the local ranch-dependent communities. (1251)

**RESPONSE:** The Forest Plan provides a balanced production of goods and services to meet national, regional and local needs. Meeting the deer herd goals is one of the objectives the Forest Service has adopted. Economic impacts are displayed in Chapter 4 of the EIS. The Record of Decision displays our rationale for selecting the Preferred Alternative, and expected effects on economic stability.

**9. COMMENT:** A major criteria and concern of the Plan should be the economic stability of Modoc County and its communities and the timber, lumber, farm and ranch industries which are the primary source of the local economies. Reductions would be received by the County of Modoc in lieu of taxes paid as a result of fees paid in grazing permits and timber harvesting. This would seriously and adversely affect the county's ability to provide law enforcement, schools and roads. The Plan does not properly address these issues or these impacts. (1275)

**RESPONSE:** Sustainable development is a concern of the Forest Service. The Record of Decision documents the rationale for selecting the Preferred Alternative. EIS Chapters 2 and 4 display economic impacts including projected payments to counties. Actual payments will vary depending on the effects of market demands on prices. EIS Chapters 2 and 3 discuss receipts to counties and differences in receipts under each alternative.

**10. COMMENT:** The northeast portion of Shasta County should also be considered in the Modoc Forest sphere of influence because of close job proximity in the Big Valley area. (1057)

**RESPONSE:** While we do have social ties to Shasta County, we did not include Shasta County in the primary zone of influence because the Modoc NF does not have any acreage in Shasta County. Its economy is dominated by Redding rather than the Modoc NF.

**11. COMMENT:** I am opposed to the Plan as it fails to give additional analysis to the direct impact this Plan would have on a ranching operation. (697)

**RESPONSE:** We expanded the description of economic impacts in EIS Chapter 4—*Environmental Consequences* to indicate the effects of various alternatives on numbers of jobs and the income of various sectors. Because poten-

tial change in AUMs can vary from allotment to allotment, direct impacts on an individual ranching operation are addressed during the allotment management planning process.

**12. COMMENT:** 3. Community impacts and employment impacts are not considered. The Humboldt Co., NV, study estimated that a reduction of one job in the livestock sector in Humboldt Co. will cause a reduction of nearly 0.3 jobs in the rest of the economy. How many ranchers will go out of business (if any) depends on the final grazing allotment allocation. Consequently, not even a "best guess" of what employment impacts will be can be made. (1217)

**RESPONSE:** We expanded our analysis of economic impacts in EIS Chapter 4—*Environmental Consequences* to show effects each alternative on various sectors. We included effects on related sectors of the economy in estimates of effects on employment.

**13. COMMENT:** Very little information on employment and income impacts on affected communities is contained in the Plan, yet the Plan states on p. 2-145 of the DEIS that "income and employment opportunities are primarily linked to timber output." This information needs to be explained in more detail. (1250)

**RESPONSE:** We expanded our analysis of economic impacts in EIS Chapter 4—*Environmental Consequences* to show effects each alternative on various sectors. Tables 4-2A and 4-2B show the importance of timber output levels on employment and income.

**14. COMMENT:** In analyzing the net public benefit from livestock grazing, consider the beef price elasticity. Also consider on the local level what the effect of increased competition for private forage resulting from cuts in permitted numbers would do to the industry, as well as the increased costs of hay production with a major increase in deer usage of private alfalfa. (1285)

**RESPONSE:** Output from the Modoc NF is too small compared to the overall market to affect beef prices. Reductions in permitted AUMs could increase competition for private forage. The fact that forage prices could go up is discussed in EIS Chapter 3—*Affected Environment* (see Range, "Dependency on Forest Rangeland").

**15. COMMENT:** The FS provides a table on page 4-10 of the [D]EIS to describe the degree of impact to individual permittees due to livestock reductions. It does not seem possible to lump all the kinds of livestock operations into one and be able to assess the economic impact to each in the form of one simple table. How were those figures determined? (1322)

RESPONSE: This table was derived from a study conducted at the Colorado State University Experiment Station. Because this table generated confusion, we eliminated it in the final EIS.

**16. COMMENT:** It is not clear from the contents what the U.S. Forest Service expects the economic impacts will be. Much of this ambiguity results from the calculations which seem to be made using old data mentioned on p. B-93 and B-94 of the DEIS appendices. The dates of the models range from 1979 to 1982. The inclusion of 1982, the worst recession since WWII, will skew the data downward. (231, 1250, 1275, 1407)

RESPONSE: We expanded our analysis of economic impacts in EIS Chapter 4—*Environmental Consequences* to show effects each alternative on various sectors. Tables 4-2A and 4-2B show incremental changes from the base level; but the base level is not as important as the comparison of alternatives. The Record of Decision shows how we considered the effects to the economy.

**17. COMMENT:** Despite resource value determinations which skew values to commodity product such as timber and grazing, recreation and particularly wildlife associated recreation is the product that provides the highest annual economic benefit from the Forest. Despite this fact, the value of recreation as a Forest benefit is given very little consideration in comparison to timber and livestock. (364)

RESPONSE: Table 2-21 in Chapter 2 displays the discounted benefits for major resources with assigned economic benefits. Timber benefits is the largest contributor to total benefits. Just because the levels of benefits generated by recreation and wildlife are lower than those generated by timber does not mean that the Forest does not manage for these resources. Chapter 4 of the Forest Plan provides direction for managing all resources.

**18. COMMENT:** Summary pg. 15—Question accuracy of PNV graph (MM\$): All alternatives register about even but on page 12 summary under the socio-economic issue there is a difference between IND Alternative and Reduced Budget of 249 jobs (1029 vs 780) and receipt to counties difference of 1.8MM\$/yr (3.4mm vs 1.6). (126)

RESPONSE: PNV taken over a 12 decade time span is not a good indicator of the effects on jobs or county receipts. At the graph scale shown, relatively little change in total PNV is apparent. PNV accounts for the value of all outputs less costs. Jobs and receipts are strongly correlated with timber production.

**19. COMMENT:** The economics of the draft plan do not reflect the real cost of performing the work. (540)

RESPONSE: The costs used in the Plan are the best information available for use on a Forest-wide analysis. See EIS Appendix B.

**20. COMMENT:** The economics of regenerating stands in the mixed conifer and white fir timber types does not reflect realistic costs to perform reforestation. These strata typically require more effort and expense than those in the pine type. With the current moratorium on use of herbicides, reforestation costs on the WMRD are approximately \$3,000 per acre. Although this cost is excessively high, it represents current cost for the white fir type and is significantly different than the Plan's figure of approx. \$1,000 per acre. (540)

RESPONSE: The cost values for regeneration assume the availability of herbicides. EIS Chapter 2 (section E.) discusses the Regional Herbicide Policy and describes projected increases in costs based on the availability of herbicides.

**21. COMMENT:** MNF should analyze all potential impacts to livestock grazing permittees as opposed to only those resulting from the forage allocation process. (1217)

RESPONSE: Forage availability is the major factor that changes between alternatives. Other cost factors are either dependent on the management standards and guidelines which are constant across alternatives, or would vary markedly by individual allotment. Chapters 3 and 4 describe social effects in the social analysis sections.

**22. COMMENT:** 1. Seasonal forage dependence is not explicitly recognized. University studies which have directly considered seasonal forage balance have shown the value of an AUM to vary greatly depending on its season of use, as influenced by forage availability from alternative sources. For Modoc Co., the seasonal forage limitations created from reduced FS grazing may be great. (1217)

RESPONSE: EIS Chapter 3—*Affected Environment* (section under Range titled "Dependency on Forest Rangeland") explicitly states the value of Forest Service rangelands for summer grazing to local ranchers. See also Appendix B for a discussion of "willingness to pay" values.

**23. COMMENT:** 2. The value of the grazing permit to the rancher is never considered. This value is substantial and AUMs taken from the rancher will directly eliminate the permit value that the rancher now holds. (1217)

RESPONSE: The value of a grazing permit is distinct to each individual situation. The importance of permits to ranchers is recognized in the economic and social analysis.

The capitalized value of permits is only one indicator of the value to the rancher.

**24. COMMENT: DEIS 3-79: In view of the sharp decline in beef demand and AUMs on MNF, what are market projections over planning horizon? Does livestock grazing decrease of 8,900 AUMs (PRF) by 1st decade and 15% decrease thereafter reflect the anticipated long-term market projections? (1248)**

**RESPONSE:** We determined livestock AUMs based on forage availability and the goals of the various alternatives. Projected market demand is higher than the number of livestock AUMs shown in the PRF alternative.

**25. COMMENT: DEIS B-37: The willingness to pay values in Table B-8 are unrealistic and will tend to skew your PNV analyses unnaturally toward recreation.**

Those values are elusive non-cash values. They do not represent dollars or cash flow to the govt. timber and range receipts, are hard cash. Thus, it is somewhat deceptive to combine the two kinds of values together in a single "benefit analysis." The analysis suffers the classic "apples and oranges" syndrome. (1263)

**RESPONSE:** The willingness to pay values are one measure of approximating the value of these resources to the American public. Since no market exists for non-commodity resources they are an approximation. The values themselves do not make decisions. Each alternative has constraints on the modeled outputs to represent a different emphasis. Appendix B displays the constraints placed on each alternative. Cash receipt values are shown in Appendix B; and they were used in the analysis of treasury returns and cash flow shown in EIS Chapter 2.

**26. COMMENT: I am concerned that the projected timber cuts are in excess of future demands. The resulting reduction in new home construction and its corresponding decline impact on timber demands should allow for more amenity types of management. (1293)**

**RESPONSE:** EIS Appendix S displays the analysis of timber supply and demand. This analysis shows that the local demand for timber exceeds supply. Demands at the national level will vary over time.

**27. COMMENT: Summary pg. 16—Question accuracy of hunting-related dispersed graph. Why is IND Alt at the lowest level the first decade? IND Alt has the highest # of roads/year, most acres open to ORV use, etc. (126)**

**RESPONSE:** As explained in Appendix B, hunting-related dispersed recreation correlates directly to projected big-game wildlife-fish user days (WFUDs). Big-game-hunting WFUDs are correlated to the amount of forage available for deer herds. The theme of the IND Alternative is to maintain a high level of forage available to livestock

grazing in the first decade. As a result, the amount of forage available to deer is reduced, which causes a correspondingly low level of hunting-related dispersed recreation.

**28. COMMENT: Summary pg. 17—Question accuracy at deer (M individuals) graph. Why is IND Alternative lowest in 1st decade? Why the big change into the 2nd decade to the highest? (126)**

**RESPONSE:** As described in the response above, numbers of deer are related to forage availability. Forage availability is dependent on the theme of the alternative. The IND Alternative emphasizes maintaining a high level of forage for livestock in the first decade. In the second decade, forage can be available to deer. The high level of transitory range created by the IND Alternative allows for a high level of forage available to deer in the second decade.

**29. COMMENT: As described in detail in [DEIS] Appendix C of the Modoc NF Management Plan, the criterion of "present net value" (PNV) was used in selecting the best forest management plan. My question is after saying this was the criterion (PNV) used in selecting the Preferred Alternative, then why did you not choose the "preferred plan" as the one which maximized PNV? This leads me to believe that the Forest Service went with a pre-planned preferred alternative which was not based on objective, scientific and economic analysis, therefore not meeting the "public economic benefit". Why not put in all the relevant political and technical constraints into the draft plan including economic stability in the local areas? Then run the model and pick the alternative which generates maximum PNV given all the constraints? (1013, 1217))**

**RESPONSE:** EIS Appendix C discusses the rationale for using net public benefit (NPB) rather than PNV in selecting the Forest Plan. A prime reason for not using PNV as the sole criterion is the inability to capture all relevant social, political and economic constraints into dollar values for modeling purposes. The Record of Decision provides the rationale for the selection of the Preferred Alternative.

**30. COMMENT: Pick the management plan which maximizes PNV (including relevant non-marked goods valued at defensible levels) in the face of required constraints. Put in all the relevant political and technical constraints into FORPLAN, including economic stability in the local areas. In the analysis, include current or nearly current livestock grazing AUM levels in all the proposed plans as "required." For example "livestock AUMs must meet or exceed 120 MAUMs to meet current permit obligations." A similar approach would be to put**

in local and regional income and employment stability as explicit constraints in all the proposed plans. (1251)

RESPONSE: As described in the response above, it is not feasible to include all relevant political and technical constraints into FORPLAN. We constrained certain alternatives to provide current or higher levels of livestock AUMs in the first decade (CUR and IND). You can compare these alternatives with the others to determine the economic impacts of not providing current AUM levels. This analysis is displayed in EIS Chapter 4—*Environmental Consequences*.

31. COMMENT: In economic evaluations of this type it is important to point out who would gain and who would lose under alternative mgt options. We are never told how much the ranch-dependent sectors of Modoc and surrounding counties fall off in trading to an increased recreational economy under the preferred plan. USFS should present these income distribution effects. (1217, 1251)

RESPONSE: We have expanded the analysis of economic impacts in Chapter 4 to include the effects of each alternative by sectors. We project that the effect on the ranching sector will be low in the first decade because of a minor decrease in AUM availability to livestock.

32. COMMENT: Although the Plan states that the IMPLAN model was utilized, no mention of how employment and income multipliers are calculated is made. This information is highly pertinent to the Plan, yet is not adequately treated. When the Plan explains the IMPLAN model, the data used is over a decade old. (1250)

RESPONSE: The description of the IMPLAN model is in EIS Appendix B. This model is based on the employment and income interactions of various sectors of the economy, based on generated outputs. The EIS includes information showing how the model is used.

33. COMMENT: If the mgt activity described for the MLV benchmark is not stewardship or custodial mgt, what is it? (1263)

RESPONSE: The MLV benchmark does not meet the minimum requirements of law, regulations or the needs of the public. Therefore, it does not meet the basic requirements of stewardship. We developed this benchmark to determine the base level of economic outputs, such as water benefits, from merely retaining the land in federal ownership with a minimal management program.

34. COMMENT: DEIS B-35: We do not understand why the costs of government timber mgt should be related to the level of per capita disposable income in the population as a whole. We cannot see a logical link between the two. Clarification is needed. (1263)

RESPONSE: Timber activities must compete on the open market for labor, and will face higher costs as income levels increase elsewhere in the economy.

35. COMMENT: In the DEIS, 3-6, the statement is made that "livestock grazing is important to Modoc County's economy." I would like to see some figures. Agriculture and forestry make up 19% of the county economy, and you don't state what the breakdown is between the two. You do state that ranching is 30% of the agriculture. Then figure in the 15% of the forage figure. (708)

RESPONSE: Importance is relative. While not a major employer, the ranching industry does provide employment in rural locations for people seeking this type of lifestyle. Most jobs are difficult to capture statistically because they are part-time and transitory in nature.

36. COMMENT: The value per livestock AUM is given as \$11.47. That is probably not realistic. Ranchers would not be willing to pay that much as public range does not have the amenities of private range. Ranchers often have to supply "improvements" on public land. You do not explain how the \$11.47 figure was reached, and whether it applies locally. This is important as improvements are consistently advocated where they are "cost-effective." (500, 708)

RESPONSE: The \$11.47 value is based on surveys of local ranching operations by the USDA's Economic Research Service. See EIS Appendix B. Because AUM prices are set by law and include many factors not considered in the open market, the actual charge per AUM does not reflect willingness to pay.

37. COMMENT: Does the U.S. Forest Service believe they are immune from taking part in helping to reduce the federal budget deficit? (603)

RESPONSE: The Forest Plan projects the budget required to provide a balanced program. We use this information to develop budget requests to the U.S. Congress which has the ultimate responsibility for providing funding and addressing the budget deficit. See EIS Appendices A and R for descriptions of the budget process and the Plan.

38. COMMENT: The Modoc has three major wildlife refuges, either adjacent to or within its boundaries, some of which should be on the tax rolls as private property when I lived here. Your planned reduction in the cut, which will reduce *in lieu* tax revenue, will add to the already heavy tax burden borne by the citizens of Modoc. The federal government must stop buying amenities with the tax dollar. (401)

RESPONSE: Amenity versus commodity outputs vary by alternative, each providing different levels of receipts to counties and effects on costs. See the economics sections

of EIS Chapters 2 and 4. Wildlife refuges are outside the jurisdiction of this document and, therefore, beyond the scope of the Plan.

**39. COMMENT:** 70% of Modoc County is occupied by federal and state agencies. Perhaps a more useful study would be to determine the cost savings to the government and the increased tax base by converting more federal land to private ownership rather than Forest Service and Fish and Wildlife Service empire building. (940)

**RESPONSE:** The study you suggest is outside the scope of this analysis.

**40. COMMENT:** Cal. Native Plant Soc. feels there is an unbalanced resource utilization when the revenues received for forest products are not adequate to recover related expenditures (below-cost timber and range), or to repair damage that results (i.e., riparian and meadow impacts from livestock). CNPS objects to this unbalanced mgt. and feels that below-cost consumptive services are not in the public's best interest, and cannot be justified given the current low demand of lumber and meat protein raised on public lands. (1214, 1248)

**RESPONSE:** The Forest prepares an annual report analyzing timber benefits and costs (TSPIRS). This analysis shows that the timber program on this Forest generates positive revenues. EIS Chapter 3 contains a discussion of the "below cost" timber situation on the Modoc NF. Studies have been initiated to conduct similar analyses for all resources. Chapter 4 of the Forest Plan provides protection for resources through management direction displayed in Forest-wide Standards and Guidelines, management prescriptions, and management area direction. EIS Chapter 3 and Appendix S discuss the timber demand situation.

**41. COMMENT:** Why were the economic and social effects to livestock permittees not presented on DEIS 4-135 under "D. Adverse Environ. Effects which cannot be avoided"? (1217)

**RESPONSE:** This section displays the adverse environmental effects. Social and economic impacts are displayed in a different section.

**42. COMMENT:** National perspective of the Plan. FORPLAN does not separately account for distribution of national benefits on local economies' income and employment as part of its objective. The local and regional economy may lose (and it appears to us that Modoc Co. will lose with the Forest Plan) but FORPLAN would still say this is best from a national perspective. (1217)

**RESPONSE:** EIS Chapters 2 and 4 display impacts on local economic sectors, and incorporate effects on local

economies in the rationale for selecting the PRF Alternative in the ROD.

## 021 - Economic Value of Forest

**1. COMMENT:** Restrictive RXs should be analyzed again to determine actual need, the actual costs, and the justification for removing the land from the multiple use land base. If this analysis is objective and based on a good cost to benefit decision, the amount of restricted land will greatly diminish. (21)

**RESPONSE:** The management direction and prescriptions are designed to meet many needs, including laws and regulations. Not all needs are conducive to quantitative economic analysis. We provided a land use mix that addresses the majority of public issues and needs, and meets the requirements of laws and regulations.

**2. COMMENT:** Subjecting timber or grazing uses to economic analysis and, for example, maximizing present net value is a valid exercise. But to proceed with resource allocations to snags or osprey or Modoc suckers or roadless areas or riparian zones without similar economic efficiency criteria being examined seems unfair and biased. We hope the final EIS and Plan disclose all the costs or trade offs associated with each activity and that an effort be made to return to a multiple use approach to resource allocations. (1266)

**RESPONSE:** See previous response.

**3. COMMENT:**

- Fifty-three percent of the land in Modoc County is administered by the Modoc NF and is therefore exempt from property taxes, which is a traditional source of funding for local government. Seventy-two percent of the commercial timberland in the county is on the Modoc NF.
- The majority of summer pasture for livestock is on the Modoc National Forest.
- The 1976 to 1984 annual average timber harvest on the Forest was 70 million board feet.
- Nineteen percent of the populace in Modoc County derive their income directly from agriculture and forestry. This is six times greater than the State average.
- For the past seven years, 25 percent Forest receipts payments to Modoc county schools and roads have constituted 51 percent of our road department's budget and have paid the salaries of approximately 26 teachers.

The foregoing issues make it painfully obvious that the economy in Modoc County is dependent upon the administrative policies on the Modoc NF. None of the alterna-



tives presented in the draft Forest Land and Resource Management Plan are viable for Modoc County. (1410)

RESPONSE: The economy of Modoc County is influenced by the policies of the Modoc NF. The potential economic impact on the primary zone of influence (Modoc, Lassen and Siskiyou Counties) is displayed in EIS Chapter 4—*Environmental Consequences*. We project that first decade receipts to counties for the Preferred Alternative is \$2.3 million. This compares to an average of \$2.15 million for the period 1980-1989. The average annual amount of timber offered for sale during 1980-1989 was 55.7 MMBF. The ASQ for the Preferred Alternative is 45.5 MMBF. This reduction in ASQ will reduce jobs and income in timber processing sectors (see Chapter 4—Tables 4-2A and B). We project that the total economy will remain relatively stable.

4. COMMENT: In [proposed Plan] Chapter 2, page 5: socio-economic section: this Forest Service Plan has not adequately addressed the issue of local economic stability under each alternative. What are the economic impacts to the county's revenues? What effects would reduced livestock grazing have on the local economy? What are the impacts to the local ranching community? What are the impacts to the local timber industry? What are the impacts to the local business community? What effect would each alternative have on the population of Modoc County? Would increased recreational use generate enough local income to offset reduced grazing and timber harvest revenues? (108, 1153)

RESPONSE: Since the publication of the Draft EIS, we expanded our economic impact analysis in EIS Chapters 2 and 4. Table 4-2 displays receipts to counties; and the effects of each alternative by the various sectors, including ranching and logging. (See also previous response.) The net effect varies by alternative. In the Preferred Alternative we expect receipts to the county to increase above the 10-year average. A small positive increase in employment and income will result.

5. COMMENT: The Modoc Forest Plan does a poor job of showing what the gains and losses to specific user groups would be under each of their proposed plan alternatives. (1251)

RESPONSE: See response to previous comment, and the social analysis in Chapters 3 and 4.

6. COMMENT: We believe the economic analysis is inadequate. It is made in a vacuum, with little effort to recognize the interplay with adjacent forests, agencies, landowners, and political jurisdictions. The discussion of local economic impacts, DEIS 3-12, recognizes almost no effect on the economy other than the direct expenditures and payrolls involved in operation of the Forest itself. (1263)

RESPONSE: The economic analysis displayed in EIS Chapters 2 and 4 provides comparisons among alternatives, and describes potential effects. Effects of spending by industrial, agricultural, and recreational consumers of the Forest's output have been accounted for in the income and employment analysis as well as direct expenditures of the Forest itself. See EIS Chapter 4 and Appendix S for a discussion of relationships with local markets and other timber suppliers.

7. COMMENT: Your economic analysis does not adequately consider the regional importance of your timber sale offerings. The Plan does not recognize the importance of local recreation use to the local economy. The importance of maintaining high levels of market resources cannot be stressed enough because the revenues and other "products" derived therefrom provide the basis by which non-market resources are managed and accessed. (1312)

RESPONSE: EIS Appendix S describes the regional importance of Modoc timber offerings. Effects of local recreation have been incorporated into the IMPLAN (computer model) analysis with other resource values. The Preferred Alternative balances market and non-market outputs.

8. COMMENT: On page 4-3 DEIS, you indicate a difference of 47 jobs between the PRF and IND alternatives. When the related ASQ's are examined, it appears that you allocate only 4.39 additional jobs for every one million feet of harvest. All studies and data with which we are familiar generally allocate 14 to 16 indirect jobs per million board feet of harvest. If we are expected to conclude that approximately 10 non-timber jobs will result because of the reduced harvest, we cannot accept that premise. While we recognize recreation as an area of great potential growth, we do not see that degree of recreation and service employment in your plan. Further, service sector jobs cannot equate to basic manufacturing (timber) jobs on a 1:1 basis because of seasonality, lower wage scales, and other factors. (1328)

RESPONSE: We expanded our analysis in EIS Chapter 4 to show effects on various sectors. Because indirect and induced jobs can happen in many sectors, the results in Chapter 4 show the effects of all resource outputs—not just the effects of timber. EIS Appendix B contains an analysis showing the influence of specific sectors.

9. COMMENT: On DEIS page S-4, you state that "logging and milling alone typically require 4-7 person-years of employment per MMBF processed." All data which we have seen indicates that 7-9 would be a more appropriate number. (1328)



**RESPONSE:** This is a Region wide average which may reflect a broader sample than your information.

**10. COMMENT:** The Amenity Alternative seems to have far more potential for net public benefits than any other. It could be further enhanced by borrowing a bit from the Preferred Alternative to improve its PNV. (1)

**RESPONSE:** The Amenity Alternative provides the most non-commodity benefits of any alternative (see Table 2-21), which is offset by the low benefit levels for timber and range.

**11. COMMENT:** I'm sure that benefits of tourism, recreation, & sustained yield forestry will exceed those of unbridled clearcutting & overgrazing and will provide more jobs and money for local economy. (70)

**RESPONSE:** The Plan (PRF Alternative) and all other alternatives considered provide yields of goods and services. Chapters 2 and 4 in the EIS show the effects of recreation and tourism on local income and employment.

**12. COMMENT:** Concerns 3-2; (4) Economic resources — are served by the recreational rockhound through the use of the outlying services. There has never been a comprehensive study of the actual dollar value in our spending. The utilization of "user days" do not reflect the actual use by the rockhounding society. (5)

**RESPONSE:** The recreation visitor-day (RVD) is a unit of measure for recreation use. It equals 12-hours of recreation. The economic value assigned to an RVD is based on an average of the types of recreation taking place. An actual value for rockhounding has not been developed.

**13. COMMENT:** Economic assumptions. The selling prices used for white fir, although computed in accordance with regional direction, are based on a high base period and may be up to \$100/MBF to high. Since stumpage value is the residual after production costs are deducted from selling prices, the receipts to the treasury appear to be significantly overestimated for any reasonable market for the next 5 to 10 years. This will affect all economic outputs. Statements such as those on pages 4-4 and 4-7 imply a greater economic benefit from hunting and recreation than is warranted. At least the areas where the effects occur and the time frames in which they should be quantified. For instance much of the hunting and recreation dollar is spent in the major urban areas of the state before the hunters and visitors come to the Modoc NF. Much of the value of a wildlife and fish user day (WFUD) is an inputted value or shadow price. As such the values are not likely to be captured as budget or revenue dollars in the near future. The imputed WFUD values for the timber-forage prescription and their contribution to maximizing net benefits are a major reason why this prescription is selected in spite of high costs and

lower timber output. If the timber-forage prescription is unsuccessful then even these benefits will be unrealized. (256)

**RESPONSE:** Values for timber were recalculated to reflect current bidding procedures. This resulted in a drop of the economic values for those strata types with a large white fir component (see Appendix B). We base values for recreation and wildlife and fish user-days on projected willingness to pay. Because the total value is based on society as a whole, the benefit generated by these uses is not necessarily experienced solely in local counties. Projected impacts on jobs and employment is tracked by local counties. No revenues are assigned to this type of dispersed recreation use.

We select certain prescriptions, such as the Timber-Forage Prescription, not only for economic benefits, but also for the objectives and constraints inherent in the theme of the alternative. The number of acres assigned to the Timber-Forage Prescription varies by the theme of the alternative (see EIS Appendix B, section on Description of Alternatives).

**14. COMMENT:** Any plan I could support must consider the following: clarification and justification of economic values used as input for the Plan. Economic assumptions in the Plan seem to vary greatly depending on the interest group it serves. As an example a deer AUM is assigned a value of about 3 times that of a cow AUM. In my opinion both wildlife and livestock should be measured for data input on equal footing. Before the final Plan is adopted can you answer the following question? Will more objective and equal criteria basis be used to compare economic values for wildlife and livestock in future plans? (1025)

**RESPONSE:** The value of a deer AUMs (as expressed in WFUDs) and a livestock AUM are both based on willingness-to-pay values generated from the best information available. This information typically shows that the willingness to pay for big-game hunting is much higher than for livestock. Economic values were not the only consideration in developing alternatives. Some alternatives, such as RPD and IND, constrain the FORPLAN model to provide high AUM levels for livestock in the first decade. The Record of Decision displays the rationale for selecting the final Preferred Alternative. EIS Appendix B displays the basis for the values used.

**15. COMMENT:** The value of an AUM for this report was \$11.47, which was based on the economic principle of willingness to pay. The actual product (red meat) produced from the Modoc NF service land is approximately \$40/AUM on today's retail meat market. This figure is above the \$30 figure for hunting or recreational use and

shows a much higher contribution to the national economy than is indicated in this report. (1153)

**RESPONSE:** The \$11.47 figure is based on the value for forage on the Forest—not on an animal's value on the retail market. This was explained on pages B-39 and 40 of the DEIS. After it reaches the retail market, the benefit values of a resource are much higher than its value on the Forest.

**16. COMMENT:** The Plan must be defective if the FORPLAN shows 8.9 MM AUMs/yr and net income of \$1.22 billion annually in 14th decade. (1258)

**RESPONSE:** We used the economic benefit values and costs in the model only for the first 12 decades. Time periods beyond the 12th decade were not used in the economic calculations; we only included them to show long-term projections for timber. Although the model calculated AUMs and income for the 14th decade, they did not influence any decisions. Erratic levels of production do not indicate that the FORPLAN model is defective. Apparently a decimal point is misplaced in the numbers and income to which you refer, which exaggerates both outputs.

**17. COMMENT:** The “willingness to pay” schedule (Table B-8) has RVDs and WRUDs based on travel costs and contingent values while timber is valued at average stumpage 79-82. We believe these numbers to be erroneous and misleading, resulting in an inaccurate evaluation of returns from various alternatives.

The “willingness to pay” for recreationists (p. B-36 chart) includes estimated travel and other costs. The willingness to pay for timber, however, only includes the bid price for stumpage. If the approach for recreation is valid, then a comparable approach for timber would include falling and hauling costs, milling costs, etc. (1258)

**RESPONSE:** We calculate benefit values for all resources on a willingness-to-pay basis for the outputs on the Forest. Stumpage prices for timber are bid prices on the Forest which is the desired location for determining benefits. Recreation and WFUD benefits are approximations of the willingness to pay on site and are assumed to be equivalent values to the timber stumpage values. travel cost and contingent value methodologies are two methods we use to determine these values; they are adjusted to represent on-Forest values. Actual travel costs are netted out of the “willingness to pay” values. “Willingness to pay” values are over and above the travel costs incurred by recreationists.

**18. COMMENT:** DEIS 2-145, 3rd para.: refers to investments in timber. We were under the impression that timber mgt expenditures are treated as expenses. Do we understand wrong? Is there a difference in cost accounting between K-V expenditures and appropriations? Re-

generation harvest generally results in regeneration through K-V. Clarification is needed. (1263)

**RESPONSE:** Investments in timber include the pre-commercial and commercial thinning of timber stands to improve growth and reduce regeneration expenses. These investments are assumed to be K-V costs for regenerated stands. For currently existing stands requiring thinning or for plantations that are burned over and do not generate salvage funds, the expenses are assumed to come from appropriated funds.

**19. COMMENT:** But it certainly could and probably should incorporate local economic stability as a constraint in FORPLAN. (1251)

**RESPONSE:** We considered local economic stability in the theme of each alternative. We constrained some alternatives to provide various levels of resource outputs, hoping that these levels would help maintain economic stability. EIS Chapter 4 shows effects on local economies and social groups.

**20. COMMENT:** USFS never clearly stated the criterion by which a management plan would be chosen. If USFS wanted to go with “net public benefit” as their management objective why didn't they specify that as their objective in FORPLAN up front, and throw out PNV? (1251)

**RESPONSE:** As stated in prior responses, we cannot model all factors providing net public benefit. For this reason, PNV is used as a proxy for net public benefit. This is modified by constraints placed on alternatives, and provides the flexibility of choosing an alternative that does not necessarily have the highest PNV.

**21. COMMENT:** Summary p. 6 States “...change in PNV is tied to species mix and timber harvest level for the first 5 decades.”

DEIS B-19 says “...PNV is significant for only 12 time periods....PNV is maximized for only 12 of the 16 decades when it is the objective function of the run.”

App. B tells us that max PNV was the objective function of all alternatives considered in detail.

We are confused by the “5 decades” reference in the summary. (1263)

**RESPONSE:** The Summary quote pertains to those factors that most significantly influenced PNV for the first 5 decades. In this case, the species mix and timber harvest level are the most influential factors.

**22. COMMENT:** There seems to be no correlation between the presentation of PNV in Fig 1 of the Summary and that in the second column of Table 2-21. Explanation and/or clarification are needed. (1263)

**RESPONSE:** Figure 1 in the Summary displays the PNV of each alternative for quick comparison. Table 2-21 shows the alternatives in order of decreasing PNV with a comparison of costs and benefits for each alternative. The reader can determine causal factors of the PNV change.

**23. COMMENT:** Any reduction in our grazing permits would cause more of a decrease in return above cash cost than the table on page 4-10 of the EIS indicates. The smaller the permit the greater the effects of a cut. All of the cost associated with running cattle on the allotment would remain close to the same even if permitted numbers are cut. As an example you still have the same number of miles of fence to maintain. (1277)

**RESPONSE:** Information in this table was generated from a study conducted in Colorado and could not be verified locally. Because of the confusion generated by this table, we eliminated it and substituted an expanded analysis of the influence of AUM production levels on jobs and income.

**24. COMMENT:** DEIS p.2-145. In the second paragraph you rightfully explain that timber prices increase over time but most of the benefits remain static. This has been a problem with the economic analysis of all forest plans and I applaud you for bringing it out in the open. (1)

**RESPONSE:** We appreciate your understanding.

**25. COMMENT:** Although Congress must set grazing fees, the DEIS should fully explain the wide range of negative impacts as well as show the percentage of ranchers in CA who do not use NF land. (169)

**RESPONSE:** EIS Chapter 4 shows the environmental consequences of grazing. The percentage of ranchers in California who do not use NFS lands is not pertinent to the decisions to be made in managing the Modoc NF.

**26. COMMENT:** Page 2-1 of the DEIS makes an important point about present net value. The relative cost per unit value of timber for instance compared to that of wildlife and recreation. Timber benefits are 1 to 1.5 times their costs while wildlife and recreation benefits run 2.5 to 8 times their costs. Wildlife and recreation opportunities should be maximized to the highest extent possible within a balanced multiple use framework. The comparison of social effects table on page 4-8 of the DEIS points out this balancing act which the Forest is trying to achieve. (473)

**RESPONSE:** Benefit values are but one aspect in balancing the multiple-use management of the Forest. Supply

opportunities and demand projections are also an important part in determining final management.

**27. COMMENT:** A problem with using an objective like national net benefit to design a forest management plan is that local economic benefits tend to be relatively small compared to the nation and thus tend to get ignored. (1251)

**RESPONSE:** We did not ignore the projected impacts on local economies. They are displayed in Chapter 4, section B, economic consequences.

**28. COMMENT:** In summary, the willingness-to-pay concept used in this [D]EIS by USFS is widely used, economically acceptable, and will likely stand up to public scrutiny. (1251)

**RESPONSE:** The Forest Service believes the willingness-to-pay concept is the best approach available for quantifying resource values.

## 022 - Receipts to Counties

**1. COMMENT:** The preferred Plan would severely impact this counties [sic] economic output and seriously damage its road department and schools. Did the Forest Service properly evaluate the impacts to Modoc County itself? What are the long range losses and gains to this county if the preferred Plan is adopted? (810)

**RESPONSE:** EIS Chapter 4—*Environmental Consequences* describes the economic consequences of each of the alternatives. Projections of receipts to counties, income, and employment under the Preferred Alternative show higher economic benefits than base year levels experienced by local counties in 1982. Projected receipts to counties are also higher than the 10-year average (\$2.3MM versus \$2.15MM). Other alternatives would provide higher employment and income than the Preferred Alternative. The Record of Decision displays the rationale for selecting the Preferred Alternative.

**2. COMMENT:** We feel that the proposed cuts in grazing and timber harvest will have a devastating effect on the local county budget, ranchers and loggers, and all business establishments, as Modoc County's economy is heavily dependent on products produced on the Modoc National Forest. We also feel that implementation of the Preferred Alternative would result in decreased returns and increased costs to operate for the ranchers and logging industries and families within Modoc County. Any money for schools or road programs that would come out of the general fund, above the present amount, due to cuts in your proposed Plan, would cause less funds to be

available for all other county services, i.e., Sheriff, libraries, courts, Chamber of Commerce, etc. (982)

**RESPONSE:** Projected revenues to the counties are higher than the 1982 base year and the 10-year average return. Proposed reductions in timber harvests and grazing will reduce employment and income of those sectors. These effects are displayed in Table 4-2 in the FEIS. We project that other sectors will increase in activity, which will offset timber reductions. The Record of Decision displays the rationale for selecting the Preferred Alternative.

**3. COMMENT:** Siskiyou County schools and the Siskiyou County road department are both heavily dependent upon the 25 percent funds for their basic operations. Any program on the Modoc [National Forest] which fails to maximize production within reasonable environmental constraints will result in foregone funds for Siskiyou County. (1282)

**RESPONSE:** This is a true statement. Any alternative with less than maximum production will result in foregone funds. However, the trade-offs for achieving maximum commodity benefits are much lower levels of production in non-commodity benefits. The Forest Plan attempts to balance commodity and non-commodity production levels.

**4. COMMENT:** The FS itself states Forest receipts as coming 97% from timber, 2% livestock grazing and only 1% recreation. Yet timber and livestock grazing are the two areas most severely penalized. (1244)

**RESPONSE:** See response to previous comment.

**5. COMMENT:** Why was the worst year for receipts in recent history 1982 chosen as the base comparison year? (1283)

**RESPONSE:** The year 1982 was chosen at the national level to be comparable with the RPA program and other national forest plans in other parts of the nation. See EIS Chapter 3 for comparisons with longer time periods.

## 023 - Budget

**1. COMMENT:** Emphasize funding for protection of fish, wildlife, clean water, and outdoor recreation. (49, 356)

**RESPONSE:** The Forest Plan displays the management direction necessary to protect all resource values on the Forest. The projected budget will provide adequate funding to ensure implementation of this management direction. Actual funding can vary depending on the

appropriations from Congress. EIS Appendix R discusses the relationship of funding to management.

**2. COMMENT:** The proposed budget for the Preferred Alternative is \$12 million, far above recent budgets which have run \$7 to 10 million. Given that Congress is unlikely to provide the extra dollars, something will have to be left out. This should be kept in mind when analyzing the effects of the Plan. None of the alternatives, including the preferred one, will be implemented the way they are described if that happens, and probably MMRs and MIRs will be hard to meet.

This budget uncertainty is another reason to formulate general goals, and specific standards and guidelines which can guide the Forest when the required specific objectives numbers aren't met. Timber and grazing outputs must be subject to meeting these standards. (708, 1221)

**RESPONSE:** The Forest Service uses projected budgets to identify for Congress and the public the best program funding mix and level to implement the Forest Plan. The final total level and mix will depend on final appropriations from Congress. The projected budget level includes capital investments at a significantly higher level than is currently provided. If full funding is not received in a single year, achieving yearly objectives may not be seriously affected; but it could influence long-term potentials. If, over time, budgets are not adequate to meet projected outputs, we may have to amend the Forest Plan. This is a monitoring item displayed in Chapter 5 of the Forest Plan.

The Forest may receive alternate funding through cooperative efforts with other agencies and user groups. This funding may offset possible reductions in total budget.

As stated on page R-5 in the FEIS, we will apply Forest management direction regardless of the budget level. We will not relax our standards and guidelines for protecting resources just to meet production levels.

**3. COMMENT:** Projected watershed and fisheries habitat improvement projects are "based on priority needs and cost effectiveness" (p. 207). To what degree will the Forest be able to realistically meet watershed rehabilitation objectives given any foreseeable budget constraints? What emphasis or priority will be placed on using these funds under the Forest Plan? If funds do not come available to meet final Forest Plan goals for watershed improvement, will the Plan and EIS need to be amended? How would this affect other management programs on the Forest? (194)

**RESPONSE:** See response to previous comment.

**4. COMMENT:** Upgrading site conditions and resources must come through mgt technique. (806)

**RESPONSE:** We agree. We will manage the Forest using the management direction displayed in Plan Chapter 4.

**5. COMMENT:** The FS, in the planning process, should display the potential consequences of budget shortfalls for the various alternatives, including trade-offs between programs and outputs, the overall effects of shortfalls in various outputs, and alternative methods for accomplishing planned outputs. (1263)

**RESPONSE:** Appendix R of the FEIS discusses the role of budgets and their relationship to the Forest Plan. It displays trade-offs between programs and outputs.

**6. COMMENT:** Alternative pg. 2—Is the Preferred Alternative the only alternative subject to a budget increase (20%)? (126)

**RESPONSE:** In the draft, we developed the Preferred (PRF), Current (CUR), and Reduced Budget (RBU) Alternatives using constrained budget levels. In the PRF, we used a constrained budget as a proxy constraint for the acres that were feasible to regenerate. We removed the budget constraint for the final Preferred Alternative and applied an appropriate regeneration constraint. Five of the alternatives considered in detail have budget increases (EIS Chapter 2).

**7. COMMENT:** Appendix S of the Plan—Riparian Improvement Priorities by Range Allotment. The introductory paragraph states that “depth of analysis and extent of implementation of strategies depends on funding level.” Restoration goals receive the highest funding priority in order to reach water quality compliance in a more timely manner. The Forest Service should set a ten-year restoration goal, not a twenty- to fifty-year goal. (671)

**RESPONSE:** We incorporated into the program budget the restoration of water quality to meet goals. We will determine actual funding for these projects when we receive final allocations from Congress. EIS Chapter 4 (Section 22, Water and Riparian Areas) explains why achieving water quality restoration takes more than 10 years.

**8. COMMENT:** MNF has been pre-implementing this Plan for several years, another approach that is, in our view, outside the intent of the law if not outright illegal. We base this conclusion on the fact that the average timber volume sold by MNF in 1985, 1986, and 1987 was 41.7 MMBF. During at least 2 of those years, the final target was significantly below the budget request. However, target budget requests themselves were low.

During this time the TM plan has called for an annual program of 62.3 MMBF. Since 1985, not only have you not received a budget adequate to accomplish the Plan objectives, you have not even requested such a budget. The 3-yr (1985-1988) request record falls surprisingly close to the

52.1 MMBF ASQ specified by the PRF. The FY 89 request of 35.7 MM—54.2 MM also straddles that range.

Since 1985, the MNF has apparently made no effort to comply with the direction in the existing TM plan but has, instead, targeted its budget requests at a level near the ASQ specified in the PRF. We can only wonder about the other aspects of the Plan that may have been pre-implemented. (1263)

**RESPONSE:** We have not been pre-implementing the Forest Plan. The ASQ set by the Timber Management Plan is not for one year, but a long-term average. From 1975 to 1989, the Modoc NF offered an annual average of 61.4 MMBF for sale. This period includes years of declining markets and large fire salvage volume. The average for 1985 to 1989 is only 49.5 MMBF, which reflects the effects of reduced budgets and the need to maintain the total below the old timber sale plan. These factors indicate that over the long term, the Forest has met the intent of the old Timber Management Plan.

**9. COMMENT:** Not realistic to say we need an increased budget to produce what we are now producing. A realistic budget should be represented in the selected alternative. (807)

**RESPONSE:** The increase in the Forest budget is not just to produce historic output levels; but to improve management where necessary, and to provide the capital investments past budgets did not incorporate. This includes funding for range, wildlife, timber and watershed improvements, landline location efforts and improved facilities for Forest management.

**10. COMMENT:** DEIS Fig. 3-7 (3-13) Shows a 1982 budget level of about \$8.9 MM. Table 2-5 (2-66) says it was \$9.6 MM—another unexplained inconsistency. (1263)

**RESPONSE:** Figure 3-7 was incorrect. The text on page 3-12 displayed the correct number. We have corrected the figure in the final EIS.

**11. COMMENT:** DEIS 3-12 indicates that the budget increase from 1975-79 was the result of reforestation efforts following the 1977 fires. Since the budget is still higher than the 1979 budget, are we to assume that the reforestation job from 1977 fires is still in full swing, uncompleted?

Table 3-8 should be updated to include 1986 and 1987. (1263)

**RESPONSE:** The total Forest budget has increased since 1979 in many other areas. The reference to reforestation

was to explain the dramatic increase between 1975 and 1979. Figures have been updated.

**12. COMMENT:** It is recommended that the Preferred Alternative be amended by incorporating the following recommendations into the final management plan for the Modoc NF. Most planners appear to be in agreement that forests do not have any obligation to maintain production at the proposed levels if there is insufficient funding. We compliment Modoc NF planners for recognizing this possibility in their Reduced Budget Alternative. (364, 672)

**RESPONSE:** As stated in prior responses, final budgets allocated to the Forest will influence the level of goods and services provided by the Forest. See EIS Appendix R.

**13. COMMENT:** Will a working relationship be developed using locally experienced individuals as a sounding board and source of ideas?

Will you attempt to run the Forest as economically as possible, with the following precedence for allocating funds:

- top-innovative mgt to allow nature to improve the Forest.
- middle-structural, on the ground improvements.
- bottom-support equipment, office and administration expenses? (1285)

**RESPONSE:** The Forest will use public involvement in implementing the Forest Plan.

The Forest will attempt to be as economical as possible in implementing the Forest Plan. Priorities for funding are displayed on page R-5 in the FEIS.

## 024 - Community Stability

**1. COMMENT:** Importance of the Modoc National Forest to our areas economy was not adequately addressed in the draft Plan and EIS. (1251)

**RESPONSE:** Since we developed the draft documents, we have expanded the effects of the Modoc National Forest on the local economy (see Chapter 4).

**2. COMMENT:** USFS should incorporate local economic stability as a constraint in FORPLAN. (1217)

**RESPONSE:** Local economic stability is considered in the themes of the various alternatives. We constrained some alternatives to provide various levels of resource outputs, hoping that these levels would help maintain economic stability. The Forest Service only provides supplies of resources. Total economic stability depends on market demand. Decline in local economic stability in the early 1980's was a result of demand changes rather than supply.

Drastic changes in demand are not incorporated into the FORPLAN analysis. EIS Chapter 4 shows effects on local economies and social groups.

**3. COMMENT:** The three [factors] that are critical to the economic stability of these communities in terms of harvesting levels, grazing and recreation were either ignored or downplayed. (115)

**RESPONSE:** The Forest Plan provides management direction for managing all Forest resources. EIS Chapter 3—*Affected Environment* and EIS Chapter 4—*Environmental Consequences* display the importance of timber harvesting, livestock grazing, and recreation.

**4. COMMENT:** Whereas, much of the population of the County of Modoc is dependent upon the ranching and timber industries, and whereas, 72 percent of the county's commercial timberland is in the Modoc National Forest, and whereas, a substantial portion of the funds for Modoc County schools and county roads are derived from forest receipts payment, and whereas, a major portion of the ranching community is dependent on the Modoc National Forest for summer grazing, and whereas, the City Council and the citizens of this city are as vitally concerned with the protection of this valuable national and local resource upon which we are so dependent as is the USFS, whereas, none of the alternatives in the DEIS adequately acknowledge and honor the dependence of the economy of Modoc County on the resources of the Modoc National Forest and the policies by which the Forest is administered,

Now, therefore, be it resolved that the City Council of the City of Alturas go on record as opposing the preferred plan alternative in the draft Forest Land and Resource Management Plan and as opposing all of the alternatives set forth in the draft Environmental Impact Statement. (135)

**RESPONSE:** We recognize the importance of Modoc National Forest policies on the economy of local communities. EIS Chapter 4—*Environmental Consequences* displays projected impacts on local economies in terms of jobs and incomes. The Record of Decision explains our rationale for selecting the Preferred Alternative.

**5. COMMENT:** The Board of Supervisors of the County of Lassen register its objection and opposition to the preferred plan as well as all alternatives. (268)

**RESPONSE:** See previous response.

**6. COMMENT:** The big switch in harvest from 70% eastside pine to 70% mixed conifers is going to break our communities. Especially if the yield is reduced. I suggest you increase the volume of cut when you harvest more fir to offset the dollar loss. (1145)

**RESPONSE:** The harvested species mix for the Preferred Alternative is now 40% pine and 52% mixed conifers for the first decade. The volume of harvest is set by all management objectives for the alternative, not just the projected revenue.

**7. COMMENT:** The livestock industry was completely left out in the planning process. (1013)

**RESPONSE:** We attempted to include the livestock industry and other special interest groups in the planning process. We strengthened this attempt after we released the draft Forest Plan. EIS Chapter 1—*Purpose and Need* describes consultation with others.

**8. COMMENT:** What USFS in fact did was to constrain the Plan “to comply with agreements between the FS and CDFG. Wildlife AUMs were constrained to meet state deer herd goals” (2-60, B-78, f.). USFS thus made the value judgment that their agreement with CDFG was more important than economic stability of the local ranch-dependent communities. (1217)

**RESPONSE:** The Forest Service agreed to support the state deer herd plans goals for populations. This led to a projected decrease in AUMs available for livestock. We expect a small decrease in the first decade (approximately 3%). We will determine the actual effects allotment by allotment. EIS Chapter 4—*Environmental Consequences* displays projected effects on the local economy. The Record of Decision displays our rationale for selecting the Preferred Alternative.

**9. COMMENT:** It is especially important not to reduce allowable cut to allow the companies dependent on Modoc National Forest timber to take advantage of growing markets in the Pacific Rim and California and further contribute to the health and stability of local economies. We cannot expect to abandon old-growth timber harvesting and have the timber industry maintain its current contribution to the region's economy. At risk are the loss of employment and economic stability when moving to a second growth economy, since the majority of the current timber supply is old growth. (1250)

**RESPONSE:** We project a decrease in ASQ to maintain and improve the ecological health of the Forest. This includes the need to maintain old growth to provide diversity and to maintain certain wildlife species. As a result of timber harvest reductions, we project a subsequent reduction in employment in the timber industry. EIS Chapter 4 displays this reduction.

**10. COMMENT:** Further reductions in AUMs would phase out many efficient small operators and deal a

crippling blow to the livestock industry and the local economy. (1022)

**RESPONSE:** The Forest Preferred Alternative displays a projected decrease of 3% in AUMs available to livestock industry. The actual effect on individual allotments may vary from this projection. The economic and social effects of these reductions are shown in EIS Chapter 4 and considered in the Record of Decision.

**11. COMMENT:** The Forest Plan should address the community stability in all actions since Forest receipts are such an integral part of the county budgets (i.e., school and road dept. budgets). (1283)

**RESPONSE:** The Forest Service is committed to sustainable development. Effects on receipts are displayed in EIS Chapters 2 and 4, and are considered in the Record of Decision.

**12. COMMENT:** It is my understanding that harvest levels at 75MMBF will not jeopardize or further deteriorate the environment and will, instead, economically stabilize the local community—a condition necessary for promoting long-range environmental concerns. (1332)

**RESPONSE:** We did not find any alternative or benchmark that could produce a 75MMBF ASQ and sustain it, and still provide for environmental concerns.

**13. COMMENT:** We request that the economic analysis be expanded to evaluate sector by sector impacts of the proposed plan alternatives. (1251)

**RESPONSE:** We expanded our analysis on employment and income to review the effects sector by sector. EIS Chapter 4—*Environmental Consequences* displays this analysis.

**14. COMMENT:** Selling of timber on our public lands should be based on market requirements only and not to support local economies. (199)

**RESPONSE:** Market demands and support of local economies are two of many factors used to determine ASQ levels. Other factors include the need to provide habitat for wildlife, protection of water quality, visual quality objectives and the need to provide for diverse recreational objectives.

**15. COMMENT:** Concentrate on the benefits of all the people. (374)

**RESPONSE:** The Forest Service wishes to maximize net public benefit, which includes evaluating the benefits to all the people.



## 025 - Local economy, jobs

1. **COMMENT:** Special emphasis should be placed on the economic impact of the Plan to the local economy. Any reductions in income to industry of the area will significantly impact the county. Modoc County cannot afford any reduction in its economy. (1066, 1070, 724, 281, 699)

**RESPONSE:** EIS Chapter 4—*Environmental Consequences* displays the projected impact of each alternative on local economies. The Record of Decision displays the weight given to the local economy in selecting the Preferred Alternative.

2. **COMMENT:** Approximately 52 percent of Lassen County is government owned, and the area must be fully utilized for Lassen and the surrounding counties to maintain their economic base. (268)

**RESPONSE:** See previous response.

3. **COMMENT:** If we were to remove those lands from being able to extract Forest receipts, we basically have reduced the tax base of which to draw from who's going to pay the taxes that those acres would have supported otherwise? (1406)

**RESPONSE:** No acres are reduced from the base for calculating receipts to counties. When acres are removed from a commodity production emphasis such as timber, total revenues generated may decrease. This will affect receipts to counties. Table 2-18 displays projected costs and revenues of each alternative. There is no process for the Forest Service to provide additional taxes beyond those allowed under current policy.

4. **COMMENT:** The county relies heavily on income from livestock operators and the timber industry. If these are curtailed as the Plan proposes, the county will not only lose the direct income derived from these sources but also the economic multiplier that goes with raw material production. (813, 718)

**RESPONSE:** EIS Chapter 4—*Environmental Consequences* displays our analysis of economic impacts and projected changes in employment and income to the range and timber industries for each alternative. The Preferred Alternative does show a decrease in employment in these two sectors.

5. **COMMENT:** The timber industry remains a significant economic factor in our community and can remain so if an adequate supply of raw material is assured. (1333)

**RESPONSE:** As displayed in the economic analysis section of Chapter 4, the timber industry still remains a significant economic factor to the local economy for all

alternatives. The largest reduction in this sector is in the Amenity and Reduced Budget Alternatives.

6. **COMMENT:** Reducing the harvest volume of the MNF will lead to economic hardship for some of the communities in your area. Recreation, mining, or other uses can co-exist with logging. A well-managed forest plan with reasonable levels of harvest should be desirable and attainable. (702)

**RESPONSE:** We believe that the alternatives we presented give a wide range of responses to timber harvest levels. The Preferred Alternative does provide reasonable levels of timber harvest while providing for other uses. The Record of Decision displays our rationale for selecting the Preferred Alternative.

7. **COMMENT:** The timber and timber-related industries are high-paying jobs, whereas tourism is generally at the minimum wage level. Tourist dollars could never make up for the money lost in timber and the rest of the businesses supported by that industry. (92)

**RESPONSE:** Your statement is correct. Jobs in timber-related industries do pay higher. This is reflected in the IMPLAN analysis (EIS Appendix B) used to calculate effects on jobs and income.

8. **COMMENT:** Increasing the deer population does not improve the economic situation of the community. Why should the cattle numbers be cut on the range, when the deer invade the ranchers' lands all year long? (925)

**RESPONSE:** In the FORPLAN model, we assume increases in deer populations result in greater hunter use (up to the demand cut-off point). Greater hunter use will improve the local economy. The use of private lands by deer is one factor considered by the California Department of Fish and Game in calculating deer herd goals.

9. **COMMENT:** It is the opinion of this board and management that certain reductions in livestock grazing, and the reductions in the quantity and quality of harvested timber on the Modoc NF would have an extremely adverse impact on a very fragile and still depressed rural economy. Timber and livestock grazing should be held at current numbers and increased over time in order to support economic recovery in Modoc County. (1056)

**RESPONSE:** EIS Chapter 4—*Environmental Consequences* displays the effects on the jobs and income on local economies. The Record of Decision discusses the Forest's role in sustaining the economy in relation to other resource management objectives.

10. **COMMENT:** The best alternative would be one that: 1) maximizes a majority of resource outputs; 2) meets all the environmental constraints; 3) provides maximum



socio-economic benefits to the local community and the regional and national user-public; and 4) does all of the above on a reasonable budget. (1312)

RESPONSE: We agree. This would be the best alternative. However, we discovered no alternative that met all of these requirements. Chapter 2 displays the development and comparison of alternatives.

11. COMMENT: This Plan as presented would reduce the timber harvest from a ten-year average of 70 million board feet to 47 million board feet. This would mean the elimination of at least two hundred jobs in our community. (1407)

RESPONSE: The ten-year average (1980-89) timber harvest for the Modoc NF was 54.6 MMBF. The final Preferred Alternative is 45.5 MMBF. EIS Chapter 4—*Environmental Consequences* displays projected reductions in timber employment.

12. COMMENT: We estimate that there are ten direct jobs and six indirect jobs in every million board feet of lumber cut off the Forest. (693)

RESPONSE: EIS Appendix B (IMPLAN section) displays the method for calculating employment.

13. COMMENT: If there are budgetary constraints to manage the Forest properly, how about looking into private industry for a voluntary-type forest management, having the Forest Service review their proposals and administering the harvest. (803)

RESPONSE: This type of stewardship contract is one possibility for achieving forest management at a reduced budget. The Forest Service will consider such contracts where appropriate.

14. COMMENT: Your comments as to exactly how much income one can reasonably expect to be generated for the county over the years if this Plan is implemented will be appreciated. (803,813)

RESPONSE: EIS Chapter 4—*Environmental Consequences* displays the projected effects by alternative on employment and income.

15. COMMENT: We support alternatives that would start at the sustained yield level of 91 million board feet and come down accordingly. We feel that a realistic goal should be from 80 to 85 million board feet per year. (1036)

RESPONSE: In our analysis, we did not discover any alternative or benchmark that could provide such a high level of timber yield at a sustained level while still meeting legal management requirements for other resources.

16. COMMENT: Even though the potential sale level drops by 23.2 MMBF/year the Forest assumes that there

will be an increase in jobs of 982. DEIS summary pg. 12. This is because the Modoc failed to use the existing plan as a comparison for projecting impacts. The draft plan falsely covers up the fact that jobs, income and payments to counties will drop off significantly by the imposition of the Plan, quite possibly causing economic and social upheaval in the area's timber-dependent communities. (1070)

RESPONSE: Table 1 in the summary was mislabeled. The 982 jobs displayed is the total projected person-years of employment. This is corrected in the final EIS. The final analysis does display a reduction in the timber processing sectors. EIS Chapter 4—*Environmental Consequences* displays the projected impact on employment and income.

17. COMMENT: We are very concerned about the potential for negative impacts to these communities which may arise from the implementation of the various forest management plan alternatives. It is appropriate to examine the employment and income effects in the appropriate level of detail. In relatively large forest areas, the impacts to a particular locality or community may potentially be the opposite of the overall trend, i.e., an alternative that results in increases in county employment may actually cause decreases in employment levels for some of the communities in the county. For that reason, supplemental information concerning economic impacts to the affected area and to specific communities should be presented.

It is important that the Forest Service consider the type and capabilities of existing mills in estimating employment impacts. Changes in harvest areas, volumes, and average diameter of trees harvested can have significantly different impacts within the same county. For example, by decreasing the average diameter or changing the species of timber, certain saw mills may be made obsolete.

Thus, there will be groups of workers displaced as mills close. This is reflected on p. S-8 of the DEIS appendices. The Plan, p. 5-21. of special concern in this area is the potential affect on the Big Valley Federal Sustained-Yield Unit, as stated on p. R-3 of the draft Forest Land & Resource Management Plan. Somewhat disturbing factor is the timber harvest level in the Preferred Alternative (PRF). Will maintain the base year 1982 California timber harvest on national forest lands was the lowest it had been since 1957. The 1986 harvest amount was the highest it had been since 1973 and twice the 1982 harvest level. Any impact evaluation should use 1986 for its comparative standard. (25)

RESPONSE: We expanded the economic impact section to display potential effects on income and employment by sector. There is no consistent logical basis to estimate impacts to a smaller area such as individual communities or mills. As with the effects of species and size, individual

operators may wish to modify their mills to operate with smaller diameter material, or choose to go out of business. The employment and income effects can, at best, be generalized. EIS Appendix B displays the process to accomplish this.

The description of impacts is compared against 1982 as the base year to maintain consistency with other Forest Plans. This was a very bad year for the timber industry and most alternatives do look better than the base year. Using 1986 as the base year would make all alternatives look bad. Descriptions in Chapters 3 and 4 provide more information on timber offer and harvest quantities to enable better comparisons.

**18. COMMENT: Plan 3-2—Local Econ. Impacts: the statement, "...individuals holding a possessory interest in NF lands" is totally erroneous. The courts have always upheld that public land grazing is a privilege, not a right. While livestock permittees always argue "possessory" rights, this is the first time we've seen the fed. govt. apparently agree with them. Please eliminate this statement. (107)**

**RESPONSE:** The State of California imposes a tax on permits such as grazing use permits because the permit has a recognized value. This tax is termed a "possessory interest tax". The payment of this tax does not imply the permittee has any ownership of NFS lands. We modified the statement in the final Plan to read, "Another source of income to the counties is the possessory interest tax levied on individuals holding various permits on national forest lands."

**19. COMMENT: DEIS 3-10: why are unemployment rates reported only for the period 1975-1980? There are figures available for the following 7 years. (1220)**

**RESPONSE:** We updated these rates.

**20. COMMENT: I'm really tired of hearing about the much needed protection of the wildlife, from the snail to the fowl in the air, without consideration that men and women need to make a living. (154)**

**RESPONSE:** The Forest Service is directed by law and regulation to consider wildlife as well as economic and social considerations when managing national forest lands.

**21. COMMENT: From time to time, the federal government attempts a new "jobs program" designed to train our local citizens for gainful employment. We cannot rationalize such an affirmative program by the fed. gov. on one hand while another agency of the fed. gov. undertakes a program to minimize raw materials production and eliminate existing jobs. (1258)**

**RESPONSE:** National forest lands are managed to provide a wide range of goods and services including raw materials for production and non-commodity values. The Forest Plan is designed to achieve a balance between commodity and non-commodity values. Achieving this balance may result in a reduction of jobs.

## 030 - Resource Management, General

**1. COMMENT: Let's carry a plan that complies with Congressional directives to produce a stable timber supply, promote dependent communities, fund local government, and provide for an adequate transportation system, and protect our environment in a way that minimizes environmental conflict. I support Modoc Cares. (285)**

**RESPONSE:** The alternatives considered in detail in Chapter 2 all meet Congressional direction. Depending on the theme of the alternative, the level of timber supply, the potential impact on local economies, the transportation system, and the environment will vary. EIS Chapter 4 describes environmental consequences by alternative.

**2. COMMENT: With proper mgt, the forage, timber, and wildlife could be improved without any cuts in timber and grazing allotments. (467)**

**RESPONSE:** Volume of timber harvest and forage available for livestock grazing vary by alternative. Some alternatives do not reduce timber and grazing levels while other alternatives do, depending on the management theme and objectives of the alternative. The Preferred Alternative does project reductions in timber and grazing. The Record of Decision presents the rationale for this reduction.

**3. COMMENT: It is your job to preserve and renew the Forest under your jurisdiction so that it will continue to be available for logging, recreation, erosion control, water quality, wildlife habitat, atmosphere replenishment and all the other functions which forests perform for us. You must resist the pressure for short-term gain; preserve and restore the Forest under your jurisdiction so that it will be at least as valuable a resource after 50 years as it is now. Overgrazing, clear cutting, uniculture, chemical broadcasting and other "engineered" changes will starve and damage not only the grandchildren of the people who profit from these changes today but also the future generations of all of us. You must protect the interests of our future citizens in whatever compromises are made! (151)**

**RESPONSE:** National forest lands are managed to provide sustained yields of resources and protect the environment over the long run.

**4. COMMENT:** Timber production, livestock grazing and extraction of minerals should come exclusively from privately held lands. Public forest land should be managed primarily to produce benefits that include: recreation, protection of watersheds, wildlife habitat, wilderness, scenic beauty, and scientific and cultural use. The Conservationist Alternative to the Forest Service draft land management plan would be an acceptable compromise. (547, 1214)

**RESPONSE:** National forest lands are managed under the laws of the United States. These laws provide for the use of national forests for timber production, livestock grazing, and extracting minerals. The purpose of forest plans is to determine the appropriate level and management direction for providing these resources as well as the many other resources of national forests.

**5. COMMENT:** There should be local input, input from the industry. The industries are the ones that make a living off the Forest, and that's what the Forest was put here for. (1118)

**RESPONSE:** EIS Chapter 1—*Purpose and Need* describes our consultation with others, including the timber industry. Forests were established for many reasons, including commodity and non-commodity values.

**6. COMMENT:** There must be a balance in the use of the national forest lands. Timber harvest, fisheries, wildlife, recreation, watershed and visual factors must all be considered. We believe that the forest lands should be managed as a continuing renewable resource so that a sustained yield and use may be made without a deleterious impact on the land and the ecological systems. We support an approach to timber harvest which insures an ongoing and sustainable timber harvest level. We support the SOC (Save Our Community) alternative with a timber harvest of 75 MMBF and maintain current AUM for the Modoc National Forest. (332)

**RESPONSE:** The Forest Service also believes in maintaining a sustained yield of resources including timber, wildlife, recreation, water, livestock while protecting the environment. The alternatives described in detail in Chapter 2 will achieve these objectives. The SOC alternative could not be analyzed in detail because 75 MMBF cannot be sustained by any alternative or benchmark while protecting the environment.

**7. COMMENT:** The Congressional requirements that the Forest Service plan and operate the national forests to coordinate in a harmonious fashion the various uses is significant in the light of the fact that the Modoc

National Forest's planning process: (1) assumed from the beginning that irreconcilable conflicts exists between timber and various other uses; (2) made inadequate effort to coordinate, reconcile, and harmonize those uses; and (3) considered no alternatives which adequately coordinate the various multiple-use goals. The Forest planning process applied on the Modoc instead is subtractive in that each area of the Forest is zoned for a particular use and other uses are prohibited or severely restricted in that zone. Because of the nature of the process, timber harvesting is treated as a competing and secondary use from the other multiple uses instead of a harmonious use. (1070)

**RESPONSE:** The planning process has attempted to the maximum extent possible to provide for multiple-use management among all resources. The Forest developed numerous prescriptions that harmonize timber management and other resources. The Timber-Forage Prescription provides for timber management and forage for deer. The Timber-Visuals Prescription allows for managing timber and visual quality. The Visual Retention and Riparian Prescriptions allow for limited timber management while protecting visual and riparian values. These prescriptions allow for timber management but will not achieve full yields from timber. Some prescriptions do preclude timber management when such management is not compatible with the management objectives for that prescription. Through monitoring and evaluation, we can determine whether modifying standards and guidelines would improve our multiple-use mix.

**8. COMMENT:** The multiple-use management concept should be applied in all but extremely critical areas where other activities have a demonstrated detrimental effect to the resource. When a significant area needs to be put into single-use designation to preserve a sensitive resource, only impact as few acres with the single-use designation as is possible. (1283)

**RESPONSE:** See previous response.

**9. COMMENT:** Management areas/specific: some areas which are labeled as range have no allotments in them — specifically the Medicine Lake Highlands. Recognizing that a range Rx can be wildlife range emphasis of livestock range emphasis, then all areas w/o allotments must be wildlife. It is unclear how the timber in these blocks will be managed, and there is definitely timber there, several of these range blocks are located in strategic areas. Particularly sensitive are blocks near Bertha's Cupboard on the [Lava Beds National] Park boundary, in the Hoffman roadless area, and near Glass Mtn. These areas seem not to have been selected because of their value for deer and pronghorn, but rather through a subtraction process. This is a drawback of not having a wildlife Rx. (708)

## 031 - Commodity Production

RESPONSE: Identifying allotments in the Medicine Lake Highlands was an error in mapping which has been corrected. We assigned timbered areas a variety of prescriptions. Refer to the Preferred Alternative map to determine prescriptions for specific areas.

10. COMMENT: We want to compliment you on the multi-use philosophy of the Modoc National Forest. (530)

RESPONSE: Thank you for your comments.

11. COMMENT: The Preferred Alternative provides a management direction that is realistic and a good balance of resource values. The alternative puts emphasis on certain resources of the Forest that have been short-changed by management in the past while still providing a flow of commodity type outputs. (807, 984, 1031, 1235)

RESPONSE: Thank you for your comments and support.

12. COMMENT: We would like an explanation on why you choose the Preferred Alternative over the Industry Alternative. It appears by the chart on 2-153 (DEIS book) that all resources (grazing, wildlife, timber, etc.) gain from this alternative. (984)

RESPONSE: The Record of Decision displays our rationale for selecting the Preferred Alternative.

13. COMMENT: Why is it we must ask the FS to maintain this land when the people who use the land are capable of maintaining it for their use? (1078)

RESPONSE: Through our system of government which includes elections and appointments, the Forest Service has been given the charge for managing National Forest System lands. The Forest Service works in cooperation with many agencies and users to protect and maintain the public lands.

14. COMMENT: We agree with your mission statement. However, we feel that adoption of the Preferred Alternative would be counter-productive. We support SOC. (1251)

RESPONSE: The Record of Decision displays our rationale for selecting the Preferred Alternative. We did not consider the SOC alternative in detail because we could not implement it as described.

15. COMMENT: I believe the SOC alternatives best promote the principles of multiple use, maintains and expands wildlife population, and certainly best promotes community stability. (1410)

RESPONSE: See previous response.

16. COMMENT: How can you satisfy your directives to manage under the multiple-use concept? (1285, 1362, 1199, 1255,)

RESPONSE: Plan Chapter 4—*Management Area Direction* describes standards and guidelines and prescriptions which the Forest will use to provide multiple-use management.

## 031 - Commodity Production

1. COMMENT: I would like to see the Forest used to the maximum potential. Your 10-year plan falls short of meeting this goal. (1118)

RESPONSE: Your comment does not specify if you wish to maximize one resource area or to achieve all resources at their maximum. The Forest analyzed a series of benchmarks (described in EIS Chapter 2) to evaluate maximum potentials for individual resources. Rarely would maximizing one resource area allow maximizing any other resource. We developed alternatives from the experience gained from the benchmarks. These alternatives presented various mixes of resources. We selected the Preferred Alternative because we believe it has the best resource balance.

2. COMMENT: The economic benefits, both direct and secondary, that our communities and schools derive from the timber harvest and grazing leases are of the utmost concern to the Chamber. The Chamber feels that the Modoc Cares SOC alternative plan provides the best and most equitable plan for management of the Modoc National Forest lands. (91)

RESPONSE: We did not develop the SOC alternative because we had inadequate information to determine how to model it. The timber yield described by the SOC alternative exceeded the benchmark runs for sustainable timber production. The SOC alternative does not explain how this production level can be achieved while maintaining adequate old growth.

3. COMMENT: MNF Plan should be most responsive to the public which uses the Forest and relies on it most—northeastern Californians. An adequate annual allowable timber sale quantity is essential to the stability of the region. Notwithstanding potential deficiencies in the 1975 TM plan, I am not persuaded that the proposed LTSY of approx. 58-60 MMBF annually is sufficient to meet the future needs of the public. (1304)

RESPONSE: The Modoc National Forest is managed to meet the needs of the nation. The needs and desires of local publics were sought during the public involvement process (described in EIS Chapter 1) and are incorporated into the Forest Plan. The allowable timber sale

quantity is an important part of the economy of northeastern California. We discuss ASQ in EIS Chapters 3 and 4.

We believe that the long-term sustained yield (LTSY) for the Preferred Alternative (56.3 MMBF) provides the Forest's fair share of sustained economic development while protecting many other resource values. The Record of Decision displays our rationale for selecting this alternative.

**4. COMMENT:** The commodity emphasis of the Forest Service should be eliminated. The Forest Service is under no obligation to maintain community stability through below-cost commodity production. Most national forest land is best suited for the production of "amenities"—recreation, wildlife, water quality, wilderness, etc., and should be used for such. (1048)

**RESPONSE:** The Forest Service provides commodity resources to meet the demands of the American public. The Forest Plan is a balance between providing our fair share of sustainable development to meet the public's commodity needs, and providing amenity values. The Forest annually prepares a review of the timber sale program (TSPIRS) to determine whether the program is below-cost. Each year the Forest has had a positive program.

**5. COMMENT:** It is apparent from the information presented that this planning effort is biased toward commodity production. The fact that regional planning direction required the Modoc NF to include areas that produce less than 20 cubic feet of wood per acre per year as suitable (regenerable) sites for timber production tends to support this observation. (364)

**RESPONSE:** We do not feel we are biased toward commodity production. The Forest included the lands that produce less than 20 cubic feet of wood per acre per year because, while these lands produce less than 20 cubic feet on the average, in small plots productivity can be much higher. The Forest allows harvesting these sites on an opportunistic basis where natural regeneration can be achieved. This does not indicate a bias towards commodity values but a wise use of resource opportunities.

**6. COMMENT:** The Preferred Alternative bodes ill for the cattle and timber economy of northeastern California. The alternative consistently places the harvesting of timber and grazing of cattle in a subordinate position to other forest users. The proposal consistently ignores other possible methods to achieve the same ends. (1359)

**RESPONSE:** The Preferred Alternative is one of six alternatives. Some alternatives emphasize commodity production while others emphasized non-commodity production. The Preferred Alternative is the Forest Service's selection as the best balance between commodity

and non-commodity values. Your comment does not provide an example of alternate methods to consider.

**7. COMMENT:** I would like to see the Forest Plan be based on production using sound intensive management practices for livestock as well as timber. With the emphasis on intensive management to control brush, junipers, along with reseeding and water improvements, livestock and wildlife will be enhanced with the least negative impact on local economy, which is based on agriculture. (1240)

**RESPONSE:** The Range-Forage Prescription provides direction for intensive range management practices. The number of acres assigned to this prescription varies by alternative. The Forest will prepare a juniper woodlands analysis to aid in managing these rangelands (see Appendix B in the Forest Plan).

## 040 - Air Quality

**1. COMMENT:** (1) What is the expected output of these pollutants from management activities involving fire in the LRMP? (2) How does this compare with the baseline or current output? (3) What effect will increases have on the Class 1 areas? (1260)

**RESPONSE:** (1) We did not model projected output of pollutants from burning activities in the Plan, because we did not expect the output to differ much from previous years. A separate Forest project analysis, apart from this Plan analysis, however, has shown that total Forest generated air pollutants will be much less than our current and past levels when the average annual acres burned by wild-fire can be significantly reduced.

(2) The baseline level of air pollutants is sketchy at this time due to very few air quality monitoring stations operating in the Northeast Plateau Air Basin which covers the Modoc National Forest. Data from those stations tell us that this air basin is among the cleanest in the State. Since the summer of 1989, the Forest has collected visibility base line data for the Warner Mountain Class I areas. The Forest is in the process of identifying Air Quality Resource Values (AQRVs) for monitoring.

(3) We will design and schedule management activities to minimize impacts to Class 1 areas, especially during those periods when visitor use is high.

**2. COMMENT:** Where it is possible that air standards will be exceeded, projects will be postponed. (500)

**RESPONSE:** The local air pollution control districts (APCDs) address this concern in their County Agricultural Burn Implementation Plan *Burn/No Burn*. APCDs also issue daily forecasts which the MNF complies with

when conducting prescribed burning. In sensitive receptor areas, we will apply special management constraints including time of year of burn activities and proper direction of air flow to help prevent cumulative effects from smoke. The Forest Service will coordinate with other APCDs. See also Plan Chapter 4, Forest-wide Standards and Guidelines for air quality.

**3. COMMENT: The FEIS should discuss how resource management activities will be consistent with protection of Class 1 air quality increments and criteria in the South Warner Wilderness and the adjacent Lava Beds wilderness. (1355)**

**RESPONSE:** We included air quality S&Gs in the Plan which specifically address Class 1 airsheds and air quality. Where the level of risk to air quality degradation is deemed unacceptable, prescribed burning will not be used. We will use other treatment methods to reduce the possibility of wildfire, including vegetative manipulation or site preparation.

**4. COMMENT: B. (3) Are cumulative impacts prioritized between districts and forests? (126)**

**RESPONSE:** Plan Chapter 4, Forest-wide Standards and Guidelines, addresses cumulative impacts of smoke from prescribed burning. We will not conduct multiple-project burning simultaneously between districts or other forests if the risk of degrading air quality is unacceptable.

**5. COMMENT: Please do all you can to keep clean air. (1231)**

**RESPONSE:** Air quality is one of many natural resources the Forest Service is mandated to manage. The intent of the Forest Service and this Plan is to manage air quality the best way possible while also providing goods and services to the public in a cost effective manner. See also S&Gs pertaining to air quality, additional air quality concerns in management prescriptions, and the other air quality comments and responses in this section.

## 50 - Diversity

**1. COMMENT: DEIS 3-34 states "...maintain a minimum of 5% of the land area occupied in each forest type in older mature stands exclusive of wilderness...." Why are approximately 165,000 acres of CAS timberland, or over 25% of the total, being preserved as one seral stage? As similarly applies to snag mgt, these are high value stands, and the use or non-use of them has tremendous impacts on PNV. If the objective function is maximum PNV, why does the MNF have the highest value seral stage 20%+ over the legally required minimum? (21)**

**RESPONSE:** The Plan calls for maintaining a minimum of 5% in each seral stage, including old-growth. Old growth allocations were made by management area. Overall, 21,712 acres were designated for old-growth management on >20 cu.ft. lands. The acreage value in this comment includes lands that are capable of producing <20 cu. ft. per acre. These stands are managed on an extended rotation, and for the most part do not meet the definition of old growth as defined in the wildlife Standards and Guidelines portion of the Plan (Chapter 4). Included in the wildlife Standards and Guidelines are the acreages by timber type that will be managed for old-growth conditions on >20 cu.ft. and <20 cu.ft. lands.

**2. COMMENT: The old growth diversity proposal on this Forest need not be implemented. This is a Forest interpretation not a requirement by law. (108)**

**RESPONSE:** Diversity guidelines in the Plan were derived from Regional guidelines. All forests in Region 5 are following these guidelines which were developed from pertinent literature and professional expertise to meet the intent of the National Forest Management Act. The Act provides for balanced consideration of all resources, including old growth, in land management planning. Section 36 CFR 219.26 requires that forest planning consider diversity of plant and animal communities.

**3. COMMENT: Based on rotational cutting plans, no species of tree should ever be less populous than about 75-80% of natural population for any age increment. (76)**

**RESPONSE:** Timber management will change the mixture of age classes and tree species on portions of the Forest, particularly in mixed conifer stands. We can mitigate some of this activity by planting the same species that were harvested, and by following diversity Standards and Guidelines prescribed in Plan Chapter 4. In addition, timber management prescriptions, such as uneven-age management can also maintain a mix of tree species. Older seral stages will decrease as a result of Plan implementation, as well as the number of tree species associated with these vegetation types. Diversity guidelines were established to maintain representative vegetation communities and seral stages at levels that would provide for viable populations of wildlife species.

**4. COMMENT: P. 2-2. Minimum viable populations is wording used in response to the question on Diversity. If this wording remains in the Plan its meaning should be explained.**

Pages 3-6, 3-7. Item 3. Diversity—current management. This section provides little information regarding management for vegetative diversity. This section only discusses timber management. No mention is made of current management for any of the other 16 vegetative types such as wet meadows, wetlands, riparian, mountain

**mahogany, black oak, juniper and etc. What are "recruitment acres in the next lower successional stage?" Are there trees or other plants? (364)**

**RESPONSE:** The section formerly on draft Plan 2-2 is reworded in the final for clarification. We expanded the definition of diversity in the EIS and Plan. In terms of displaying vegetation diversity, the EIS contains specific information on the amount of habitat in EIS Chapter 3—*Affected Environment*, under Diversity and Wildlife.

**5. COMMENT: Maintaining 5% of each timber type/seral stage combination (DEIS, page 2-35) will not be adequate to guarantee the continued existence for current species diversity.(364)**

**RESPONSE:** Guidelines for diversity comply with Regional Guidelines which are based on research and professional expertise. All forests in Region 5 follow these guidelines. Although species diversity will not be optimized in management activities, we believe that viable populations of existing plant and animal communities will be maintained.

**6. COMMENT: MNF Plan proposes to address diversity by requiring a distribution of stands in certain age and size classes. However, with each stand having a very low diversity within it, an overall reduction in the number of species and the population levels of other species will occur. Thus, a distribution of relatively sterile even-age stands does not adequately maintain diversity on MNF. The reduced diversity can affect timber production by eliminating or decreasing pest predator species populations, thus, eliminating or weakening the prevention component of integrated pest mgt. All veg mgt activities should maintain the plant species composition of the habitat type where the project occurs. (500)**

**RESPONSE:** Timber harvest activities will increase fragmentation of forested lands. Proper planning and placement of harvest units can reduce adverse effects resulting from this fragmentation. In forested habitats, overall diversity is expected to increase — not decrease — as younger seral stages become more abundant. The number of conifer species within harvest areas may decrease because these are typically planted with one or two species. Disease resilience of conifers is expected to be higher as the rotation ages are shortened.

**7. COMMENT: All major veg. types will be maintained in their present proportions on the Forest. The size class distribution should not be the primary determining factor for diversity, except for old growth forests.(500)**

**RESPONSE:** Planned management activities (e.g., timber harvest and prescribed fire), and catastrophic events (e.g., wildfire) are apt to change seral stages of vegetation communities. Younger seral stage proportions will increase

and old-growth and older seral stages will correspondingly decrease in forested habitats not extensively harvested to date (such as red fir, white fir and mixed conifer).

Forested habitats, such as ponderosa pine, that have been extensively logged, will not change significantly, relative to current proportions of seral stages. Our goal in eastside pine is to retain essentially all remaining old growth, estimated at 6% in this vegetation type. The remainder of our ponderosa pine stands will be in early- or mid-seral stages, which is essentially our current situation.

**8. COMMENT: Rangelands should also be managed to maintain the complement of native plant and animal species on the different soil types. Juniper or shrub species should not be eliminated from any area. Seedlings of species that would improve range condition should only use native species that would naturally be found on the project area.(500)**

**RESPONSE:** Most of the complement of native shrub communities have been altered because of past livestock grazing and fire suppression activities. The results of this have been an increase in juniper dominated stands, and shrub dominated stands with sparse understories. We will try to recover shrub/steppe communities that were here historically. We will use native seedlings as an aid to recover sagebrush communities. However, where erosion stabilization is the goal, non-native perennials may also be used.

**9. COMMENT: The Plan must be expanded to define which types and stages are targeted, how many acres of each will be maintained, and what active management techniques will be used to ensure maintenance of this acreage. Again, the consequences of management implementation for the Preferred Alternative project decreases, particularly in old growth and riparian habitats. These decreases will significantly contribute to a reduction in Forest diversity. Neither the Plan or the DEIS address the reductions in MIS habitat in terms of decreases in diversity.(661)**

**RESPONSE:** Vegetation types and projected changes in these types are displayed in the Affected Environment and Environmental Consequences of the EIS (Chapters 3 and 4). The Plan describes acreages of old-growth that will be maintained to meet diversity guidelines. EIS Chapter 4—*Environmental Consequences*, Wildlife and Fish section, addresses expected impacts to MIS habitat and species. Specific management information is addressed in the Forestwide Standards and Guidelines, Management Prescriptions, and Management Area Direction (Plan Chapter 4). Under the Preferred Alternative, riparian habitats will be improved, not further degraded.

**10. COMMENT: Vegetative diversity is not even mentioned in future condition or mission except as a compo-**



nent of timber age classes and wildlife habitat. There are no diversity objectives. Nowhere is general native plant diversity mentioned in and of itself; this should be an important goal and monitoring criteria for the grazing program. Plantation monocultures will definitely decrease diversity, both within and between stands. Ponderosas, Jeffreys, and white fir will be more prevalent, with sugar pines, mountain hemlocks, incense cedars, and hardwoods becoming scarcer. Since the ponderosa forest in lava beds is a narrow strip of probably-retreating size, clearcutting along the boundary could affect the microclimate there, possibly crossing a critical moisture limit to affect the health of the [National Park Service] forest. (708)

RESPONSE: Vegetation diversity was displayed using broad plant communities and seral stages within those communities. Their relative abundance is displayed in EIS Chapters 3 and 4—*Affected Environment* and *Environmental Consequences*. Data will be fine-tuned during specific project level analyses. Plantations will result in reduced conifer species diversity, particularly in mixed conifer stands; whereas seral diversity will increase as a result of altering older stands to younger stands. Further discussions on diversity are also contained in the following comments. There is no indication that harvest methods as implemented in the Plan will have a negative impact on health of ponderosa pine stands in the Lava Beds National Park Forests.

11. COMMENT: Such vegetation as old-growth, as stated in the DEIS (p. 2-65), will decrease considerably. These decreases will significantly contribute to a reduction in Forest diversity. Neither the Plan or the DEIS address the reductions in habitat in terms of decreases in diversity. (1018)

RESPONSE: EIS Chapter 4—*Environmental Consequences*—states that old-growth reductions are expected as a result of plan implementation. Standards and Guidelines (Plan Chapter 4) display the amount of old growth that will be maintained; these are allocated by management area. Old-growth reductions will occur primarily in red fir, white fir and mixed conifer stands. Because pine stands have already been heavily harvested (6% remains in old growth), most of remaining old growth will be maintained. We developed Standards and Guidelines for diversity in part to insure that viable populations of plant and animal populations are maintained. In addition to Standards and Guidelines, the final Plan dedicates habitats for pine marten and pileated woodpeckers, two old-growth dependent MIS.

12. COMMENT: The MNF has the obligation to provide long-term mgt. and protection of a significant proportion of Calif.'s plant species.

Although the MNF plan recognizes the Forest's diversity, it fails in many areas to adequately consider the long-term impacts of the proposed land uses and mgt. strategies on plant species diversity, and the genetic diversity of "important" timber species.

Calif. Native Plant Soc. (CNPS) is not satisfied with the treatment of diversity in the Plan because it provides for maintenance of diversity in terms of the structure and age of communities. Biological diversity, the number and relative abundance of species, is not adequately addressed. The Plan does not show adequate concern for the affects of the proposed increases in road-building, timber harvest, grazing and recreation on species diversity.

Maintenance of diversity and the complex communities which result should be given the same attention as single species such as deer, and commodity resources such as timber. (1214)

RESPONSE: Single species plantings will reduce stand diversity within harvested and planted stands of mixed conifer timber types, where typically one or two species are replanted. On the other hand, historic ponderosa pine stands were probably single species conifer stands. Due to fire suppression, these stands may be more diverse now than in historic times because of white fir and juniper encroachment.

Plan and EIS Chapter 3—*Summary of the Analysis of the Management Situation* and *Affected Environment*, respectively—reflect the difficulty in defining biological diversity; to that end, these sections were improved. At the Forest Plan level, quantifying all plant communities is difficult; there could be literally thousands. To that end, we addressed vegetation diversity in broad vegetation categories. Vegetation/plant species diversity is only one facet of biological diversity. The following comment and response delves further into the discussion of biological diversity.

In relation to specific vegetation communities, the Forest Ecologist has developed an ecological classification for eastside pine communities, and is currently working on a similar classification for riparian areas. These are more applicable at the project level and will be used to guide management direction on these sites.

13. COMMENT: The Envir. Conseq. Section (DEIS p. 4-20) states that "vegetative diversity will be altered under any land mgt. alternative." We are particularly concerned about the statement that "diversity is not a specific resource that can be managed" (DEIS 3-30). The USFS possesses the info needed to act responsibly and maintain species diversity, as mandated by law. Maintenance of diversity is the most important facet of resource mgt.



**Projected decreases in old growth and other Forest habitats will cause decreases in MIS populations and further fragment Forest ecosystems. Decreases in MIS are in violation of CFR 219.19, which requires the maintenance and improvement of MIS populations. We oppose any Forest actions that further reduce species diversity or amounts of old growth Forest. (364, 1214, 1260)**

**RESPONSE:** Diversity must be viewed as much more than just the application of vegetation type/seral stage guidelines. Diversity is the combination of many physical and biological phenomena that together make up habitats. Plant species composition and frequency, seral stages, crown closure, vegetation structure, snags, and down logs, are all criteria that contribute to vegetation diversity. In the Plan diversity was addressed using requirements developed for vegetation patterns; down logs; snags; threatened, endangered and sensitive plant and animal species; species of special interest; harvest species; and aquatic and riparian habitats. The concept of diversity is ensuring that the viability of all species and habitats is maintained. Allocating vegetation communities and seral stages is merely one facet of this issue. The Forest-wide Standards and Guidelines, management prescriptions, and management area direction provide specific direction for managing these components.

We anticipate increases and decreases in some species (including MIS): a goal of the Plan is to ensure that viability of all species is maintained. Plant and animal species viability must be maintained according to 36 CFR 219.19. Fluctuating population levels does not violate this regulation as long as viability is maintained.

**14. COMMENT:** Use of introduced non-natives after burning for forage and slope stabilization can also be harmful to native vegetation. Evidence exists showing non-native grasses do not reduce erosion more effectively than natural regeneration. Non-natives can be a detriment to the ecosystem because they suppress shrub germination and outcompete native forb and grass species that typically germinate following fire. This can have long-term effects on plant species diversity and community structure and composition because species are eliminated if intolerant of the treatment.

Native shrubs and annuals have been shown as effective as non-natives, and do not have negative side effects associated with non-natives. (1214)

**RESPONSE:** Generally, we use native species for revegetation purposes to emulate historic post-fire conditions. Unfortunately, alien invaders, such as cheatgrass, invade these sites naturally.

In slope stabilization projects, such as roadsides, some non-native species are better suited for erosion control; establish more rapidly; and are inexpensive compared to

native species. Where erosion control is the main goal, non-native species may be used in lieu of native species.

**15. COMMENT:** Calif. Native Plant Soc. is most concerned about the fate of native herbaceous forest species that require cool, shaded forests, undisturbed soil, and decaying forest humus. Many herbaceous forest species probably cannot tolerate a continuous disturbance cycle with open canopies, competition from weedy species that are favored by disturbance, and other characteristics of clearcut Forests. It reduces Forest diversity and possibly creates rare species from those which are presently common. (1214, 1295, 708)

**RESPONSE:** A reduction in both plant and animal species dependent on old-growth habitats is likely. By reserving specific habitats for old-growth management, we can manage for core areas that will be maintained for plant and animal species dependent on this seral stage. Habitats surrounding these core areas will be managed to include stands that are in older rotation cycles. These managed areas will fluctuate spatially and over time. In this manner, reserves of old-growth-dependent plant and animal species can expand into adjacent stands when they are suitable.

**16. COMMENT:** We are concerned with potential losses of genetic diversity. Regulated forests will be revegetated with nursery stock. Remaining old-growth forests which harbor significant genetic info will be reduced to a bare minimum. Selected genotypes will be planted over large expanses of land. Only one or two species will be planted (i.e., ponderosa or Jeffrey pine). Can we citizens be assured that this nursery stock is providing the necessary diversity to cope with future changes and overcome natural disasters, such as insect infestations? These concerns further support a reduction in the proportion of land that is clearcut on MNF. (1214,1260)

**RESPONSE:** Regarding the comment about old-growth forests, please refer to the previous response. Single species plantings could alter some mixed conifer stands to pure species stands over time. The concern about genotype is probably minor. We primarily get planted trees from local seed sources, because these are recognized as being adapted to specific environmental conditions.

**17. COMMENT:** Replant the same species that were there before harvest. Uneven-aged stands can provide a greater opportunity for diverse plant/animal communities. (1030)

**RESPONSE:** Uneven-age management is planned on 5% of the Forest's timber land base which includes < 20 cu.ft. per acre. Uneven-age management will retain some vertical diversity within a specific stand. However, these stands will still lack large overstory trees. The major impact of uneven-age management is that it necessitates frequent

re-entry into the same stand(s), thus disturbing these sites more often. Uneven-age management may also require a well-developed road system.

**18. COMMENT:** The oak standards are good as far as they go, but should be considered minimums and be modified to give direction to leave all quality acorn-producing trees and quality replacement trees.

Aspen groves are proposed to be managed by clearcutting groves of decadent trees. A superior method would be to use partial cuts and not begin the next cut until regeneration trees from root sprouts are above the browse line. This would provide the full range of aspen grove values including nest trees for yellow-bellied sapsucker, other woodpecker species and cavity-nesters such as tree swallows that require the micro habitat old decadent trees provide.

Bitterbrush and mtn mahogany are also intended to be regenerated by removal of old stands. Regeneration of both species is uncertain by all methods. Any method used in timber or range lands should be considered experimental. All techniques attempted should be verified as consistently reliable before any large-scale projects are attempted. (1260)

**RESPONSE:** We agree with your suggestions, but feel that the intent is adequately incorporated in the current direction.

**19. COMMENT:** Plan 2-2: Diversity. It seems to say that the Plan will only maintain "minimally viable" wildlife populations and will not result in the extinction of any plant. We request that this issue statement be strengthened by an affirmative commitment to increase diversity. (107)

**RESPONSE:** Diversity will probably increase in some areas, and decrease in others. As a minimum, we intend to maintain viable populations of fish and wildlife, and prevent extirpation of plant species. However, management direction in Plan Chapter 4 provides numerous opportunities for enhancing fish, wildlife, and plant populations, and increasing diversity Forestwide.

**20. COMMENT:** The natural diversity data base (NDDB), which the DFG has assembled over the past 5 years, contains much of the information upon which we are basing our comments regarding natural diversity. We urge you to make use of it in preparing the final documents. The staff of the NDDB would also appreciate receiving copies of rare plant and animal survey reports, forms, and other documentation.(364)

**RESPONSE:** Much of the information in the CNDDDB was provided by Forest personnel and was included as base information in the draft document. We used the data base in developing the Final EIS and Plan.

**21. COMMENT:** Contribution to diversity of natural plant and animal communities in CFR 219.17 (b)(2)(v), requiring Forest to treat wildlife as a controlling, coequal consideration in forest mgt.(1248)

**RESPONSE:** This regulation requires forests to address long-term changes in plant and animal species diversity. Forest-wide standards and guidelines, management prescriptions, and management area direction for diversity and wildlife provide direction to ensure that viable populations of all plant and animal species are maintained. See also comments addressed above.

**22. COMMENT:** Plan 4-48. (5)(a). What does the word "representations" mean? (364)

**RESPONSE:** Thank you for bringing this to our attention. We changed the sentence to read: "*If naturally present, maintain representative seral stages within the following vegetation types....*"

**23. COMMENT:** Continue the ecosystem classification program. (500)

**RESPONSE:** We will continue this program.

**24. COMMENT:** Chapter 4, p. 4-3, Overall management: Even-aged timber with a diversity of age classes — clarify this statement. How can you have even-aged timberlands throughout the Forest with a diversity of age classes? (1153)

**RESPONSE:** Portions of the Forest will be harvested each year. Thus, over time many age classes comprised of units will have been harvested. In addition, portions of the Forest will be managed for old growth and older seral stage-dependent species.

**25. COMMENT:** Recommendation: The MNF should reexamine its seral stage diversity requirement. Analysis along with Forest-specific data should be supplied which demonstrates the cause and effect relationship between the seral stage pattern proposed and its necessity for viable wildlife populations. Seral stages produced by areas withdrawn from timber production should also be included in the calculation of sufficiency. (672)

**RESPONSE:** Our purpose for diversity standards transcends their applicability to maintaining viable wildlife populations. Diversity standards are one of several methods we use to ensure that biodiversity on the Forest is maintained. Another objective of those standards is the maintenance of existing plant communities. We developed diversity guidelines in the Plan from Regional guidelines. All Region 5 Forests are following these guidelines. They were developed from pertinent literature and professional expertise to meet the intent of the National Forest Management Act. Seral stage diversity is defined and displayed

EIS Chapters 3 and 4—*Affected Environment and Environmental Consequences*.

**26. COMMENT:** If an area has <5% in a required seral stage, no timber will be cut in that stage in that MA until the 5% is met. Replacement acres will be actual old growth in other MAs as well as acres set aside in the MA, thus resulting in twice the required area set aside until the 5% is met for that MA. (500)

**RESPONSE:** A major objective for meeting seral stage diversity is to manage existing stands that meet old growth standards as the highest priority on a management area basis. If <5% is available, then the most suitable stands approximating old growth will be managed for old-growth conditions. This is defined in the Forest-wide Standards and Guidelines for seral stage diversity (Plan Chapter 4).

**27. COMMENT:** Caltrout supports the establishment of RNAs and SIAs for preserving examples of California's many aquatic and terrestrial communities. (1295)

**RESPONSE:** Plan Chapter 4—*Forest-wide Standards and Guidelines*—outlines direction for maintaining plant and animal communities, sensitive plants, fish and wildlife, seral stage diversity and many other resource areas. For example, the condition of aquatic systems, including their biota, should be maintained or improved by implementing the Riparian Management Prescription. Likewise, threatened and endangered species are protected by the Endangered Species Act. Direction in the Plan for our threatened, endangered and sensitive species protects habitats necessary for these species. Additional direction is also provided in the Management Prescriptions.

Currently, one RNA exists on the Forest (Devil's Garden RNA). An additional RNA is proposed in the Raider Basin area of the Warner Mountains. The RNA was proposed, in part, to emphasize unique aquatic and terrestrial communities. We also have mechanisms to establish additional RNAs and SIAs as the needs are identified. For further information on SIAs and RNAs, please refer to sections 210 and 211 of the comments and responses.

## 51 - Old Growth

**1. COMMENT:** The DEIS Summary-26 states that all alternatives result in declines in old growth and mature forest stands. This is unacceptable. No further reduction of old-growth timber should be made. A minimum of 10% of this seral stage should be maintained. (3, 1253)

**RESPONSE:** Seral stage guidelines, including old growth, are based on guidelines developed using research findings and professional expertise at the Regional (Statewide)

level. They are adequate for maintaining sufficient levels of old growth to provide for viability of plant and animal populations dependent on this seral stage. In the Plan (Chapter 4), standards and guidelines require that 5% be managed as mature seral stage (medium-large tree with >40% crown closure, 140-180 years old) and an additional 5% be managed as old growth (medium-large tree, 40% crown closure, >190 years old). Thus, in reality we are managing for a minimum of 10% in mature and old growth. In addition to these standards and guidelines, the Final Plan dedicates habitats for pine marten and pileated woodpeckers, two old-growth-dependent MIS.

**2. COMMENT:** No old-growth forest remaining should be cut for at least 50 years. This is important to fully protect old-growth-dependent species as well as provide for mandated age and species diversity. You cannot equate a 300-year-old tree with simply board feet or money. (169)

**RESPONSE:** The National Forest Management Act (NFMA) requires that all resources receive balanced consideration in land management planning endeavors. This provides the framework for multiple-use management. Old growth is an important component of forested ecosystems; but it is not the only component. We developed standards and guidelines to ensure that sufficient old growth is maintained for viable populations of plants and animals dependent on this seral stage. The previous comment provides background on how old growth will be managed. (See also the comments on forest diversity, Resource 050.)

**3. COMMENT:** Old-growth forests. On page 2-65, the DEIS indicates that implementation of the plan will result in the retention of 30,800 acres of old growth out of the total of 640,000 forested acres on the Modoc NF. This is close to, but below, the MMR of 5% for each seral stage ( $30,800/64,000 = 4.8\%$ ). Twelve hundred more acres of old growth must be retained to meet the minimum level required by the MMR. DEIS (Summary-26), page 3-31 the graph. No alternative should permit old growth eastside pine to fall below the minimum 5% during any period. (364)

**RESPONSE:** Of the 640,000 acres approximately 21,000 acres will not be managed for timber because they are in the wilderness area or other areas where timber will not be managed. Of the remaining 619,000 acres that are considered tentatively suitable, 30,812 acres (5%) will be managed for old growth.

**4. COMMENT:** Virgin old-growth forests should be preserved first in meeting the 5% forest seral stage requirements. Just growing large trees won't restore all the many interrelationships and natural checks and balances that have evolved over long periods. (500)

RESPONSE: We select old growth on the following bases:

- Stands that meet old-growth requirements will be selected as the highest priority.
- In management areas that do not contain enough old growth, stands that most closely approach old growth will be selected and managed for old growth. Very few areas on the Modoc have not been harvested. These will likely be the highest candidates for old-growth retention.

5. COMMENT: The effect of further reductions in old-growth forests on plant and animal diversity, and continued fragmentation of forest ecosystems reflects an extreme imbalance in multiple-use objectives. S&Gs (proposed Plan 4-38) for timber encourage the use of old-growth conifers. A tree "must contain at least a 10-foot log with at least a 6-inch top diameter inside bark, 25% sound." The value of an individual old-growth tree (to diversity, wildlife, water quality, soil productivity, herbaceous plants, lichens, mosses, microorganisms, aesthetics, recreation, and the human spirit), far exceeds this pathetic contribution to sawtimber (1214).

RESPONSE: Old-growth trees do play an important part in the role of an ecosystem. However, the standards defined for sawlog in the timber standards and guidelines can be met by a relatively small tree. We developed old-growth standards and guidelines to ensure that this seral stage and the species dependent on old growth are maintained as an integral part of forested ecosystems.

6. COMMENT: DEIS 3-34 states that particularly in the eastside pine type, remaining old-growth stands supply the only significant harvestable volume, and that a clear but difficult choice faces the decision maker: "to meet timber harvest and silvicultural improvement targets, or meet old-growth and diversity mgt. direction." The only legally and morally proper decision is to change the "targets" and preserve the remaining old-growth forests. Continued harvest of old growth cannot continue without devastating effects to diversity. (1214)

RESPONSE: Of the suitable land producing > 20 cubic feet per acre of ponderosa pine, only 6% remains in old growth. Thus, only an additional one percent can be harvested within old-growth pine. For the most part, timber harvest has shifted to smaller trees and other timber species (red fir, white fir and mixed conifer), in addition to large-diameter pine. The Plan reinforces this trend. We expect old growth to decrease in other timber types, but not below levels stated in the Standards and Guidelines and management area direction. (See also previous comments on old-growth management strategies.)

7. COMMENT: The only solid MMR for wildlife set forth in the Plan is the regional requirement that the forest maintain 5% of its lands in old-growth habitat

(DEIS 3-165). But the Plan does not require that this old growth be retained in a pattern — a structured mosaic of habitat areas — that will ensure the viability of minimum numbers of indicator species in the Forest. The Plan acknowledges that many timber compartments no longer contain 5% of timbered areas in old growth (DEIS at 3-165), but does not analyze whether such timber compartments could sustain indicator species populations with a mosaic of habitat areas.(1214)

RESPONSE: Undoubtedly, old-growth stands will be fragmented as the result of timber management. The Forest will attempt to minimize adverse effects of this fragmentation by providing corridors between old-growth areas. By reserving specific areas for old-growth management, we can manage core areas that will be maintained over time. Habitats surrounding core areas will be managed to include stands in older rotation cycles. These managed areas will fluctuate spatially and over time. In this manner, reserves of old-growth-dependent plant and animal species can expand into adjacent stands when they are suitable.

The Forest has also dedicated habitats to be managed for pileated woodpeckers and pine marten, based on the habitat requirements of these species. These habitats are spatially arranged where suitable habitats exist, and will provide a pattern of older seral stage habitats for these and other species dependent on older seral stages.

In compartments where old growth is deficient, stands that are most similar to old growth will be managed for old growth. For the most part, these are in ponderosa pine stands. The wildlife Standards and Guidelines (Plan Chapter 4) provide direction and acreages for selecting old-growth stands. This is further detailed in the management area direction.

8. COMMENT: Include in your plans the setting aside of representative old-growth timber stands at all elevations and aspects within the forest for purposes of scientific research. All species found on the forest should be included. (1228)

RESPONSE: We will manage old growth primarily where the opportunity exists, and in a manner that facilitates a contiguous network with other old-growth stands. As old growth is managed for various timber types, most conifer species will be included. Many different elevations and aspects should be included by default. Scientific research in these areas is encouraged. Forest-wide Standards and Guidelines outline amounts of old growth for various timber types.

9. COMMENT: DEIS 4-133: Siskiyou LMP-DEIS mentions a study to determine the benefits of old growth to the forests of the Pacific NW. Presumably this study applies as well to Modoc LMP — or has this appraisal

been made on the MNF? Since needs for mtce have not been determined and regional studies of benefits of old growth are underway, what plans are being considered for a moratorium on old-growth timbering pending study outcomes? (1248)

**RESPONSE:** This study does not apply to the Modoc. No moratorium on old growth is planned. The Forest-wide Standards and Guidelines provide specific direction on amounts and types of habitats considered suitable for old growth. We will designate and monitor old growth at the project, timber compartment, management area and Forest level to ensure that the Standards and Guidelines are met.

**10. COMMENT:** DEIS 4-136: Why cannot these impacts be avoided? How can they be avoided? This inevitability factor violates NFMA requirements for diversity, viability, equity, distribution, protection, enhancement.(1248)

**RESPONSE:** Timber harvest and related activities will have negative impacts on species dependent on older seral stages. As this seral stage decreases over the Forest, we also anticipate a decrease in species dependent on mature and old growth. We believe that management direction in the Forest- wide Standards and Guidelines and management area direction will maintain sufficient habitat to provide for old-growth-dependent species endemic to the MNF.

**11. COMMENT:** DEIS 4-121: MMR of 5% old growth is exceedingly low. At what percentage level can old growth habitat enhancement be expected?

— compensation for timber compartments with less than 5% MMR old growth standard (1248).

**RESPONSE:** Forest-wide Standards and Guidelines prescribe 5% in mature and 5% in old-growth seral stages. In addition, we have dedicated habitats for pine marten and pileated woodpeckers; and we have spatially distributed them over portions of the Forest that contain suitable habitat for these species.

Habitats designated as mature could be used as replacement old growth after a catastrophic event, such as wildfire. Other enhancement measures are implemented on a project-by-project basis. For example, we thin a stand to produce larger trees, and ensure that the stand will become old growth.

We will allocate old growth at the management area level, rather than the timber compartment level. If, within the management area, old growth is below MMRs, then we will designate and manage habitat at the next lower seral stage as old growth.

**12. COMMENT:** We seriously question the statement that: "providing old-growth habitat in eastside pine is the

Forest's most serious problem...Inappropriate use of overstory removal and sanitation/salvage treatments understocked many stands to where old-growth habitat was no longer present." (DEIS 3-84 thru 89). We find no hard evidence cited in the DEIS text or bibliography that is pertinent to an interdependency of any species of wildlife with old growth pine. The listed "other MIS" species are none other than wildlife which are common and widely distributed through extensive ranges and a great variety of habitats.

(DEIS 3-155). The foregoing quoted NACASI review of the "indicator" species theory discredits, or at least, casts serious doubt on the scientific validity and technical application of the concept for application as proposed by the Forest. The Forest seems prepared to jeopardize substantial public values in forestry and recreation on the basis of insufficient information. Today there are viable populations of the "other MIS" species occupying the Forest so, it seems that the present situation does not reflect adversely upon past management practices. (1252,1118)

**RESPONSE:** Old growth is much more than just habitat for selected MIS species. These stands add to the structural and biological integrity of the ecosystem. Although relatively few species are solely dependent on old growth for their entire life cycle, many species use old-growth habitats as a component of their home ranges. These species habitats would be diminished without the old-growth component.

Old-growth forests, and their inherent and structural components, contribute to structural diversity and long-term nutrient cycling. These in turn contribute to future forest generations. Once old growth is removed, these components are lost; and, therefore, the productivity of future stands diminishes. Large diameter trees can be produced in 200+ years, but the potential of a stand to produce attributes associated with historic old growth are lost. For information on management indicator species, refer to resource 084 of the comments.

**13. COMMENT:** The DEIS calls for mgt of 50-160 acres of old growth for each of 100 pairs of goshawks (in the PRF), or 5,000-16,000 ac. Of old-growth timber. In that the goshawks are not threatened nor endangered, and the 100 pairs exceeds the MMR by 28 pairs, and the acreage needs have not been substantiated, and significant old growth is already available in existing special use categories, we oppose the taking of 5,000-16,000 ac. of the most productive of timberlands for this purpose.

Your PRF calls for preserving old-growth habitat to the point where more than 29% of the MNF would be "old-growth" timber by decade 16, in addition to that held in Wilderness and other special use set-asides. Your Plan

**calls for a seral stage diversity which is unnatural, perhaps unattainable, and unwise. (1258)**

**RESPONSE:** The EIS and Plan call for managing 50 to 100 acres per pair of goshawks, not 50-160. Nesting habitat allocation for goshawks is included in the 5% allocation for old growth based on vegetation diversity Standards and Guidelines. For further information on goshawks, refer to resource 086 of the comments.

The Plan calls for maintaining a minimum of 5% in each seral stage, including old growth. We allocated old growth by management area. Overall, 21,712 acres were designated for old-growth management on suitable timber lands capable of producing > 20 cu.ft. per acre. The values depicted in your comment include lands that are capable of producing < 20 cu. ft. per acre. These stands are managed on an extended rotation, and do not necessarily meet the definition of old growth as defined in the wildlife Standards and Guidelines. Included in the wildlife Standards and Guidelines are the acreage by timber type that will be managed for old-growth conditions on > 20 cu.ft. and < 20 cu.ft. lands.

**14. COMMENT:** We also feel greater use of uneven-aged management would mitigate some of the needs to set aside single use acres dedicated to old growth habitat or visuals. (1266)

**RESPONSE:** Uneven-age management methods of harvest include group selection, and removal of large diameter overstory trees. The rotation age would be significantly less than that required for old growth. Uneven-age management may have some benefits in maintaining forested habitat for visual quality objectives and some wildlife and plant species; but it would not maintain or result in old-growth conditions. Refer to comments in timber (resources 230, 237, and 249) and diversity (resource 050 and 051) dealing with uneven-age management.

**15. COMMENT:** Old growth: using recruitment acres is not acceptable if they are low seral stage; they do not provide similar wildlife benefits. We must keep 5% minimum in actual old growth, and if a management unit does not have enough existing, then old growth must be set aside elsewhere until the unit reaches 5%. Since only 6% of suitable > 20 eastside pine remains in old growth, we should fulfill only current sales, and quickly phase out selling it, so this type will be adequately represented. Otherwise, we will likely violate the 5% MMR. We will need to convert our mills eventually; why not start now? It is hard to judge the Plan's allocations without an old growth map. We need to make sure prescriptions match where the old growth is. (708)

**RESPONSE:** In management areas where old growth is deficient, lower seral stage stands may have to be selected and managed as old growth. Although this is less than

desirable, allocating these stands to ensure adequate future spatial distribution of old growth is important. The highest priority always is to select stands that currently are old growth to meet the Standards and Guidelines. Data base maps in the Supervisor's Office show the location of old-growth stands, and are being validated at the district level. Forest-wide Standards and Guidelines and management area direction outline old-growth acreages and locations. Visually depicting old-growth locations and acreages on maps, and verbally describing them in the Plan is sufficient for relating prescriptions to specific management areas.

**16. COMMENT:** Prepare a mapped inventory of all undisturbed true old-growth forest. (708)

**RESPONSE:** Data base maps in the Supervisor's Office show the location of old-growth stands, and are being validated and designated by management area at the district level.

**17. COMMENT:** Large groves of ancient old growth in wilderness should not be allowed to be destroyed by fire unnecessarily. (500)

**RESPONSE:** Fires in wilderness areas are controlled as rapidly as possible to prevent resource damage. See comments on fire (resource 070).

**18. COMMENT:** Eliminate reservation of old-growth timber areas for spotted owl habitat. (1162)

**RESPONSE:** At this time, we have made no allocation of habitat for spotted owls. If nest sites are located on the Forest, old growth may be allocated to maintain owl habitat and perpetuate the species.

## 060 - Facilities

**1. COMMENT:** [See that] the usual practice of running roads down creek channels is not tolerated, nor the slash left to wash down into the creek and river channels. My special concerns are for the headwaters of the Pit and Mill Creek, the Warners and the entire Modoc National Forest. (43)

**RESPONSE:** Thank you for your comment. Road locations and construction methods are site-specific to individual projects. The practices to which you refer are not allowed under current standards. The Riparian Precipitation in the Forest Plan provides standards and guidelines designed to protect and enhance riparian areas.

**2. COMMENT:** The Forest Service may be tempted to close or abandon facilities that are not currently receiving much use (DLMP, P. 3-24). CORVA does not think this is a wise management plan. Once these facilities are

“closed”, they are vandalized and destroyed. CORVA recommends against closing or abandoning any developed recreation facilities. With regard to abandoning trails and roads within the Forest, it is important that these travel routes are still shown on the Forest map (DLMP, P.3-24). (344)

RESPONSE: We will address travel routes identified for closure or inclusion into an OHV network in the OHV and road closure plan. This plan will be subject to further public review and comment. As part of the OHV plan—not the general Forest Plan—we will include mapping and signing of routes. We will remove recreational facilities that are discontinued or replaced to avoid the vandal situation you describe.

3. COMMENT: Were mining activities to recommence at Hayden Hill, the CDF operated lookout tower would most likely be relocated. Relocation also removes another possible reason for this tract to have been designated for visual retention, since the site will no longer be visited by the public as a lookout site. (42)

RESPONSE: Should this activity resume as you suggest, we would amend the Plan to reflect this change in characteristics of this area.

4. COMMENT: Formulate and implement objectives to increase signage in areas that are already available with easy access for activities such as cross country skiing, sledding, hiking, etc. Coordinate design or road systems with the timber sale planning process in order to open up new areas for recreation. (973)

RESPONSE: Forest Plan Chapter 4 incorporate provisions for signing, as you suggest .

5. COMMENT: [Mgt. RX 17] Element L—Facilities: guidelines 3 and 11, regarding the winterization of roads and installation of bridges and culverts, should be elevated to the level of standards. Guideline 14 should be amended to include a statement to the effect that passage at stream crossings will be maintained when necessary for the fish population. This criterion should also be raised to the level of standard. (1316)

RESPONSE: We have retained item #3 as a guideline to allow managers flexibility in selecting the most effective techniques to prevent erosion and water degradation. Item #11, as you suggest, has been elevated to a standard. The intent of guideline #14 is to maintain fish passage in all appropriate situations. Item #14 is retained as a guideline to allow on-site flexibility in applying the guidance embodied in the two references.

6. COMMENT: DEIS Chapter 2, Section E, Subsection 5: This subsection does not compare the effect of the

alternatives on existing or planned transmission facilities. (1352)

RESPONSE: Transmission projects are a site-specific; we address them only in a broad sense in the Plan. We conduct site-specific analyses according to the NEPA process, and compare alternatives and associated effects on a project-by-project basis.

## 061 - Forest Service Roads

1. COMMENT: The DLMP and DEIS have expressed the need for a road obliteration plan (DLMP, p. 3-9, B-3; DEIS, p. 3-41). Unless roads enter areas permanently closed to vehicles or there are significant resource concerns (e.g., water quality), all the roads should be left open for all Forest users to enjoy. (344)

RESPONSE: We have received your comment and will incorporate into the road closure and OHV plan as it is developed. These valid concerns are specific to individual roads or small areas, and vary from area to area. Additional public comment and input will be included into this closure and OHV plan.

2. COMMENT: The Modoc N.F. is now overroaded. No new roads should be constructed without eliminating old road mileage at least equal to the new mileage being constructed. 3-9 (364)

RESPONSE: Your comments have been received and will be taken into consideration as we prepare the road closure plan and OHV plan. Few new miles have been identified for construction, while many more miles have the potential for closure.

3. COMMENT: [Proposed Plan] 4-5. Facilities, item 1. This item needs to be reworked. The transportation system on the Modoc N.F. needs to be evaluated. Before new roads are planned, the existing road system should be evaluated for management needs. Roads not needed should be obliterated. (364, 749)

RESPONSE: Thank you for your comment. We will evaluate the transportation system in depth as we prepare the road closure plan and OHV plan referenced in Plan Appendix A. A detailed analysis for site-specific needs is beyond the scope of this Forest Plan.

4. COMMENT: On 3-9 of the Plan, referring to the roads, there are by far too many roads now. (984)

RESPONSE: We address the need for new road construction, reconstruction, closure, or obliteration on a case-by-case basis, and ensure consistency with the needs of the area served by the road. We will develop a road closure plan in conjunction with an OHV plan. This study will



review road needs and densities to determine total needs. We will use public involvement to develop this study.

**5. COMMENT:** Impacts of these roads [to maintain fences] on vegetation and livestock? Spin-off effect of these livestock associated roads, tracks, routes in opening up fragile soils, sensitive areas to mining, hunting, fuelwood gathering and other activities impacting Forest resources. (1248)

**RESPONSE:** EIS Chapter 4 displays environmental consequences of management activities.

We will prepare a road closure plan dealing with low standard roads that serve a variety of resource uses. Primary concerns to us as well as you are (1) that sensitive soils and water quality are not degraded by this use, and (2) that these roads are compatible with adjacent resources. Plan Chapter 4 includes Standards and Guidelines which minimize or prevent soil and water degradation.

**6. COMMENT:** Inventory of unnecessary roads and landings. Obliteration plan. Budget for implementation. (1248)

**RESPONSE:** EIS Chapter 2 displays budgets by alternative. The intent of the Forest Plan and subsequent road closure and OHV plan, is to inventory these routes; review their condition and purpose; determine which routes should be kept and eliminated; and bring those retained into the system and managed as a road or traveled route. We will close or obliterate the routes we eliminate.

**7. COMMENT:** DEIS 3086: "700 miles of uninventoried roads" — are these in addition to the 1,000 miles of primitive roads for ORV use? Is "unauthorized" meant instead of "uninventoried"? Are the 700 miles roads or uninventoried roads or unauthorized roads or tracks, trails, firelanes, firelines, primitive roads, routes? Have all these different lines of transport been inventoried? Every time an ORV strikes cross country, isn't another route in the making? How many passes cause permanent or semi-permanent damage of soil and vegetation? What is to "temporary" about the "roads"? How easily can they be obliterated? (1248, 1260)

**RESPONSE:** The 700 miles of "uninventoried" roads are non-system (i.e., not within the Forest road system) roads which have developed over the years (and continue to develop) as you describe through OHV, woodcutters, range permittees, and other Forest users driving through the Forest. At this point, the mileage is our best estimate because the roads are not inventoried or managed. In many cases, these routes cause no damage to soil or water,

and serve a transportation need. In other cases, they can cause severe problems to adjacent resources.

Under current law, expenditure of road maintenance funds is not allowed on non-system roads. Therefore, this category of travelway has been ignored until now.

**8. COMMENT:** The expectation that "irreversible loss of land productivity, cultural resources and wildlife habitat" will inevitably occur as a result of road construction (P.4-138) is another assumption. No alternative to this was proposed or contemplated. (1253)

**RESPONSE:** Amount of road construction varies by alternative. Even continuing the current situation with no new road construction would perpetuate the impacts associated with the current transportation system. These impacts can be minimized by properly designing roads and applying Standards and Guidelines in the Plan. But some adverse impacts will occur in any event, and are so displayed in EIS Chapter 4.

**9. COMMENT:** [The following information is essential] For a more thorough and site-specific evaluation of the proposed alternative: explicit information on methods to be used to effectively implement Forest access and travel management to protect natural resources. ODFW comments and recommendations are based on ODFW understanding of the National Forest Management Act (NFMA), the Clean Water Act, Executive Order 11990, and key provisions of the Wildlife Policy of the State of Oregon. ODFW supports regulation of motorized travel on the Forest to protect fish and wildlife and their associated habitats. DEIS 4-116: The effect of roads on habitat effectiveness for deer needs to be discussed. (1317)

**RESPONSE:** Thank you for your comments. We will develop management strategies as we draft the road closure and OHV plan referred to in Plan Appendix A.

**10. COMMENT:** Facilities — Plan p. 4-22: Need direction for closure and/or access affecting deer and pronghorn hunting areas. (73)

**RESPONSE:** We will consider your comments as we develop the road closure and OHV plan.

**11. COMMENT:** P.4-22: Address under (d) guidelines and standards pertaining to roads: Consult with local agencies including the County Planning and Road Departments in the identification of roads which are projected to be closed or downgraded, in order to determine the effect on existing development and projected development under the County General Plan and Transportation Plan. Special attention should be given to emergency access such as fire access, and the effect on the existing integration of the USFS roads in the overall circulation patterns under use by the public, or in areas which are



projected for development in the County General Plan. (Note: this may be duplicated in the section on special use permits.) (101)

RESPONSE: We incorporated your comment in the Facilities section of the Forest-wide Standards and Guidelines (Plan Chapter 4).

**12. COMMENT: What are the recreation, range and wildlife needs for roads? (364)**

RESPONSE: Roads provide access to national forest lands that are otherwise inaccessible to most Forest users. This access provides a means for removing timber products; disbursing Forest users, permittees, and recreationists; and managing forest lands. Although roads sometimes negatively impact resources such as wildlife, they often enhance others such as recreation. A balance of road densities is necessary to meet the needs of the public.

**13. COMMENT: I would like to see less oil roads in our forests as I believe it will help save wildlife. (412)**

RESPONSE: Depending on the amount of traffic, oiled roads can be a benefit or a liability. Substantial traffic on native or unsurfaced roads creates dust in summer and mud in winter. As a result, runoff water is concentrated in the roadway rather than natural drainages. Soils erode into streams and riparian habitat areas, thereby becoming a detriment to wildlife and fish.

**14. COMMENT: FMP 3-27: What measures are taken to remove roads from riparian areas or areas affecting streams? (1248)**

RESPONSE: Roads that are adversely affecting riparian or stream areas are relocated or closed to eliminate the particular problem. Work is accomplished through project activities in conjunction with riparian or stream enhancement work. We will close or obliterate roads as needed in accordance with the road closure plan mentioned in Plan Appendix A.

**15. COMMENT: DEIS 4-140: "The State's planned route through the Warner Mtns. conflicts with lands designated as SPNM." What conflict has this planned route had on potential wilderness designation for roadless areas affected by route proposal? (1248)**

RESPONSE: Currently, the "State's planned route" is only a plan with potential corridors for OHV designation. Although potential conflict exists, we would avoid selecting routes through those areas designated as SPNM or wilderness. We will probably select for designation existing roads or travelways. We will include the State plan as

source data when we develop the Forest road closure and OHV plan.

**16. COMMENT: [Plan] 4-22, the need to manage the road system to minimize harassment of deer on winter range should be added. (1317)**

RESPONSE: Into Plan Chapter 4, we incorporated numerous standards and guidelines to minimize impacts from transportation system management to deer, other wildlife, and critical habitats.

**17. COMMENT: Necessary logging roads should be few and carefully planned with the Forest Service, and the area restored according to its former appearance, when the roads are no longer needed. (45)**

RESPONSE: Proposed timber sales and associated transportation systems are analyzed in depth on a site-specific basis. Roads are located and designed to minimize environmental impacts; and they are obliterated or closed where appropriate. In Plan Chapter 4, we incorporated numerous standards and guidelines to direct these site-specific efforts.

**18. COMMENT: P.4-23, (e) (1) 3rd sentence—change "available" to "appropriate". (73)**

RESPONSE: We incorporated your change in the Facilities section of Forest-wide Standards and Guidelines (Plan Chapter 4).

**19. COMMENT: Add section: Develop definitive policies and practices for the upgrading, maintenance and revenue programs for roads which are transferred to another agency or jointly maintained for the benefit of private development when required for the safe and efficient circulation patterns of existing or proposed subdivisions. (101)**

RESPONSE: The Facilities section of the Forest-wide Standards and Guidelines in Plan Chapter 4 provides direction for construction and maintenance of the Forest transportation system.

**20. COMMENT: DEIS 3-41: What is "road and resource damage"? Are the roads damaged? (1248)**

RESPONSE: Roads are rutted through use during wet periods when soils cannot support vehicle weights. These ruts concentrate water and divert runoff from natural drainages to the roadway. This diversion can erode many soil types along the roadway, and then deposit sediment into stream courses. The road eventually becomes undriveable and is then "damaged", as is the soil and adjacent resources. Hard surfacing, capable of supporting vehicles under wet conditions and controlling winter runoff, is one method of preventing this damage. Another is

## 062 - Road Construction

closing roads and prohibiting use during these wet periods.

**21. COMMENT:** Use chemicals in lieu of salt for snow and ice on roadways in winter range areas, lowering number of deer killed by vehicles. (913)

**RESPONSE:** The Forest Service does not use salt for snow removal on the Modoc National Forest. Generally, we do not remove snow from Forest access roads. However, if removal is done, either by the Forest Service or permittees, only equipment is used — not chemicals or salt.

**22. COMMENT:** I would comment on the logging roads in some areas. It was a waste of tax payers' money to improve the roads to the extent that they were. (1411)

**RESPONSE:** We analyze road standards for specific timber sales on a case-by-case basis according to the NEPA process. Site-specific projects are beyond the scope of this Plan. General guidelines are included in the Forest Plan to ensure that roads are constructed or reconstructed only to the minimum standard necessary for the intended use.

## 062 - Road Construction

**1. COMMENT:** No new permanent roads should be built. All new haul roads should be permanently closed after logging is finished and the closures should enforced. Closures on old haul roads should be enforced also. (1064, 1048)

**RESPONSE:** New road construction needs are minor, except for low standard haul roads for timber removal. We will generally close these new roads after hauling is completed, depending on post timber sale needs (i.e., personal firewood gathering, site preparation, and reforestation). Much of the terrain on the Modoc does not lend itself to effective closures without total obliteration.

**2. COMMENT:** The amount of road construction and reconstruction proposed under the Preferred Alternative is not clearly justified in the DEIS. Concerned that the increased road construction may hinder achievement of water quality objectives since increased road construction increases the potential for erosion and stormwater runoff. (1068)

**RESPONSE:** Thank you for your comment. In environmental documents specific to each project, we analyze road construction for timber sale activities (or other resource projects) regarding the effects on water and soil quality. Expected effects of road construction activities

are displayed in EIS Chapter 4—*Environmental Consequences*.

**3. COMMENT:** New roads systems should be designed and constructed to minimize disturbance to the riparian areas. (1295)

**RESPONSE:** We agree. Roads are designed and constructed to meet site-specific needs, and to protect adjacent resources. The Riparian Prescription (Forest Plan Chapter 4) provides standards and guidelines designed to protect and enhance riparian areas.

## 063 - Road Maintenance

**1. COMMENT:** We suggest that the following prescription be developed: When water points are on streams, pumping for road use should not, even temporarily, dewater the stream or otherwise make conditions unsuitable for fish life. This approach is necessary to actually give fish and wildlife priority over road watering. For any pond that may be used for road watering, a prescription should be established for that individual pond specifying how much water can be taken during each summer month without adversely affecting the fish and wildlife values. Monthly criteria are necessary on many waters so that evaporation during the rest of the year does not deplete the water to a point where fish and wildlife are adversely affected. (364)

**RESPONSE:** Guideline #7 in the Water section of Forest-wide Standards and Guidelines states: *Maintain necessary instream flows to protect such beneficial uses as fisheries, recreation and aesthetics. In site-specific application, operational clauses are incorporated into timber contracts that designate watering points, define time periods, and limit water usage to acceptable volumes.*

**2. COMMENT:** [DEIS] 3-138 on water mentions that water is used for dust abatement on roads. The subject needs to be specifically addressed so that fish and wildlife are not adversely impacted. (364)

**RESPONSE:** See response immediately above.

## 065 - Trails

**1. COMMENT:** The off-road community would like to see the Forest Service develop more ORV opportunities. CORVA recommends the construction of 125 miles of ORV trails be included in the LMP. (344)

**RESPONSE:** The Plan allows for OHV on all roads and trails unless specifically prohibited. The Plan as written also discusses an OHV plan and road obliteration plan.

**2. COMMENT:** The DEIS claims the two NRT's have not been maintained in recent years (3-86). This is true. Records show, however, that funding has been programmed for maintenance on these trails, yet no work was performed. (329)

**RESPONSE:** Deciding which trails are maintained in a particular year is based on funding and priorities. These decisions are beyond the scope of this Plan.

**3. COMMENT:** One very important ORV issue is the creation of a statewide trail system. This ORV opportunity, however, was barely addressed in the DEIS (DEIS, p.4-140) and not at all (at least not specifically) in the DLMP. Does the Forest Service intend to work with the state to develop a plan to meet everyone's needs? What are the alternatives? What is the time table? (344)

**RESPONSE:** We will develop a definitive OHV plan following release of the Forest Plan. The OHV plan will take into account the needs of the Modoc portion of the statewide plan, as well as interests of user groups.

**4. COMMENT:** Highgrade (MA 31): The Highgrade NRT should be maintained and other trails should be constructed. The Cave and Lily Lakes link with the NRT, as listed in [Plan] App.L is a good idea. The old road up lower Bidwell Creek should be maintained as a trail clear to Larry Flat. (500)

**RESPONSE:** Your specific suggestions are management decisions based on funding and priorities. However, we will develop an OHV plan to inventory and review these types of roads and trails for inclusion in or exclusion from the trail system.

**5. COMMENT:** I recommend that the Payne's Spring area be set aside for development of hiking trails, and that Bulls Eye Lake be raised 6 to 8 feet to enhance the natural fishery and to avoid much of the present winter kill of fish. (687)

**RESPONSE:** We manage Management Area 61 for a variety of uses. Specific projects are beyond the scope of the Forest Plan. We will analyze projects on a case-by-case basis.

**6. COMMENT:** [Area north of Stough Reservoir and north through Little Baldy] The inventoried trail has been neglected for many years, and is dangerous. A similar problem exists to the far north in the Larry Flat, Highgrade and Dismal Swamp region. This Highgrade Trail along the summit was blocked with dead fall and slides this autumn (1987).

**RESPONSE:** See response below.

**7. COMMENT:** We suggest that a set of corrals be built at Stough Reservoir, Buck Mtn., in the North Warners, and at Larry Flat. We further suggest the old trail system throughout the North Warners be restored, with an additional loop constructed from Morrell Mine to the High-grade Trail at Mineral Spring. We are available to assist in rehabilitation of the North Warner trails. Triangle Ranch, Blue Mtn., Wild Horse Valley, Timber Mtn., and Border Mtn. areas offer similar opportunities for development. (701)

**RESPONSE:** Thank you for your comments and your offer for help. The Plan addresses the trail system in the general sense that we will "manage a full spectrum of trail opportunities." Specific trails to maintain, reconstruct, or construct depend on use patterns, Forest priorities, and funding levels. We analyze such projects on a site-specific basis, at which time we solicit public involvement. We encourage your continued involvement at the project level.

**8. COMMENT:** Trails need to be given more priority. Loops need to be emphasized. Trails are not given adequate scenic easements or replaced if a timber sale is planned on top of them. Old trails/primitive roads are still excellent for hiking. (708)

**RESPONSE:** Your comment is incorporated in Plan Chapter 4, Forest-wide Standards and Guidelines, section 13.

**9. COMMENT:** Existing system trails should be preserved and maintained. Trails which have been dropped from the system should be inventoried and, where practical, reestablished. Non-motorized use should be given preference. Reconstruction of existing trails should be given priority over construction of new trails; new construction should only be approved after public input is taken. Trails should be protected from the effects of other activities. Herbicides should not be used on trails. (1048)

**RESPONSE:** The Plan currently provides direction for a full spectrum of trail opportunities, including hiking, equestrian, handicapped, and OHV. Preferences of one user group over another depends on public need and input to specific development plans. Priority for maintaining or reconstructing existing trails is based on funding levels.

**10. COMMENT:** Modoc National Forest has recently eliminated 49 trail miles. What trails have been abandoned? This should be disclosed in LRMP. (1260, 708)

**RESPONSE:** While it is true that some trails have been replaced by roads for vehicle access over the years, displaying these trails in the Plan would be redundant and confusing. The Plan addresses the existing trail system and

## 066 - Road and Gate Closures

provides direction for future management and development. We will address old abandoned trails needing restoration on a case-by-case basis, with public input and a demonstrated need.

**11. COMMENT:** Areas where resource damage is occurring could possibly be set up for consideration in programs such as adopt-a-trail programs wherein volunteers do maintenance and repairs as opposed to closing trails. (1330)

**RESPONSE:** We currently use cooperative efforts as part of the trail maintenance program; and we will continue such programs as the need or opportunity arises.

**12. COMMENT:** Trails to be closed [should] be subject to public notice and input before such action is taken. (1330)

**RESPONSE:** We agree. We will enlist the public's involvement and provide site-specific analysis prior to closing major trails.

**13. COMMENT:** Draft Plan—page L-3; maintenance levels for trails, first line: The next two sentences are a little confusing. I assume you mean that a trail with a tree that fell by itself across a trail creates a challenge, while the same tree would make wheelchair access impossible. A little clarification would help here. (100)

**RESPONSE:** We have corrected Appendix L.

## 066 - Road and Gate Closures

**1. COMMENT:** Roads—LMP 30-9 and Appendix G: We agree with your road closure and obliteration plan. In addition, we believe that a well-publicized, seasonal road closure program would be an attribute for this Forest, particularly during deer hunting season. (530, 1068)

**RESPONSE:** Thank you for your comment. We will prepare a road closure and obliteration plan in conjunction with an OHV plan; and we will solicit additional public input as we develop these plans.

**2. COMMENT:** I am opposed to locked gates on public lands. (921, 1170)

**RESPONSE:** Locked gates are only one method of implementing road closures for resource protection. Before we implement road closure plans, we will solicit additional public review and comment.

**3. COMMENT:** Road restrictions should be extended wherever possible. I feel ORV use should be eliminated. Closing roads when possible might make more areas classifiable as SPNM. (1223)

**RESPONSE:** OHV use is a valid recreational use of national forest lands. During development of the road closure and OHV plan, we will determine whether road closures are appropriate for particular areas; and we will address specific areas and routes where use will be permitted or excluded.

**4. COMMENT:** In all alternatives, decade one would see 111 miles of road obliterated that hopefully would be related to temporary maintenance level one roads no longer needed for access rather than to "manufacture" unroaded recreation areas. (1252)

**RESPONSE:** Your interpretation is basically correct. We generally close roads that no longer serve an access need, or that are causing soil and water degradation.

**5. COMMENT:** [re: Road closures]: It is best that a more adequate signing program and maps with authorized routes of travel be developed with your Plan. (1235)

**RESPONSE:** Thank you for your comment. Although travel maps are beyond the scope of this Plan, we agree that with Plan implementation, these maps and signing are necessary for proper management.

## 070 - Fire and Fuels

**1. COMMENT:** The general public seems to lack understanding where confine, contain, and control; as well as how and where it will be used. With additional concerns of what suppression strategy will be used on private land and will detection, prevention, and suppression be a cooperative venture. (708, 364, 500, 672)

**RESPONSE:** The Glossary in the EIS contains definitions for *confine*, *contain*, and *control*.

We will continue to use the *control* suppression strategy for private lands within the MNF fire protection boundaries.

**2. COMMENT:** P. 4-24: Add to section a. (6): identify existing subdivisions and projected subdivision areas for integration in the fire protection plan. The USFS should continue to comment on development projects, including general and specific plans, and subdivision projects, in terms of fire safety plans. (101)

**RESPONSE:** After the Forest Plan is approved, we will complete a fire management action plan which will include the method of attack required for specific resources. A subdivision area will be a high priority for attack. The Forest has no responsibility for structures. Therefore,

existing or proposed subdivisions will not change the fire protection organization.

**3. COMMENT:** CDF is concerned that [the MNF's] fire management emphasis is prevention and that [the Forest has] forecasted an increase in burned acres. (126)

**RESPONSE:** The prevention emphasis is in error and has been changed to "emphasis is suppression." As indicated on page H-1 in the Forest Plan, we base our projected increase in burned acres on more human-caused fires that occur as the population rises, and on changes in fire behavior as timber stands change from old-growth to plantations.

**4. COMMENT:** Public is concerned with the "acceptable" number of acres burned by wildfire for each management area. (364)

**RESPONSE:** We changed the term "acceptable number of acres" to read "expected number of acres" burned by wildfire by year and decade. The expected number of acres burned by wildfire are based on past fire occurrence and size, current fuel loading, vegetation type, resource values and expected fire behavior for each fire intensity level (FIL).

**5. COMMENT:** Virgin old growth is such a rare resource that it needs to be protected from destruction by fire. Key habitats and areas designated for high habitat capability should receive high priority for suppression. (1260)

**RESPONSE:** See response to following comment.

**6. COMMENT:** LRMP 4-3: What does "Maintain a level of resource protection commensurate with values" mean? Does it mean that resources deemed to have low values in dollar won't be protected? If it does, we strongly object to this philosophy. (1260)

**RESPONSE:** "Commensurate with values" means that we will spend fewer or more dollars on suppression depending on the value of what we are protecting: e.g., sage brush (low-value resource) vs. old-growth timber (high-value resource).

**7. COMMENT:** All areas of the Forest should be inventoried to determine where and when natural fire could be used. Human-caused fires should not automatically be suppressed. (1048)

**RESPONSE:** Forest-wide Standards and Guidelines state that "Within the first decade, identify project areas where fires from naturally occurring unplanned ignition may be allowed to burn within the prescription."

Also, a recent amendment to fire management direction permits lightning-caused fires to play, as nearly as possible, their natural ecological role in wilderness. We

may include this direction in the Wilderness Fire Management Plan which we will prepare after the Forest Plan is approved.

We use confine, contain, or control strategies for fire suppression commensurate with values, hazards, risks and management objectives regardless, of the ignition source.

## 072 - Prescribed Burning

**1. COMMENT:** Identify areas to use fire as management tool on the Modoc National Forest. Prescription fire should be used to reduce the fire danger in timber stands and other areas, to increase forage/browse for livestock and wildlife and to reduce brush encroachment. (500, 277, 500, 579, 698, 708, 734, 913, 915, 1010, 1152, 1337, 500)

**RESPONSE:** The Forest is currently inventorying opportunities to use prescription fire in eastside pine. We will address the proposal through the NEPA process during project-level environmental analysis.

**2. COMMENT:** The Plan does not include a discussion of how plant communities are to be protected from adverse impacts of prescription fire under unnatural conditions (i.e., off-season & hot). [We have] a concern that policy is established to ensure that natural regeneration occurs and eliminates the need to use non-native species for rehabilitation. (1214)

**RESPONSE:** In Chapter 4 in Forest-wide Standards and Guidelines, Management Prescriptions, and Management Area Direction, the Plan provides direction for wildfire suppression and prescribed fire usage. Concerns which you express vary by site and burn prescription. They are most appropriately addressed in site-specific analysis at the project level.

## 080 - Other Wildlife

**1. COMMENT:** Considering the monetary value of each deer/duck/fish bagged by the sportsmen, the F&G is worth more than the trees. How were WFUDs calculated? (49, 364)

**RESPONSE:** Outside of aesthetic values, wildlife and fish have important economic benefits. In the EIS, the value of wildlife and fish is expressed in WFUDs (wildlife and fish user days). This converts into each 12-hour period that is spent hunting, fishing or watching wildlife. In the preferred alternative, over 106,000 WFUDs are spent in consumptive use of wildlife and fish resources. We expect this figure to increase to 121,000 by the second decade. These levels represent important contributions to the local, State and national economy. Nonconsumptive use is not quan-

tified in the EIS or Plan. EIS Chapter 4—*Environmental Consequences* discusses economic impacts by sector.

**2. COMMENT:** We do not believe that this preferred alternative will provide sufficient or comprehensive protection for resources which will otherwise be jeopardized by excessive levels of livestock grazing, clearcut logging and other destructive human activities. (274, 1316, 364, 366)

**RESPONSE:** Forest-wide Standards and Guidelines relative to specific species and habitats ensure that sufficient habitat is maintained for viable populations of plant and animal species dependent on the Forest lands. In addition, management prescriptions for timber and range include additional standards and guidelines to protect species and habitats in areas where these activities will occur.

**3. COMMENT:** I feel it is weighted too much in favor of wildlife at the expense of social and economic issues. Habitat improvement is vital, but aggressive management techniques beyond livestock AUMs and timber harvest must be included. Social, economic, and resource issues are equally important. (703, 1282, 1230)

**RESPONSE:** NFMA requires that all resources receive balanced consideration in land management planning efforts. We feel that the Plan presents an acceptable balance between commodity and amenity resources. The Record of Decision displays the rationale for selecting the Preferred Alternative. On some portions of the Forest, management emphasizes livestock grazing, timber harvesting, and other commodity oriented uses. Within these areas, Standards and Guidelines ensure that the integrity of habitats is maintained to provide for plant and animal species dependent on those habitats.

**4. COMMENT:** The Plan identifies only one significant problem with respect to special habitats and the species which depend on them. That problem is a shortage of snags. We believe there are a number of other problems that are associated with timber and range management. The Plan should evaluate the existing conditions in each special habitat type, and discuss the expected range of conditions that would occur under the available management alternatives. (364, 4)

**RESPONSE:** Snags are a significant special habitat issue. However, hardwoods, down logs, wetlands, riparian areas, and vegetation diversity also received considerable attention in both the EIS and Plan. The *Affected Environment* (Chapter 3) and *Environmental Consequences* (Chapter 4) sections of the EIS address these habitats, and changes that are likely to occur as a result of Plan implementation. In addition, Standards and Guidelines (Plan Chapter 4) provide Forest-wide management direction for these habitats. Beyond Forest-wide Standards and Guidelines, management prescriptions (including timber and range

prescriptions) contain additional direction for managing these resources.

**5. COMMENT:** Habitat with high capability and dispersal routes will be needed to maintain viable populations. Also, a reasonable buffer in population numbers should be added for such crisis events or simply miscalculation. The Conservationist Alternative requires creation of a RX that will designate areas of high and moderate habitat capability for all MIS in both timber and rangelands. These areas should be mapped in the final Plan in the MA section. The total acres in high habitat, moderate habitat, and low habitat areas for the MNF should be given. High habitat capability areas will be given priority for protection with medium habitat capability used to provide dispersion, to provide additional acres where enough high capability habitat is not available, and to provide buffers around territories of high capability. (500)

**RESPONSE:** Developing an MIS prescription is really not feasible. MIS are generally viewed as a barometer for measuring changes in habitats and the effects of changes on other species that have similar habitat requirements. In some cases, prescriptions were made for MIS species, (i.e., the Raptor Management Prescription). We would be limited in using an MIS prescription because MIS have widely varied habitat requirements. In fact, the management of some MIS will limit use by other MIS.

For example, management favoring pine marten would likely result in a negative impact on deer habitats. We felt the most logical way to manage our MIS was to ensure a management level that provide for the viability of these species in the Forest-wide Standards and Guidelines and in management prescriptions. We will implement Standards and Guidelines and prescriptions in management area direction, ensuring that the needs of these species are addressed throughout the Forest.

Habitats important to MIS are based on habitat capability models for these species. EIS Chapter 3—*Affected Environment* provides information on the amount of habitat available for MIS species. EIS Chapter 4—*Environmental Consequences* addresses expected changes in habitats. For additional information on MIS, see comments in resource 084.

**6. COMMENT:** Since bitterbrush and mtn mahogany regeneration are experimental, do not decimate existing populations in either range or timber areas. Increased coverage can be encouraged in areas which already have base populations. Burning should be considered experimental, done with a cool mosaic burn, and should only be attempted in other than small experimental plots in ecotypes where it has been proven effective in the past. Bitterbrush seeding will be done only in the context of

livestock and (if necessary) wildlife exclusion, and methods should not involve heavy equipment. (500)

**RESPONSE:** Until we better understand the ecology of these species, we will treat areas on an experimental basis. Regarding bitterbrush seeding, our main goal is to re-establish this species where it has been eliminated by wildfire on the Doublehead District. The main objective is to improve the deer winter range. Heavy equipment is necessary for site preparation. These areas are fenced to exclude deer and livestock until the plants are old enough to withstand browsing.

**7. COMMENT:** Protect habitat necessary for the Pacific flyway or for other migratory birds. (1237)

**RESPONSE:** Managing the Forest for MIS and special habitats should also meet the needs of migrants that temporarily use the Forest during spring and fall migrations. Most of the Pacific Flyway is centered in the Tule Lake and Upper/Lower Klamath Wildlife Refuges.

**8. COMMENT:** DEIS 4-134 (means to mitigate adverse impacts – wildlife)

- inventories are required for LMP-DEIS. Procrastination to project level is unacceptable, illegal.
- wildlife direction is meaningless without baseline data, understanding of Limiting factors, viability based on protection/enhancement, species cas to assure survival population and distribution. (1248)

**RESPONSE:** Because the Modoc includes 1.6 million acres, we could not inventory all MIS and habitats. Baseline data was collected for several species and habitats. That information is located in the land management planning data base in the Supervisor's Office.

Species-specific data was available for all threatened and endangered species and most sensitive species. Detailed information was also available for waterfowl, osprey, mule deer, redband trout, and some resident trout fisheries. Data were also compiled for special habitats including vegetation types, seral stages, snags, down logs, and wetlands.

Where specific information was not available, we mapped vegetation communities and structural characteristics of these communities using aerial photos and field validation. We used this information to determine habitat suitability for designated management indicator species. Habitat capability models were developed for these species using the literature from species experts. We corroborated vegetation information with species habitat requirements to determine potentially suitable habitat for each species. This information could then be used to determine how these species would be affected by management practices, and changes in the vegetation communities. We also

developed standards, guidelines and management direction for these species to ensure population viability.

Species data and the habitat capability models are located in the Forest Supervisor's Office or at ranger districts. One of the monitoring objectives is to validate MIS habitat capability models.

**9. COMMENT:** [Proposed Plan] Ch. 4, p. 61, Element D, Range #7, (a) #2. Wildlife use should be based on an actual census to obtain an accurate as possible projection of the increase or decrease of wildlife before livestock use is adjusted up or down accordingly. (1296)

**RESPONSE:** Your comment refers to management in the Wilderness, and primarily to deer as the wildlife species. Direct census of deer is extremely difficult. A range-land/riparian task force, comprised of representatives of varied local interests and State agencies, reviewed the Standards and Guidelines, and did not recommend changes in this section. Therefore, it was not changed. The standard says that livestock use will be adjusted only if proper use criteria are exceeded. This would be done through the allotment management planning process.

**10. COMMENT:** Plan 4-41: would like to see documentation for many of these requirements. The withdrawals and dedicated acres seem arbitrary and outside of the Forest planning process. Is there research to support findings and have outside experts been contact for input? What are the economics of these decisions? (126)

**RESPONSE:** The documentation for these species requirements can be found in the habitat capability models for the species, and is summarized in EIS Chapter 3—*Affected Environment*. The models are located in the Supervisor's Office. Species experts reviewed these models and assisted in their revision. The economics of these allocations in terms of reductions in the allowable sale quantity are located in EIS Chapter 4—*Environmental Consequences*.

**11. COMMENT:** Conducting "surveys to establish forage/prey ratios for reservoirs is not a Modoc NF responsibility in managing habitat; surveying and managing forage/prey ratios is a DFG responsibility for fish management. (364)

**RESPONSE:** We agree. Our role is to assist the CDFG if necessary. Our relationship with the fisheries unit manager is excellent, and we work closely with him in any fish management projects (in both habitat and population management).

**12. COMMENT:** Elk: mentioned in the species list, but there are no environmental consequences or management directives because they are not a MIS. Since there are now herds at Egg Lake & Big Valley Mountain, Adin Pass, Crowder Block, and Fandango-north of Joseph



Creek, we might want to look at how much more we want them to expand. We should determine if elk were historically on the Modoc. (708)

RESPONSE: Elk have been documented on the Forest in recent years. Numbers of elk and extent of the habitats that they use are largely unknown. We can find no indication that elk historically occurred on the Modoc. For these reasons, we did not select them as a management indicator species. If populations continue to expand, we may add them as an MIS in the next planning endeavor.

13. COMMENT: Portions of the Pit River and Willow Creek canyons should be preserved as prime raptor habitat. (1237)

RESPONSE: We designated raptor management areas primarily to provide protection and management direction for bald eagles and goshawks. As additional nest territories are found, we will designate them for management under the Raptor Management Prescription (Plan Chapter 4). Protection for other raptors including Swainson's hawks, golden eagles and prairie falcons are in the Forest-wide Standards and Guidelines.

14. COMMENT: In the DEIS — Ch. 4, Pg. 60, It is stated, "Native wildlife have priority for use of wilderness forage." Question: how can native wildlife not already by nature of their inherent physical abilities (v/s herding—gathering—control with fencing as with domestic livestock) not have inherent priority? (1296)

RESPONSE: Wildlife species have adapted to certain environmental and ecological conditions. In a relatively short period of time, these conditions were altered by domestic livestock. Wild herbivores, such as deer, tend to be selective foragers, whereas domestic livestock tend to be general foragers. Livestock can graze areas so that there is insufficient forage remaining for deer. The reverse is rarely a problem. On MNF, 122,000 AUMs are currently available for livestock grazing. If we assume that current deer numbers equal 22,100 AUMs, the potential exists for livestock to utilize forage to the detriment of deer. We developed management direction to ensure that deer have access to forage when they need it.

15. COMMENT: Forest personnel should put less emphasis on snag recruitment and improving the Modoc sucker habitat and more toward improving economic conditions. (1230)

RESPONSE: Thank you for your comment. We feel that the Preferred Alternative provides a balance between commodity and non-commodity resources.

16. COMMENT: I support the PRF. (7)

RESPONSE: Thank you for your support.

17. COMMENT: [Proposed Plan] P. 4-51: Add under section E, subsection (3): coordinate with the county to protect wildlife and fish resources identified in the county general plan which jointly depends on private and public land habitats and resources for their preservation. (101)

RESPONSE: This has been added to Forest-wide Standards and Guidelines.

18. COMMENT: Plan 2-7—wildlife and fish: good, but slow on fisheries improvements. Snag creation proposal on the east side of the Warners sounds creative. Will it work? Is it being done elsewhere? (107)

RESPONSE: The Final Plan expands on fisheries improvements. Snag topping is being proposed primarily in ponderosa pine stands where timber harvest is occurring. For further information, please refer to resource 098 of the comments.

19. COMMENT: DEIS K-4: How about a list of all the plant species?(107)

RESPONSE: Sensitive plant species are listed in EIS Chapter—*Affected Environment*. A comprehensive list of all plant species would add little substantive information to the documents.

20. COMMENT: Summary pg. 30—Statement under wildlife. "CUR and IND do not meet goals during the 1st decade, but meet them in succeeding decades." Why doesn't IND meet CDFG goals 1st decade when RPD does?(126)

RESPONSE: RPD (RPA alternative with departure) includes direction to increase habitat for wildlife and fish, emphasizing mule deer and trout. The industry alternative emphasizes commodity outputs over wildlife and fish, hence the difference.

21. COMMENT: 4-41 23. wildlife and fish — 1. bald eagle a. winter roosts: my family and I have observed bald eagles wintering in Lake City Mill Creek canyon. (333)

RESPONSE: Thank you for the information. This information was forwarded to the Warner Mountain Ranger District. If the roost site lies on national forest land, we will designate the area as a bald eagle winter roost site and manage it under the Raptor Management Prescription.

22. COMMENT: "Poor and fair range condition is caused by overstocking (of livestock, wild horses and wildlife); ..." (DEIS, 3-75). Inclusion of wildlife in this statement suggests overstocking of wildlife. It appears that wildlife should be excluded from this statement. (364)



**RESPONSE:** Some habitats, such as bitterbrush winter ranges can be overgrazed in the absence of livestock. Range condition can decline as a result of this.

**23. COMMENT:** 4-9. wildlife and fish — item 5. This item should state that habitat quality and quantity will be provided as needed on a seasonal or year-round basis. (364)

**RESPONSE:** We modified that item to reflect your suggestion.

**24. COMMENT:** Item 6. What are suitable wetlands? (364)

**RESPONSE:** Suitable wetlands are those capable of supporting nesting or migrating waterfowl.

**25. COMMENT:** Item 9. Where are habitat and population objectives identified for management indicator species? (364)

**RESPONSE:** These are located in the Forest-wide Standards and Guidelines, Forest objectives, management prescriptions, and management area direction (Plan Chapter 4).

**26. COMMENT:** — snag (per acre). The Modoc NF goal is 1.5 at the end of decade 2, not 1.3. (364)

**RESPONSE:** Under the guidelines in the final Plan, it would take 3 decades to meet 1.5 snags per acre. See comments related to snags (resource 098) for further information.

**27. COMMENT:** Plan S&G's for wildlife should be included as minimums. In addition, all standards described in the DEIS under affected environment, if they are more stringent or have not been mentioned in the S&G's, are included here. (500)

**RESPONSE:** Standards and Guidelines for wildlife are applied on a Forest-wide basis. Management activities cannot alter habitats below S&Gs.

**28. COMMENT:** Emphasize mgt for upland game species. (1374)

**RESPONSE:** Blue grouse and sage grouse are management indicator species with Forest-wide Standards and Guidelines applicable to their management. We will manage habitats of other upland game species, including California quail and mountain quail, by applying existing guidelines for diversity, riparian areas, etc.

**29. COMMENT:** Construe "multiple use practices" in wildlife habitat areas in favor of wildlife. Enhance populations of game species — here is a great opportunity for multiple use. There is much hunting interest in California that is dormant because of poor opportunities and mis-

management. We need more camp sites for all sorts — primitive to RV to accommodate this group. (706)

**RESPONSE:** We agree. The Plan establishes the framework for increasing numbers of deer and other consumptive wildlife species.

**30. COMMENT:** I am for increased deer, antelope, waterfowl and upland game. (108)

**RESPONSE:** Habitat management direction for deer accommodates numbers prescribed in the Calif. Dept. of Fish and Game deer herd management Plans (an increase). Likewise, habitats for antelope, waterfowl and upland game should be maintained or improved by applying Standards and Guidelines for these species, and the special habitats up which they are dependent.

**31. COMMENT:** I believe we need to maintain the necessary wildlife in our area. (109, 157)

**RESPONSE:** The Plan is designed to ensure that viable populations of all species dependent on the Modoc NF will be maintained.

**32. COMMENT:** Support continued multiple use management practices in wildlife habitat areas whenever practical. (1005)

**RESPONSE:** The Plan allows for multiple-use management in habitats designated for specific wildlife species as long as these are compatible with habitat requirements of these species.

**33. COMMENT:** Proper wildlife management is a vital part of our present and future. (1386)

**RESPONSE:** We agree. Thank you for your comment.

**34. COMMENT:** [DEIS] 3-42. Demand. This section is vague and provides very little information. What is ecological demand? Does this section mean that the Modoc NF applies minimum management requirements to furbearers or all wildlife? This section should contain information on demand for the next 10-15 years. There are a number of uses which will conflict with wildlife such as timber production and range use. This Plan should attempt to identify these conflicts and should also include a section on opportunities for wildlife habitat improvements. (364)

**RESPONSE:** Ecological demand refers to the Forest's responsibility to ensure that viable habitats for all plant and animal species are maintained. It is applicable to all species. Ecological demand is explained in more detail in EIS Chapter 3 — *Affected Environment*. The statement relating to furbearers states that these are the only species that have a direct commercial value (i.e., pelts). EIS Chapter 4 — *Environmental Consequences* portrays conflicts be-

tween commodity production (i.e., timber and range), and effects on habitats of wildlife and plants. *Affected Environment* defines opportunities for habitat improvement.

**35. COMMENT: Beaver should also be controlled where they block spawning runs. (364)**

**RESPONSE:** Beaver control is the responsibility of the Calif. Dept. of Fish and Game. Where fish passage is a concern, recommendations can be made to the Dept. to remove beavers.

**36. COMMENT: Management Areas. On pages [proposed Plan] 4-161 through 4-268: in addition to the prescription for raptor management, other species-specific management prescriptions should be devised to treat management areas when an area dedication is inappropriate but rare or sensitive species are known or believed to exist. (364)**

**RESPONSE:** Management direction for other species are built into existing management area direction, or the Forest-wide Standards and Guidelines. We developed the Raptor Prescription because of the number of bald eagles and goshawks that nest on the Forest. These encompass large areas that can be identified on the ground, and dedicated to specific management practices.

**37. COMMENT: The Modoc NF [needs to] be surveyed to detect the presence of certain "species of special concern", and [needs to] be monitored if populations occur and are potentially affected by management. Among these are Townsend's big-eared bat, snowshoe hare, white-tailed jack rabbit, badger, fisher, pygmy rabbit, sharp-shinned hawk, Cooper's hawk, white pelican, double-crested cormorant, white-faced ibis, snow plover, California gull, northern harrier, short-eared owl, long-eared owl, burrowing owl, black swift, purple martin, yellow-breasted chat, and bank swallow. (364)**

**RESPONSE:** The extent to which these species occur on the Modoc National Forest is largely unknown. None is federally listed as threatened or endangered. The bank swallow is a State-listed species (threatened). No known populations occur on the Forest. The fisher is a Forest Service-designated sensitive species. One sighting is documented for the Forest; no breeding records exist on the MNF.

Several of the species you mention (Townsend's big-eared bat, pygmy rabbit, white-faced ibis, snowy plover, purple martin, and white pelican) are Category 2 candidate species being considered for listing by the U.S. Fish and Wildlife Service. Category 2 species are those that could merit listing, but the biological vulnerability and threats to the species are such that they do not support listing at this time. Several of these species are not found on the Forest. With the exception of purple martin, a snag-dependent

species in burn areas, no breeding records are known for these species on the Forest. We will maintain purple martins using the snag Standards and Guidelines. Townsend's big-eared bats are found on Lava Beds National Monument, and probably dwell in caves on the Forest. Where we find bat populations on the Forest, we will manage those areas to protect important roost sites and adjacent foraging habitat.

We will protect habitat for the remainder of the species on your list by applying existing Standards and Guidelines and management direction for MIS and special habitats identified in the Plan.

**38. COMMENT: I am concerned about the ...proposed increase in wilderness areas to protect the spotted owl, as well as other species. (163)**

**RESPONSE:** We have proposed no increases in wilderness areas to protect spotted owls or other species. Management direction for fish and wildlife resources are meant to ensure the continued viability of those species dependent on the Modoc National Forest.

**39. COMMENT: DEIS 3-94 vs. DEIS 3-155: DEIS 3-155 lists 354 wildlife species on MNF. 3-94 Lists 470 species in riparian areas. How do these figures square? Has an inventory of riparian species been completed? (1248,364)**

**RESPONSE:** The correct number is 354 and has been corrected in the Final Plan. We have not completed an inventory of riparian species for the Modoc. Management of riparian areas (Riparian Prescription) will ensure that degraded riparian areas will be restored, and that riparian areas in good condition will be protected. Undoubtedly, plant and animal species dependent on riparian habitats will benefit from riparian area management.

**40. COMMENT: Species, especially birds nesting in riparian areas, feed in wide areas outside riparian zones during breeding and other seasons. Impact of livestock grazing and other forest practices on this crucial, wide-spread feeding areas adjacent to riparian zone. (1270)**

**RESPONSE:** Foraging areas are generally not the limiting factors for most species that use riparian areas during the breeding season. Livestock grazing in riparian areas is a major concern on the Forest. Areas outside riparian areas are used to a much lesser extent. Likewise, Forest practices as prescribed in the Plan should not have an adverse impact on species dependent on riparian areas for nesting or denning. Improving riparian areas will greatly enhance breeding habitats of those species dependent on vegetation communities in these areas. We developed the Ripar-

ian Prescription, in part, to assure the protection of riparian habitats for species dependent on these areas.

## 081 - Fish

**1. COMMENT: 4-122. Improvement of only 1.5 miles of trout stream habitat per year is inadequate. It also seems to say that the 1.5 miles of improvement is a result of the "riparian area prescription" and reducing livestock AUMs; we hope that the riparian prescription and reduced AUMs occur on more than 1.5 miles of stream per year. (364)**

**RESPONSE:** 1.5 miles per year applies to stream improvements through habitat or stabilization structures. Habitat improvement through management, e.g., changes in grazing strategy, should result in closer to 10 miles per year. This distinction has been made in the LMP.

**2. COMMENT: 4-149.2.c.1. the standard (a) to not allow silt to "cover" more than 15% of the spawning "substrate" is unacceptable. The standard should relate to the amount of fines allowed in the gravel. Recommend that the USFS incorporate some of the approaches outlined in the DFG 1601-1603 syllabus for acceptable techniques for instream construction into the USFS BMPs for further guidance. Bank stabilization, flow maintenance dams, deflectors, weirs and vegetative planting should be added to the list of stream habitat improvements. (364)**

**RESPONSE:** Fifteen percent of siltation of the substrate at large (as opposed to the amount of fines in gravel) would be an earlier indicator of possible problems or unacceptable practices. By checking for fines as they accumulate on the surface, we can catch fines before they have had a chance to work their way into the gravels and cause embeddedness problems.

In the Riparian Prescription, the guideline reads that "improvement practices include but are *not limited to* [emphasis added] what is listed."

BMPs for water quality were developed by the U.S. Forest Service (Pacific Southwest, Pacific Northwest, and Intermountain Regions), certified by the State Water Quality Control Board, and approved by the Environmental Protection Agency.

**3. COMMENT: Include the following in all EA's for proposed activities:**

- prepare analysis which identifies the existing fishery habitat condition of the waterways which may be potentially impacted by sedimentation caused from the proposed activity and other activities. This analysis must include the cumulative impacts to fishery habi-

tat from all activities. The analysis must be conducted by a professional fisheries biologist. (548)

**RESPONSE:** The analysis you suggest is currently performed during the NEPA analysis process, as required under the CEQ regulations. In compliance with NEPA, qualified personnel perform the analysis personnel for an interdisciplinary review.

**4. COMMENT: Include the following in all EA's for proposed activities:**

- post-project mitigation measures and analysis which identifies that water quality and fishery habitat are being maintained in accordance with section 1604 of the NFMA and Sec. 319 of the Clean Water Act. (548)

**RESPONSE:** Monitoring for effectiveness of mitigation is a requirement under CEQ regulations with which the Forest must comply. Further, the Forest also has the responsibility of monitoring to determine if water quality BMPs are effective for meeting water quality objectives. If they do not, the Forest recommends revisions to the BMPs' effectiveness.

**5. COMMENT: Include the following in all EA's for proposed activities:**

- in cases when existing water quality and fishery habitat requirements are not being met, or may not be met, the EA should identify these conditions and recommend the proposed be delayed or terminated pursuant to Sec. 1604 of the NFMA. (548)

**RESPONSE:** Under CEQ requirements, the Forest EAs and EISs must disclose adverse effects that may result from a proposed project. The Forest EA analysis also identifies management constraints or mitigation measures to protect aquatic resources, and to alleviate any unavoidable negative effects on the resources. An EA must also provide a range of alternatives, one of which is a "no action" alternative. The Forest does not proceed or allow operators to proceed with a project that is in violation of other laws and regulations. In some cases, enhancing water quality can be an objective or opportunity during project implementation, or the focus of a project itself.

**6. COMMENT: 37% of the water produced in the MNF does not meet established water quality standards. FS is required to comply with the NFMA and Clean Water Act. Your Forest is also required to comply with Sec. 319 of the Clean Water Act on a basin-by-basin basis to protect water quality. (548)**

**RESPONSE:** As stated in EIS Chapter 3, water quality is improved by applying BMPs for water quality. BMPs were developed by the Forest Service, certified by the SWRCB,

and approved by the EPA. BMPs provide direction for the Forest to comply with the Clean Water Act.

**7. COMMENT: Water quality and fishery habitat in all waterways and basins in the MNF must be protected at all times by the FS from timber harvesting, livestock grazing, mining and other activities. (548)**

**RESPONSE:** The Forest applies BMPs for water quality to all Forest activities. BMPs were developed by the USFS, certified by the State Water Resources Control Board, and approved by the EPA.

**8. COMMENT: Off-road vehicle use, etc. (671)**

**RESPONSE:** The Forest applies BMPs for water quality to all Forest activities. BMPs were developed by the USFS, certified by the State Water Resources Control Board, and approved by the EPA.

**9. COMMENT: Main concern proposed poisoning of Willow Creek to remove those fish that would compete with the Modoc sucker, not so concerned with the actual introduction proposed, and with the lack of concern with the species already in existence. Concerned with the poison used. How long will the effects last? When will it be safe to use the creek again? Will willow creek be outlawed against fishing completely for fear of harming an endangered species? Once approved for recreational use, can you guarantee its safety? (1061)**

**RESPONSE:** Applying chemicals for fish control is under the jurisdiction of CDFG and, therefore, beyond the scope of the Forest Plan. The effects of chemical treatment for fish control are described in CDFG's EIS regarding their use of rotenone ("Rotenone Use for Fisheries Management," April 1985).

**10. COMMENT: In the Management Area 45 South Adin, description page (proposed Plan) 4-214, 5th paragraph describes Willow Creek as a low quality area for trout. From personal knowledge trout have been the main fish caught for a least 4 generations. (1061)**

**RESPONSE:** The Forest Plan only covers Forest lands; records indicate that portions of Willow Creek on Forest land is currently low quality for trout. Downstream of the Forest boundary, the predominant species on record is trout.

**11. COMMENT: MCCA would appreciate a specific reply:**

- Recommend all streams should be classified as to fisheries probability, year around water levels, etc. And different types should be managed differently. (1283)

**RESPONSE:** Streams are classified as perennial or ephemeral, by the quality of fisheries they support, and for

other water uses (see EIS Appendix M). We modified the Riparian Area Prescription in the final Forest Plan to reflect various management practices for various stream classes and different morphologies.

**12. COMMENT: Caltrout opposes logging and road building in previously untouched, unroaded areas and wilderness areas which contain significant trout resources unless the area is subject to an approved fishery management plan. It is not clear to what extent proposed new road developments will impact the resident fishery or what specific mitigation for these impacts are to be made. (1295)**

**RESPONSE:** We address potential impacts on a site-specific basis. Any necessary mitigation measures are also addressed at that time.

**13. COMMENT: We note with regret the Plan's lack of resemblance to the spirit of "Rise to the Future," the theme of which is to raise forest fisheries output to a status equal with other forest products. We urge MNF to comply with the Chief's directives, and commit to the spirit of "Rise to the Future". (1295)**

**RESPONSE:** We disagree. The Forest Plan *does* reflect the spirit of "Rise to the Future." Forest Standards and Guidelines and the Riparian Area Prescription (Chapter 4) address protection and enhancement of fisheries and aquatic resources. We will also continue implementing BMPs for water quality during all Forest activities. Of these activities, fisheries are considered one of the beneficial uses under watershed protection.

The Forest Plan also addresses enhancement opportunities for fisheries habitat through structural and non-structural habitat improvements. Trout habitat and riparian systems in general are expected to improve under all alternatives. Largemouth bass habitat in artificial reservoirs will improve under the Preferred Alternative (PRF). Recovery of endangered species habitats is included under all alternatives.

**14. COMMENT: Native fisheries should be restored and maintained at or near historical conditions. Water quality and spawning grounds should be upgraded to benefit native fisheries. (1341)**

**RESPONSE:** CDFG decides whether to effect changes in the species compositions of streams. The Forest, however, is committed to maintaining biological diversity and native complements of fish in project areas, including but not limited to endangered native species on the Forest. Although the Forest Plan specifically addresses only MIS

fisheries, improving water quality for MIS or other beneficial uses should also benefit other native fisheries.

**15. COMMENT:** Modoc National Forest is home to many fine trout streams and their preservation is paramount to other aspects of this Plan. (1222)

**RESPONSE:** We agree. We place much emphasis on water and trout habitat quality in the Forest Plan. Protective measures are mainly addressed in the Forest Standards and Guidelines and the Riparian Area Prescription (Chapter 4).

**16. COMMENT:** Plan 4-168 – Fandango: shouldn't there be a recovery plan to implement or an attempt to develop one so that the [redband trout] species can be delisted? (107)

**RESPONSE:** The subspecies is not currently listed as threatened or endangered, and as yet there is no recovery plan. A recovery plan would be useful for developing a program to reduce the possibility of ever listing the Goose Lake redband trout. Developing a recovery plan will involve cooperation among the MNF, CDFG, Oregon Fish and Wildlife, BLM, SCS, various water districts and private landowners in California and Oregon. The Forest is committed to cooperating with the other agencies in the developing a plan, as stated in the Forest Standards and Guidelines.

**17. COMMENT:** Lassen Ck. provides important habitat for the Goose Lake redband trout. However, beaver dams and grazing activity impacts have seriously reduced the stream's productivity. This must be corrected by the MNF under Sec. 1604 of the NFMA and Sec. 19 of the Clean Water Act. (548)

**RESPONSE:** The Riparian Area Management Prescription covers beaver dams and grazing with respect to management of trout streams, including Lassen Creek. We will further evaluate Lassen Creek projects during a site-specific environmental analysis.

**18. COMMENT:** The redband trout is a federal candidate for listing and as such should be placed in the "sensitive" category of MIS (DEIS p. 3-156) (661)

**RESPONSE:** The Forest is currently conducting an evaluation of the Goose Lake redband trout to determine if it can be appropriately listed as "sensitive". Forest Standards and Guidelines and Riparian Area Prescription provide management that maintains or enhances habitats for trout species, including the Goose Lake redband trout. As an MIS, the subspecies will also be monitored (p. 5-20).

**19. COMMENT:** Restoration activities should continue, with cattle excluded from riparian grazing. (671)

**RESPONSE:** Restoration activities will continue as displayed in the Forest Plan. We will apply improved grazing systems and adjust livestock stocking rate to meet riparian objectives. We will exclude livestock in areas where these approaches fail to meet prescribed objectives.

**20. COMMENT:** Fandango (32): Lassen Creek and Buck Creek need to be specially managed for redband trout migrating from Goose Lake. (708)

**RESPONSE:** We will evaluate management activities and projects in and around Lassen Creek and Buck Creek on a site-specific basis. Enhancing riparian habitat for the migratory Goose Lake redband trout is also part of the Forest Plan's overall objective to improve water quality and trout habitat. The Forest is committed to cooperating in the recovery efforts for the subspecies, especially the lake run population, as stated in the Plan's Forest Standard and Guidelines. Maintaining the migratory route below the Forest boundary is outside the Forest's jurisdiction.

**21. COMMENT:** Greater attention needs to be given to maintaining the gene pool of the unique redband trout found in Goose Lake. (1222)

**RESPONSE:** Genetic analysis and maintenance of a "gene pool" are the direct responsibilities of the CDFG. We cooperate with the Department to ensure that viable populations of fish species are maintained, and that aquatic and riparian habitats are protected or enhanced. Because we do not have genetic information, we take the conservative stance of protecting Goose Lake redband populations that use the Forest by preventing further degradation of stream spawning and rearing habitat. The Plan provides direction for protecting and enhancing the populations, as addressed mainly by the Forest Standards and Guidelines and Riparian Area Prescription.

**22. COMMENT:** Protect Lassen Creek by acquiring private inholdings, fencing out cows, and removing beaver which interfere with trout spawning migrations. (1227)

**RESPONSE:** We will continue restoration activities as displayed in the Forest Plan. We will improve grazing systems and adjust livestock stocking rate to meet riparian objectives. We will exclude livestock in areas where these approaches fail to meet prescribed objectives.

Manipulation of beaver populations is under the jurisdiction of CDFG. The Plan's Riparian Area Prescription addresses assessing the impacts of beaver dams on fisheries, and manipulating the dams if necessary.

**23. COMMENT:** 4-168. Fandango Management Area (MA). Goose Lake redband trout. Much more intensive management of the cattle allotments including cattle exclusion in the riparian areas of the Lassen and Willow

creeks drainages should be specifically emphasized as a very important part of the effort to rehabilitate these streams. (364)

Beaver control to prevent fish migration barriers is another important activity that should be specifically listed. The Modoc NF should also attempt to acquire private inholdings in Lassen and Willow creeks.

RESPONSE: We will continue restoration activities as displayed in the Forest Plan. We will improve grazing systems and adjust livestock stocking rate to meet riparian objectives. We will exclude livestock in areas where these approaches fail to meet prescribed objectives.

Manipulation of beaver populations is under the jurisdiction of CDFG. The Plan's Riparian Area Prescription addresses assessing the impacts of beaver dams on fisheries, and manipulating the dams if necessary.

24. COMMENT: Plan, p. 4-41. Recent genetic analysis of the rainbow trout complex (by Berg 1987) identifies three distinct groups of redband trout: an inland form, *Parasalmo gairdneri gibbsii*, that occurs in Oregon and Idaho, a McCloud River form, *P. g. newberryi*, that occurs in the McCloud River drainage, and a Goose Lake form, *P. g. ssp.*, that occurs in Goose Lake and some of its tributaries. Plan, p. 4-168. Willow Creek and its tributary, Buck Creek, are important spawning areas for the Goose Lake redband trout. (1316)

RESPONSE: We corrected the description of the Goose Lake redband trout (currently called *Oncorhynchus mykiss* subsp.), and included Buck Creek as spawning habitat for the subspecies. This subspecies is found in tributaries to Goose Lake and the upper Pit River. The migratory population from Goose Lake has not been checked electrophoretically, but the Forest is currently cooperating in this effort with the CDFG.

The Goose Lake redband trout is not listed under the threatened and endangered species section of the Plan because it is not officially listed as T&E by either the State or federal government. We are currently evaluating this fish for listing as a Regional "sensitive" species. We will maintain or enhance its habitats, and monitor populations. If the Goose Lake redband trout becomes listed, amendments to the LMP may be necessary.

25. COMMENT: The Plan should recognize, either in the discussion on threatened and endangered species or in the section on special habitats, that the MNF contains important spawning and nursery habitat for the dwindling run of Goose Lake redband trout that annually migrate (or attempt to migrate) from Goose Lake into Lassen Creek and other Goose Lake tributaries. The Goose Lake redband trout is a Category 2 candidate species. (1316)

RESPONSE: Because the Goose Lake redband trout is still a "Category 2" species, it is not currently afforded the same consideration as a listed threatened and endangered species. The habitat for the subspecies, however, is already emphasized in discussions regarding Lassen Creek and other MNF tributaries to the lake that have spawning runs. We included a discussion of the Forest's role in habitat protection and enhancement for the Goose Lake redband trout in the final Plan and EIS. Because the species is an MIS, we will monitor the Goose Lake redband trout during project implementation.

26. COMMENT: 4-45. (12). For warmwater species (not just largemouth bass) add the following guideline: "Publicize angling opportunities for largemouth bass, sunfish and catfish in those waters managed for these species with underutilized populations." (364)

RESPONSE: CDFG bears the primary responsibility for publicizing angling opportunities. Although we commonly cooperate in these efforts, it would not be appropriate to include a standard or guideline, such as you suggest, in the Forest Plan.

27. COMMENT: Note that fishery management activities are the responsibility of the DFG and habitat management is that of USFS. The Plan should primarily address the costs and benefits of habitat mgt funded by USFS; habitat mgt funded by other agencies and mgt by the DFG (such as increased stocking of trout) should not be attributed to the Modoc NF. (364)

RESPONSE: We agree. However, it is important for the Forest to have population information to be more effective at habitat improvement work and monitoring for other Forest activities.

28. COMMENT: For lakes, reservoirs on Modoc NF (and ponds), structural habitat improvements including spawning bed construction, cover development and aquatic weed control are inappropriate for bass (see our comments on DEIS pp. 3-191 And 3-192) and trout. Combinations of cold and warmwater species are undesirable. Management promoting these activities should therefore, be deleted. Guidelines that would be appropriate to add include (1) riparian protection, (2) prevention of siltation and turbidity from shoreline and upstream areas, (3) development of boat and shoreline access and fishing access, (4) promotion of angling opportunity for underutilized fish, (5) discouraging the illegal use of live bait fish, and (6) discouraging any transplanting of fish except with a written permit from the DFG. (364)

RESPONSE: Structures may be useful in congregating adults to areas where forage is available. Not enough is currently known about the effects of structures on the population, especially in turbid, shallow reservoirs. The Forest will coordinate with CDFG to develop a warmwa-

ter fisheries habitat improvement plan to determine what structures may heap with warmwater fisheries.

Fish management is under the jurisdiction of CDFG. Population decisions are under the jurisdiction of CDFG, providing the decisions do not affect threatened or endangered species. "Improved access" is already addressed in Chapter 3. "Improved recreational facilities" has also been listed. Public information regarding the illegal movement of live fish is carried out as a cooperative effort between the Forest and CDFG.

**29. COMMENT: Monitoring.** On page 5-19, the Plan indicates that Lost River and shortnosed suckers will be monitored every five years. The DFG recommends that the frequency be increased to annual. (364)

**RESPONSE:** Assessing habitats (which is the Forest's responsibility) every five years through habitat typing, photo points, and hydrology transects should suffice. As more information on the species is discovered, more habitat parameters may become part of the typing procedure. Regarding population levels, the Forest will cooperate with CDFG and other agencies because of the magnitude of such a population evaluation.

**30. COMMENT:** On page 5-20, the Plan provides for monitoring of "fisheries". Goose Lake redband should be listed separately instead of being combined with trout and largemouth bass. (364)

**RESPONSE:** The monitoring plan has been changed. The lake run Goose Lake redband trout is addressed separately from other trout populations, including resident Goose Lake redband trout populations.

**31. COMMENT:** Habitats will be monitored every five years. This is not sufficient for a subspecies teetering on the brink of extirpation. The DFG suggests that, at a minimum, the spawning runs in Lassen and Willow Creeks and subsequent fry production as well as riparian habitat be monitored annually. (364)

**RESPONSE:** We will monitor Goose Lake redband trout populations in Lassen and Willow Creeks annually; and we will monitor habitat condition every five years. If changes in the habitat are major, we will notice them during population monitoring. Other changes will probably be gradual; therefore, five-year intervals of habitat monitoring should suffice.

**32. COMMENT:** Ash Creek was one of the best fishing streams in the MNF. Now you can hardly catch a fish there. (1130)

**RESPONSE:** We will evaluate Ash Creek for habitat improvement possibilities during the environmental analysis process for timber sales, allotment management plans,

or other Forest activities, including those directed at fish habitat improvement.

**33. COMMENT:** Trout in Johnson Creek, Rush Creek and Ash Creek have deteriorated at an alarming rate the last few years. (366)

**RESPONSE:** Ash Creek trout are supplemented by a CDFG stocking program, which is beyond the Forest's jurisdiction. We will assess fisheries and habitats in all the creeks you named as they come up for habitat improvement projects or environmental analyses for other Forest management activities.

**34. COMMENT:** I would like to know why more of the streams in the Warner Mts. are [not?] planted with trout. (914)

**RESPONSE:** Stocking fish is under the jurisdiction of CDFG. The Forest's role is to improve fish habitat in streams.

In addition, some streams in the Warners are in drainages that contain pure-strain Goose Lake redband trout. Stocking is avoided to prevent hybridization and loss of a unique subspecies. In wilderness areas, introductions of species that were not already present is prohibited. The appropriate strategy for long-term trout fisheries in the Warners and elsewhere is to improve habitats so that fish populations are self-sustaining.

**35. COMMENT:** Can alternate fish harvest strategies be used to reduce impacts to fish populations? [paraphrased comment]. (979)

**RESPONSE:** Stream closures and other fishing regulations that affect harvest are under the jurisdiction of CDFG, and beyond the scope of the Plan.

**36. COMMENT:** Plan 5-12: MNF will monitor riparian areas annually, and 20% of identified monitoring sites for fisheries, i.e., trout and bass, annually (proposed Plan 5-20). Do these statements refer only to MIS fish species, and over what period of time will 100% of identified monitoring sites have been studied? There should be a schedule outlining a monitoring timetable of the 20% of the monitoring sites. If 20% of the sites are sequentially monitored then all the sites will have been monitored at the end of 5 yrs. We believe 5 yrs is too long and that severe damage to the riparian zone from grazing could occur before the next monitoring. (1295)

**RESPONSE:** Some MIS were selected as indicators of entire systems; therefore, we will monitor a MIS fish species. We will develop a monitoring schedule of specific sites in conjunction with monitoring of other Forest management activities; therefore, a schedule is not presented in the Plan. Habitat degradation at a rate that would be noticeable earlier than a 5-year monitoring period would



most likely be of such magnitude that it would be visible during population monitoring surveys as well as during surveys conducted for the environmental analysis process. If such conditions are identified, we can schedule more intensive monitoring on a site-specific basis.

**37. COMMENT: Plan 5-20. Fisheries monitoring techniques should include habitat surveys. The DFG would like to participate in selecting monitoring sites. E-6. For fisheries, water quantity should be monitored along with quality. Substrate sediment sampling should also be considered. (364)**

**RESPONSE:** DFG has an opportunity to recommend or comment on monitoring sites during the EA process for projects on the Forest. Flow is part of the stream condition monitoring process and is also considered in measuring for water quality. The Forest uses the USFS Region 5 fish habitat assessment method which includes substrate, cover, and other habitat parameters to monitor changes in habitat.

**38. COMMENT: The proposals for instream fish habitat structures and pool excavation; wetlands development or expansion; and additional stock-watering facilities appear to have a cumulative impact of increasing the over impoundment of water in the Clear Lake watershed. The DEIS should quantify the effects of the proposed impoundments on downstream water rights users. If appropriate, the draft should address measures to offset downstream water reductions. (1316)**

**RESPONSE:** Instream structures and pools should have, at most, an effect of raising the water table, allowing critical summertime flows to increase. Because the waters have already been adjudicated, Forest wetlands and other impoundment facilities must be developed within the existing water rights situation, following the State's water rights procedures and requirements.

**39. COMMENT: 3-187. Diversion, storage, and consumptive uses of water are the primary causes of the low flows and water levels that limit the habitat capability for trout in streams and reservoirs. Other factors that affect habitat capability in lakes and reservoirs include (1) populations of competitive and predatory gamefish such as largemouth bass, bluegill, etc., and (2) poor water quality. We are unaware of any lakes or reservoirs on the Modoc NF where trout are limited by "low levels of aquatic vegetation" or "poor stocking and coldwater species composition." The Modoc NF should supply more detail on what they will do to improve habitat in lakes and reservoirs to increase high capability habitat from 24% to 66%. We note that in-lake habitat structures are not an accepted method of improving trout habitat. (364)**

**RESPONSE:** EIS Chapter 3 addresses human causes for reduced water levels and flows. Species composition in

lakes and reservoirs is under the jurisdiction of CDFG. Because various species have different habitat requirements, we must conduct detailed analyses of fish habitat and potential improvements in lakes and reservoirs on a site-specific basis.

**40. COMMENT: DEIS 3-188. The estimates of increased trout production attributable to habitat improvement should be re-evaluated. (364)**

**RESPONSE:** These estimates are based on the same habitat capability models that we used to estimate the current biomass. We will further evaluate the models, as well as other relationships of habitat parameters to fish biomass, on a site-by-site basis as Forest projects are analyzed and implemented.

**41. COMMENT: DEIS 3-191 and 192. There are numerous problems in the section on largemouth bass.**

- (1) Largemouth bass require relatively warm waters; "clear water" is not a requirement.
- (2) Vegetation and structure that provides cover for young fish is detrimental in most Modoc NF waters because it increases recruitment and exacerbates the slow growth and stunting problems that typify the area.
- (3) Largemouth bass are not a good stream fish; they are more suited to lakes and ponds.
- (4) Largemouth bass do conflict with other resource uses, particularly trout management since they are both predators and competitors in trout lakes and reservoirs; there is also more demand for trout than for bass fishing (note that most bass populations on the Modoc NF are under-harvested whereas trout are harvested at relatively high rates).
- (5) Habitat improvement opportunities should not include provision of hiding cover, development of spawning sites and structural improvements.
- (6) Largemouth bass should not be stocked in reservoirs by the Modoc NF.
- (7) "Multiple species fish management" of trout and bass is not advisable.
- (8) Bass management would benefit from improved access, promotion of more fishing use in waters that are managed for bass and public information programs that discourage the illegal stocking of bass (and other species of fish). (364)



**RESPONSE:**

- (1) We agree that relatively warm waters are required for largemouth bass; however, clear waters could also benefit bass in that waters free of sediments are better for spawning as well as forage production.
- (2) Structures may be useful in congregating adults to areas where forage is available. Not enough is currently known about the effects of structures on populations, especially in turbid, shallow reservoirs.
- (3) We agree and we removed the sentence on improving stream and river habitat for largemouth bass.
- (4) The text (Chapter 3) has been modified to reflect your concern with conflicts between trout and bass management. Regarding harvest, as you pointed out, public access may be the cause rather than less interest.
- (5) See (2) above.
- (6) Stocking is under the jurisdiction of CDFG. If the Forest feels that stocking may be beneficial, the Forest will comply with CDFG requirements and obtain the necessary CDFG permit before implementing an operation.
- (7) Again, fish management is under the jurisdiction of CDFG. If CDFG decides to maintain multiple fish species in reservoirs, the Forest will work towards enhancing habitat to suit CDFG's management practice.
- (8) "Improved access" is already listed in EIS Chapter 3. We added "improved recreational facilities". Public information will be addressed cooperatively by the Forest and CDFG.

**42. COMMENT:** [Appendix] K-2. Arctic grayling were stocked in Bullseye and Little Medicine Lakes in the 1970s but have not established reproducing populations; fathead minnow or rough sculpin on MNF. We would appreciate any documentation of these species on the Modoc NF. (364)

**RESPONSE:** Because the species might again be stocked in the lakes, Arctic grayling will be maintained on the list. Rough sculpin and fathead minnow have not been reported on the Forest. We have corrected the Appendix.

**43. COMMENT:** The stream management section should include a guideline that says "establish minimum flow releases from reservoirs that are adequate to sustain good fish populations in the downstream areas as well as the reservoir." (364)

**RESPONSE:** Forest impoundments are subject to water quality requirements for beneficial uses including fisher-

ies. We will address specific flow releases and fisheries on a site-specific basis.

**44. COMMENT:** Standards and guidelines should be changed to: "in cooperation with the California Department of Fish and Game, establish adequate minimum pools for all reservoirs." (364)

**RESPONSE:** We included this in the Riparian Prescription standards and guidelines.

**45. COMMENT:** The wording in standards and guidelines should be changed: "Large wood debris providing habitat to coldwater fish and not creating barriers to fish migration will be maintained..." (364)

**RESPONSE:** Guidelines #1 and #5 in the Riparian Prescription provide direction for maintaining large woody debris and removing barriers to fish migration, where appropriate.

**46. COMMENT:** [Plan] 4-238. Medicine Lake MA, third paragraph. Blanche Lake is not stocked with trout. (364)

**RESPONSE:** The correction has been made.

**47. COMMENT:** On page 4-168 of the Plan, MA 32 — Fandango: Goose Lake redband trout also spawn in Willow Creek and most importantly in Buck Creek, where the best spawning habitat exists. Goose Lake spawners which were prevented by a series of concrete structures from ascending Willow Creek for many years, are currently able to use this system again now that a fish ladder has been completed. (364)

**RESPONSE:** The correction has been made.

**48. COMMENT:** Redband trout, DEIS 3-190: the DFG has contracted with Dr. Graham Gall at the University of California at Davis (UCD) to conduct a genetic study of the endemic rainbow-redband trout complex including populations inhabiting Goose Lake and tributaries. Electrophoretic analysis of these populations indicates that the rainbow-like trout in the upper Pit River and Goose Lake drainages are very different from those occurring in the McCloud, Klamath, or Columbia River systems. "Goose Lake redband trout" has been informally accepted. The DFG also recommends that they be accorded sensitive status because of their uniqueness and relative scarcity. The UCD genetic studies also show that the Goose Lake trout does not possess the genetic characteristics diagnostic for rainbow trout of hatchery ancestry, thus indicating that little or no hybridization has occurred with planted rainbow trout. The UCD genetic studies also confirmed the existence of resident or non-migratory populations of Goose Lake redband trout in a number of tributaries to Goose Lake, the upper Pit River, and Alkalai Lake. These include Davis Creek, Joseph

Creek, Parker Creek, East Creek, Turner Creek, Rush Creek, Halls Canyon Creek, Ash Creek, Eight-Mile Creek, and Twelve-Mile Creek. Presumably, the rainbow-like trout in the unsampled adjacent streams are also Goose Lake redbands. Since only two Goose Lake tributaries on the Modoc NF are available to spawning Goose Lake trout (Lassen Creek and tributary Cold Creek, and Willow Creek and tributary Buck Creek) greater efforts should be made to maintain and improve this limited stream habitat if extirpation is to be averted. (364)

RESPONSE: We corrected the text in EIS Chapter 3 to say that Goose Lake redband trout inhabit the MNF. A further investigation of fish from the streams of Gall's study indicated that Buck Creek, Thomas Creek, Davis Creek, Lassen Creek, East Creek, Dismal Creek, Parker Creek (S Fk), and Turner Creek contain pure-strain Goose Lake redband trout alleles (Dr. William Berg, UC Davis, person who conducted the redband study out of Dr. Gall's lab, personal communication). Joseph Creek and Ash Creek are not pure. The Riparian Area Management Prescription addresses maintaining and improving streams containing Goose Lake redband trout.

49. COMMENT: [Proposed Plan] P. 4-9 Wildlife and fish: 2. Not all riparian areas will have or can have viable fish populations. (1153)

RESPONSE: We agree; however, the statement to which you refer does not say that viable fish populations will be maintained in all riparian areas. It states that riparian areas will be managed to optimize fish habitat and fish populations; viable populations may not be supported.

50. COMMENT: [Proposed Plan] P. 4-150 Element c-2-1-c,d,e: better suited for guideline. Enhance cold water fisheries in streams by improving, and/or maintaining stream stability, pool/riffle ratios and shading and/or narrowing of channels. (1153)

RESPONSE: These standards are applicable to all streams containing coldwater species; therefore, they are better suited for standards.

51. COMMENT: DEIS 3-146: allegations in 2nd para. Need to be more specific and quantified. (1263)

RESPONSE: The explanations are under the *Water* section of EIS Chapter 3. Parameters that were used in the watershed assessments, including cumulative watershed effects, are addressed in Chapter 3. These effects are used in determining a "threshold of concern," given as an indexed figure. Under water quality assessment, Chapter 3 explains how various activities affect streams.

52. COMMENT: DEIS, p. K-2. The list of fish on the Modoc Forest should include the Goose Lake redband trout (*Salmo* sp. or *Salmo gairdneri* ssp.). The Lost River

sucker is in the genus *Deltistes* (see miller 1981). The correct spelling to the scientific name for the shortnose sucker is *Chasmistes brevirostris*. (1316)

RESPONSE: Redband trout (formerly listed as *Salmo newberryi*) has been changed to Goose Lake redband trout (*Oncorhynchus mykiss* ssp.). We corrected the genus name of Lost River sucker to *Deltistes* and the species name of shortnose sucker to *brevirostris*.

53. COMMENT: We support the designation of rainbow, redband, brook and brown trout as Management Indicator Species (Plan, p. 4-20). (1295)

RESPONSE: Thank you for your comment.

54. COMMENT: The need to improve our reservoirs for fishing and camping is a must if we are going to have 60% increase in usage. (749)

RESPONSE: We agree. Improving recreation access is included. Facilities improvement has been added.

55. COMMENT: [Proposed Plan] P. 4-150 2 A: delete "except".(1153)

RESPONSE: This has been deleted from the Final Plan.

## 084 - Management Indicator Species

1. COMMENT: Species designated as MIS must be monitored and that their population numbers should not decrease due to mgt. activities. However, the DEIS (p. 4-121) indicates that the pileated woodpecker, and presumably other old-growth species, will decrease over the planning horizon for the PRF. This projected decrease in MIS populations, which is most likely a result of habitat loss, is in violation of CFR 219.19, which in part requires maintenance and improvement of habitat of all MIS. All sensitive animal species should be designated as MIS and require species-specific monitoring and mgt plans. (1018, 1248)

RESPONSE: 36 CFR 219.19 requires us to maintain viability of MIS populations. Decreases in MIS are permissible as long as the viability of these species is not threatened. We expect species dependent on mature or old-growth stands of timber to decrease as these seral stages become less common. Sensitive animal species are treated as MIS in the Forest Plan. We will also monitor sensitive species. Monitoring techniques for each MIS and special habitats are defined in Plan Chapter 5 and Appendix E. See also following comment and response.

2. COMMENT: DEIS 4-117: "Land managers assume that if they maintain viable populations of [MIS], they will maintain viability of all species which use the Forest." — not a safe assumption. Basis for this assumption

in the case of each MIS. — Species represented by each MIS.

- Viability level for each MIS and species represented.
- In appraisal of survival of MIS and associated species, how valid are Forest viability standards? (1248, 1252)

RESPONSE: If management indicator species were the only ecological consideration in the Plan, this would be a valid concern. We use habitat components (such as vegetation diversity, hardwoods, snags, down logs, wetlands, riparian areas, and aquatic habitats) as well as specific plant and animal species as barometers for assessing changes in habitats, and ensuring that sufficient habitats are maintained to sustain viable plant and animal populations. Using MIS as ecological indicators is only a small part of the fish, wildlife and botanical portions of the Plan.

In addition, management indicator species are divided into one or more of the following categories:

- species listed as federally threatened, endangered or sensitive (viability is a concern);
- species designated as sensitive to management activities;
- species that are ecological indicators of specific vegetation communities or seral stages;
- harvest species; and
- species that are of local interest.

Population thresholds were set primarily for species where viability is a concern. Forest-wide Standards and Guidelines, management prescriptions, and management area direction are sufficient to ensure the continued viability of the remainder of MIS. Using MIS and direction for special habitats, we believe that all species on the Forest will remain viable, or contribute to viability for wide-ranging species.

3. COMMENT: The Modoc Forest Plan treatment of indicator species, I believe, is not in compliance with minimum management requirements (MMRs) and the National Forest Management Act: the Plan's guidelines for management of indicator species's habitat are too vague to provide the required minimum protection for these species. The Plan identifies the marten and the pileated woodpecker as indicator species for old growth but fails to establish any standards for management of old growth to sustain these species the Plan does not establish minimum numbers of breeding pairs of either species to meet MMRs, does not establish minimum habitat acreage to sustain each such breeding pair. The MNF Plan offers no guidelines for minimum management of indicator species and no assurance of the contin-

ued viability of these species as the Forest rapidly cuts its remaining old-growth stands. (16)

RESPONSE: We apply specific management guidelines to most of the indicator species. Habitat requirements are based on habitat capability models for these species. Models are based on the literature as applied to Modoc National Forest habitats, and were peer reviewed. EIS Chapter 3—*Affected Environment* provides population estimates.

We have done little work on the marten and pileated woodpecker on the Modoc. The extent to which these species occupy habitats on the Forest (both currently and historically) are largely unknown. Based on the literature, and habitats that exist on the Modoc, we feel they are good indicator species for mature and old-growth habitats.

In the Final EIS and Plan we designated habitats to manage for these species. In the PRF, we are managing 13 territories for marten on the Doublehead and Warner Mountain Ranger Districts; i.e., roughly 2,000-acre areas that are managed primarily for older and mid-seral stages. Please refer to the pine marten standards and guidelines (Plan Chapter 4) for specific information on how these areas will be managed. Most of these territories will also provide habitat for pileated woodpeckers. In addition, we will manage 5 territories specifically for pileated woodpeckers on the Big Valley Ranger District, where habitat conditions for pine marten are probably marginal. These territories are a minimum of 600 acres. See standards and guidelines for pileated woodpeckers (Plan Chapter 4) for specific information on habitat management.

Standards and Guidelines for old growth, snags and down logs will be applied to habitats outside these territories and should be sufficient for travel corridors between them. We will monitor habitats for pine marten and pileated woodpeckers on the Forest. Viability for these species cannot be met on the Modoc alone. To be effective adjacent Forests such as the Shasta-Trinity, Klamath and Lassen must also provide habitat for these species.

4. COMMENT: Plan 4-40 Wildlife and Fish S&G: S&Gs in the various RXs should be contained in the Forest-wide directions, S&Gs. E.g., Plan 4-44, areas critical to the sage grouse shall be "managed," but no suggestion is made as to what that mgt should be. In contrast, in the Rangeland Mgt RX and others, the specific mgt is detailed (see 4-112). (107)

RESPONSE: Several species addressed in the Forest Plan use specific types of habitats. For example, sage grouse primarily use rangelands and are heavily dependent on meadows for summer forage. Essentially all sage grouse habitat management falls under the Rangeland Prescription. Thus, we address management direction for sage

grouse more specifically in this portion of the Plan. In these cases, the standards and guidelines in management prescriptions provide additional direction to the Forest-wide Standards and Guidelines. We modified Forest-wide Standards and Guidelines to define management which provides suitable habitat as defined in the sage grouse habitat capability model.

**5. COMMENT: Increase protection of critical habitat for antelope, deer, raptors, the Modoc sucker, and old-growth dependent species of wildlife. (186)**

**RESPONSE:** Plan Chapter 4 (Forest-wide Standards and Guidelines, management prescriptions and management area direction) discusses protection measures for these species.

**6. COMMENT: DEIS 3-171 (pileated woodpeckers): since pileated woodpeckers need eight snags per acre, how valid is MMR of 1.5 snags/ac.? How is Forest to provide 8 snags/ac distributed throughout woodpecker habitat? Land allocation and snag plan over snag-suitable forest acreage. — article by Raphael and White. They find the need for more than 2 snags/ac. (1248)**

**RESPONSE:** Your reference to eight snags per acre is the management goal within a 1-2 acre patch around the nest site; it doesn't refer to the entire home range of the pair. Preferred habitats probably do contain snag densities > 1.5 per acre. The 1.5 per acre snag density standard is viewed as a minimum, and is based on Region 5 guidelines which were adapted from research in the Blue Mountains of Oregon and Washington (Thomas et al. 1979). They suggest that snag densities below this level would not support viable populations of cavity-dependent species in northeastern Oregon and southeastern Washington forested habitats. In habitats managed primarily for pileated woodpeckers, prescribed snag densities have been increased. Forest-wide Standards and Guidelines (Plan Chapter 4) provides specific information on snag densities in pileated woodpecker habitat.

**7. COMMENT: Pileated woodpecker: develop 10 nesting territories with a minimum of 300 acres with high habitat capability. (500)**

**RESPONSE:** We designated five 600-acre pileated woodpecker territories on the Big Valley Ranger District. In addition we designated 13 pine marten territories on the Forest, most of which also meet habitat requirements for pileated woodpecker. Other comments and responses in this section provide more information.

**8. COMMENT: Forage allocations in all allotment mgt plans should be revised to include antelope. We ask that consideration for delineation of pronghorn kidding areas be made part of the final Plan. Any inundation of these areas because of inadvertent flooding [should] be con-**

**trolled if possible. Monitoring antelope for abnormal kid loss disease, herd fluctuations and habitat changes should be included in your final Plan. (558)**

**RESPONSE:** We estimate that the forage for pronghorn is one pound per day per pronghorn (30 pronghorn per AUM). Forest-wide Standards and Guidelines for pronghorn address direction for recognizing pronghorn forage requirements in allotment management plans. Unless an allotment has high pronghorn densities, forage availability for pronghorns is generally not a limiting factor. The quality of forage for pronghorn is a more important issue. Guidelines in the pronghorn habitat capability model, and Interstate Antelope Conference Guidelines and Pronghorn Technical Note provide the most direction for pronghorn management. The CA Department of Fish and Game will do population/composition monitoring for pronghorn. Department of Fish and Game personnel will be involved revising allotment management plans.

**9. COMMENT: DEIS 3-174, 175:**

- research underway to determine snag densities, pileated wood-pecker numbers.
- snag inventory
- snag retention-recruitment plan. Budget, completion dates for all of above.
- How does above quote [on p. 6 of letter] (DEIS 3-174) square with DEIS 3-174 on needs of pileated woodpeckers? (1248)

**RESPONSE:** We will monitor habitats considered suitable for supporting pileated woodpeckers. We will inventory nest sites and collect habitat data to determine management requirements for this species on the Modoc. Please refer to previous comments on pileated woodpeckers.

**10. COMMENT: Pileated woodpecker (PWP): The evidence is not compelling that this bird is an appropriate indicator species for old-growth-dependent wildlife. It has yet to be demonstrated that the Forest Service model for PWP habitat requirements is sufficiently valid to justify the prescribed limited use of land as applied in this instance. According to a survey of PWP literature, (INCAST Technical Bulletin No. 522, April 1987), researchers have recommended the retention of snags in riparian areas which are the most frequented habitat and have found that nesting in second growth forest is common, provided the trees are tall enough and snags are present. The unlikely assumption of the Forest Service model for PWP habitat that maintaining viable populations of this species required extensive area and networks of snags and down logs is not supported by substantial evidence that justifies the provisions for limited use. The proposed Plan by definition strongly relies on dependent interspecific relationship between PWP and old-growth habitat in**

all management areas. The vast majority of areas where the Forest is proposing such an aggressive and wasteful creation of snags and down logs are too distant from riparian areas (19,000 ac, <1.2% of the Forest area) to provide any more than incidental wildlife use — most particularly by the pileated woodpecker. (1252)

**RESPONSE:** As with many species, habitat requirements for pileated woodpeckers vary over the species' range. In the eastern United States, preferred habitats are mature oak forests. Riparian areas are also preferred in some areas. Over much of the western United States, preferred habitats are mature and old-growth conifer stands with sufficient snags and down logs to meet nesting and foraging requirements. On the Modoc, most of the remaining pileated woodpecker habitat is in mixed conifer and red fir. Ponderosa pine stands may have supported pileated woodpeckers at one time, as they do in central and eastern Oregon. However, these stands lack suitable mature/old-growth habitat, and snags to function as pileated woodpecker habitat. The snag creation program referred to is not just for pileated woodpeckers. The Forest has 55 species of birds and mammals dependent on snags. Especially in ponderosa pine, snag densities are well below accepted guidelines. Please refer to the snag (resource 098) comments for further information.

**11. COMMENT:** (DEIS) 3-185 (paragraph 4). The Clear Lake winter range is used by interstate antelope that summer in Oregon. 3-185 (Paragraph 1) forage allocations in allotment management plans should be revised to include antelope. 3-201 Interstate deer and antelope that winter on the Forest provide hunting opportunities in Oregon. The contribution to this recreational opportunity needs to be recognized. 3-204 the 9,600 migratory interstate deer are part of management objectives set by the Oregon Fish and Wildlife Commission. (1317)

**RESPONSE:** This information is incorporated in the Final EIS. In relation to forage allocations, the Plan's Forest-wide Standards and Guidelines for pronghorn provide direction for forage requirement analyses in allotment management plans. See also comment from respondent #558 addressed previously.

**12. COMMENT:** The planning team should evaluate designating the sandhill crane as an additional indicator species for Forest wetlands. (16)

**RESPONSE:** Sandhill cranes were added as an MIS for the Modoc.

**13. COMMENT:** Sandhill cranes: page 3-156 DEIS lists six MIS-sensitive species. The greater sandhill crane is an important declining species that the CDFG is trying to recover through greater management effort on public lands. [We request] Designation of greater sandhill crane as a USFS sensitive species. Livestock grazing has

a negative impact on this species and should be controlled where it is causing severe habitat degradation and interruption of reproductive activities. (364, 16)

**RESPONSE:** We developed Forest-wide Standards and Guidelines for sandhill cranes; see Chapter 4 of the Forest Plan. Designation as a sensitive species is a Regional Forester decision. However, the Forest is currently evaluating sandhill crane for "sensitive" classification. The Forest recognizes that the sandhill crane is a State threatened species; therefore, we designated it as a MIS.

**14. COMMENT:** The DEIS (p. 3-156, Table 3-19) should be changed to include the golden eagle, osprey, pileated woodpecker, prairie falcon and redband trout under the category of sensitive MIS. (1018)

**RESPONSE:** See the previous comment on designation of sensitive species.

**15. COMMENT:** The indicator species chosen in the Plan do not adequately represent all rare animal species and most certainly do not represent all rare plants. Recommends that the Plan address at least all species that are known to exist in the Modoc NF that are T&E (i.e., listed as rare, threatened, or endangered by the federal government or the State of California), are T&E candidate species, are listed as sensitive by the Regional Forester, or are *de facto* rare species (e.g., species listed in the California Native Plant Society's inventory of rare and endangered vascular plants of California. By "address" we mean that specific quantified objectives designed to achieve viable populations of these species should be set forth in the Plan in accordance with FS Manual 2672.31 and 2672.32. (364, 661)

**RESPONSE:** In the Plan, we addressed all State-listed plant and animal species that have known populations on the Modoc. We added Swainson's hawk and sandhill crane to the Forest's MIS list. However, we did not add great gray owls because no known breeding populations occur on or adjacent to the Modoc. We plan to conduct more inventories to determine the status of these species on the Forest.

We developed Forest-wide Standards and Guidelines to ensure that habitats required by these species would be managed. For federally listed species, management direction is provided that supports recovery objectives per FS Manual 2672.31. For sensitive species, management direction was developed to ensure that the Forest contributes to the maintenance of viable populations of these species (FS Manual 2672.32). Forestwide Standards and Guidelines and management prescriptions (Plan Chapter 4) discusses management direction for threatened, endangered and sensitive species. If we had sufficient information about the species on the Modoc National Forest, we established population goals. Where

such information was not known, we used species-specific habitat capability models to develop direction for habitat management. The models were reviewed by biologists familiar with the species' habitat requirements.

**16. COMMENT:** Minimum population numbers for all MIS plus fishers, wolverines, mtn lions, bobcats, black bear, burrowing owl, river otter, badger, and other at-risk species should be published in the final. MNF should also select a cave-nesting species as MIS. (500)

**RESPONSE:** Burrowing owls, mountain lion, bobcat, river otter, and badgers are not listed as threatened, endangered or sensitive by federal or State agencies in California. The extent of wolverine (Forest Service sensitive and State endangered) and fisher (Forest Service sensitive) populations on the Forest are unknown. Developing population networks for species with large home ranges (such as lions, fishers and wolverines) would require lands of several different agencies and private land owners. Where caves are important for species such as Townsend's big-eared bats, their habitats have been protected on a site-specific basis. At this time, further protection is not warranted.

**17. COMMENT:** Provide a pattern of 200-400 ac. units of high habitat capability for pine marten in MAs 62, 31, 32, 33, 34, and 36. (500)

**RESPONSE:** The Forest identified 13 potential territories (approximately 2,000 acres each) specifically for marten management. See previous comments in this section, and Standards and Guidelines for this species in Plan Chapter 4.

**18. COMMENT:** All candidate species for federal listing presented in the Forest should be included in the Plan's management directions so that further reductions in numbers do not occur and subsequent listing become necessary. We are very concerned with the projections, over the fifty-year planning horizon, for management indicator species. These projections (DEIS p. 4-121) show a decrease in two of the 28 indicator species populations in the Preferred Alternative. These projected population decreases are presumably due to decreases in the habitats of these species, both of which are in violation of CFR 219.19 which requires maintenance and improvement for all MIS. (661)

**RESPONSE:** We included in the Plan candidate species (Category 1 and 2) known to occur on the Forest that could be affected by Forest management. Decreases in species populations are not necessarily in violation of 36 CFR 219.19 unless viability of these species is threatened.

**19. COMMENT:** The Plan does not contain maps of known territories of MIS. There are no maps for old growth or high-capability habitat for MIS, and descrip-

tions of high-capability habitat requirements are included only by reference. Fencing standards for pronghorn, the Modoc sucker recovery action plan, and the bighorn sheep management plan are also only referenced. It is impossible to tell if an area is being protected because of bald or golden eagles, goshawks, peregrine or prairie falcons, or osprey. Other MIS often are managed only by application of Forest-wide Standards and Guidelines for snags, down material, riparian zones, oaks, etc., with no special areas designated. (708)

**RESPONSE:** The Land Management Planning data base, located in the Supervisor's Office, contains information on known and potential habitat for all MIS. Old growth, hardwoods and other special habitat components are also located in this data base. Documents cited in the EIS and Plan are located in the Supervisor's Office. Incorporating these maps into the Final EIS would have taken considerable space.

To manage some species, we had to develop specific Standards and Guidelines. We can manage other species by applying habitat component Standards and Guidelines. Where appropriate, these were used.

**20. COMMENT:** Recommend the cinnamon teal be used instead; it is a good local nester. The mallard tends to be an early nester requiring good residual cover, the teal a later nester. (806)

**RESPONSE:** Although your statement is correct, habitat management beneficial to mallards would have similar results for cinnamon teal. We see no need to add cinnamon teal to the MIS list.

**21. COMMENT:** Willow flycatcher, Modoc, Lost River and short nose suckers, and the Goose Lake redband trout should not only be monitored, but also considered for critical habitat designation. (1214)

**RESPONSE:** We feel the Riparian Prescription provides sufficient protection for these species. Critical habitat is normally designated for federally listed species, such as the Modoc, Lost River and short nose suckers. Critical habitat is listed in the Riparian Prescription for these species. We are managing Lassen Creek for Goose Lake redband trout under the Riparian Prescription. See also resource 081 of this appendix.

Little is known about the willow flycatcher on the Forest. They are dependent on meadows with a well-developed shrub component. The Riparian Prescription should also protect and enhance riparian communities for this species. We will inventory and monitor this bird to determine areas of the Forest where it is found.

**22. COMMENT:** DEIS 3-162 (willow flycatcher): To what purpose are willows planted? DEIS 3-163: is not LMP-DEIS required to present mgt. Plan, land alloca-

tions, equity-distribution-diversity considerations for this and other MIS vis a vis. Studies/inventories completed, proposed for willow flycatcher. (1248)

**RESPONSE:** The reason willow flycatchers were added as an MIS were twofold. First, they are a designated sensitive species. Second, they are an ecological indicator for willow stands in riparian areas. No inventory work has been done on willow flycatchers on the Modoc. Management according to the Riparian Prescription should result in the improvement of nesting sites for willow flycatchers. The monitoring section of the Plan (Chapter 5) specifies direction for assessing habitats and populations of this species.

**23. COMMENT: DEIS 3-172: The Forest could maintain and improve blue grouse habitat through coordination with other resources...." (1248)**

**RESPONSE:** We agree. The coordination of wildlife habitat management with other resource uses is essential in assuring that these habitats are protected.

**24. COMMENT: DEIS 3-174 sage grouse: what species/habitat does sage grouse MIS represent? – are other species represented by sage grouse in similar decline? – to what extent is concern for sage grouse indicative of need for concern for other MIS? (1248)**

**RESPONSE:** Sage grouse are indicative of sagebrush shrub/steppe habitats and riparian areas within these habitats. They are a good indicator of historical sagebrush conditions within the Great Basin. Other shrub/steppe-dependent species, such as vesper sparrows, have also declined in recent times. Pronghorn and sage grouse together are effective barometers of sagebrush communities in the Great Basin.

**25. COMMENT: What attempts have been made [to reverse population decrease of sage grouse]? – How effective can attempts be or how can attempts be adequately appraised for their effectiveness in absence of baseline and other crucial research on "current population and trends", and "limiting factors"?**

- Plans for annual lek surveys, budget.
- Limiting-factors-research.
- What specifically is proposed? – "Many areas of Forest have or could have suitable habitat." – How can habitat be protected for sage grouse in riparian areas? Protection-enhancement plan as crucial element of LMP-DEIS.
- NFMA requires distribution of species throughout range. In plan to "reverse current trends" toward species extirpation in all or parts of Forest, how can species be reestablished throughout Forest range?

**What is range at various periods in past, including likely pre-Columbian situation? (1248, 551, 708, 806)**

**RESPONSE:** In areas where this species has been studied, the decline of sage grouse can be related to both habitat deterioration and hunting practices. On the Modoc, juniper encroachment, fire suppression and heavy livestock grazing have altered much of the historic habitat. The invasion of exotic, non-native grass species further exacerbated the habitat declines. Habitat restoration in riparian areas and judicious treatment of historically suitable habitats (currently unsuitable) could provide a habitat base for the population to increase. A major concern with terrestrial habitat improvement is the propensity of non-native species to invade treated sites. Hunting has been closed in Modoc County since 1982. In other areas of the State, sage grouse populations increased as a result of this closure.

Plan Chapter 5 discusses monitoring requirements. These will primarily center around lek counts and brood counts in cooperation with the CA Department of Fish and Game. Effects of livestock grazing on sage grouse habitats will be addressed in allotment management plans. We will make adjustments based on habitat requirements of sage grouse per the literature and habitat capability models.

**26. COMMENT: DEIS 3-178 (w. gray squirrel): "On land not managed for timber, no attempt has been made to manage habitat for gray squirrels."**

- How much mgt. of gray squirrels is likely to be necessary on untimbered land?
- What silvicultural practices have protected oaks in commercial conifers to date? (1248)

**RESPONSE:** Most gray squirrel habitat is located in areas where timber management occurs. Most oak-woodlands grow among conifer species. Selection harvest systems of conifers will leave the oak component intact. In pure pine stands, we will manage mid-seral stage pine stands with a snag component to meet habitat requirements for gray squirrels. Meeting the Forest-wide Standards and Guidelines for oaks, diversity and snags should maintain viable habitats for gray squirrels.

**27. COMMENT: DEIS 3-185 (pronghorn – opportunities): Conditional "could" is not appropriate to requirements of NFMA. Specific research, specific cooperative programs, costs, completion date.**

- What specific studies indicate decline in Likely Tables herd? What are probable causes of decline?
- Have similar studies assessed ratios and decline in other herds?
- Is enough info available to warrant immediate changes in mgt programs affecting deer and other wildlife? (1248, 364, 551)



**RESPONSE:** For information on forage allocation alluded to in allotment management plans, see comment from respondent #558, previously addressed. Indications are that the Likely Tables herd is not as productive as other herds in Modoc County—the CDFG conclusion based on population censusing. CDFG has collected all population information on pronghorn. Reasons for declines in pronghorn are similar to those for sage grouse: juniper encroachment, degradation of riparian areas, fire suppression, and historic heavy livestock grazing. Effects of livestock grazing on pronghorn habitats will be addressed in allotment management plans. We will make adjustments based on habitat requirements of pronghorns per the literature and habitat capability models. Monitoring populations is primarily the responsibility of CDFG.

**28. COMMENT:** MNF has not adequately emphasized monitoring techniques [of sensitive species and communities]. (1018)

**RESPONSE:** Monitoring techniques (Plan Chapter 5 and Appendix E) are specific for all special habitats and MIS. We have made changes in monitoring intensity between the draft and final Plan.

**29. COMMENT:** Plan 4-40—wildlife and fish S&G: Why do the S&Gs apply only to the MIS and not to all Forest wildlife? The treatment of MIS appears to violate 36 CFR 219.19 which calls for the designation of MIS because their population changes are believed to indicate the effects of mgt activities. This should be clarified. (107)

**RESPONSE:** Monitoring all 350+ vertebrate species that occur on the Modoc is impossible. Therefore, we selected MIS and special habitats to portray changes in terrestrial vertebrate populations as a result of Plan implementation.

**30. COMMENT:** The DFG's pronghorn antelope management plan should also be added to the list of plans "incorporated by reference," since pronghorn herd goals from this plan are discussed. 2-7. Pronghorn should be added to the second paragraph under wildlife and fish as follows: "by allocating forage needed to meet deer and pronghorn herd plan goals. (364)

**RESPONSE:** We incorporated your suggestions into the final Plan.

**31. COMMENT:** 4-190. Patterson MA, last paragraph. Pronghorn do not "frequent" this area. Few pronghorn occur here. (364)

**RESPONSE:** We believe this adequately reflects the occurrence of pronghorn in the area.

**32. COMMENT:** 4-224. Crowder MA. the area is important summer habitat for pronghorn. (364)

**RESPONSE:** This was added to the Final Plan.

**33. COMMENT:** Willow flycatchers, page 3-163, the DEIS should indicate that this species is on the DFG's list of bird species of special concern. (364)

**RESPONSE:** The willow flycatcher is proposed as a State endangered species. This was added to the Final EIS.

**34. COMMENT:** Blue grouse: initiate a study with adjacent forests to determine population levels and the reasons for the species' decline. (500)

**RESPONSE:** We will monitor habitats considered important to blue grouse at the project level. We will also work with the CA Department of Fish and Game in any monitoring with which they are involved.

**35. COMMENT:** Sage grouse: begin a study to identify limiting factors for sage grouse populations and annually survey known leks to determine populations trends. (500)

**RESPONSE:** We will specifically address habitats considered important for sage grouse in pertinent allotment management plans. We will also assist the Department of Fish and Game in lek and brood surveys. See also the comment from respondent #1248, addressed previously.

**36. COMMENT:** Maintain all conifer species in grey squirrel habitat to provide multiple food crops. (500)

**RESPONSE:** The most important habitats on the Forest for gray squirrels are oak woodlands or mixed oak/conifer habitats. Meeting the guidelines for oaks, diversity and snags will ensure ample habitat for gray squirrels.

**37. COMMENT:** One pound of forage per day for pronghorn seems low. (500)

**RESPONSE:** Pronghorn are selective feeders. This value is normally used for pronghorn. Of greater significance for pronghorn is the quality of the forage (i.e., perennial forbs in the spring and summer). See also the comment from respondent #558, addressed previously.

**38. COMMENT:** Cooperate with state and other federal agencies to add other species as MIS as they are recognized as sensitive. (500)

**RESPONSE:** In the final Plan, we added as MIS State-listed species that are not listed by the Forest Service. These include Swainson's hawk (State threatened) and sandhill crane (State threatened).

**39. COMMENT:** P. 4-112 3-B-1: What constitutes an active lek? Historical data? Actual activity within the last 5 years? It should be actual activity within a designated amount of time. (1153)



**RESPONSE:** The Rangeland working group (composed of various representatives of the community and local and State agencies) changed this standard and guideline to refer to sage grouse habitat without any designation to lek activity. See this standard in Plan Chapter 4.

**40. COMMENT:** DEIS 4-121: Is the Medicine Lake Highlands the only place a viable population of pine marten will remain in the entire MNF.? (1220)

**RESPONSE:** Marten habitat capability on the Modoc is probably the highest in this area. Habitats for pine marten have been designated in the Medicine Lake Highlands, and other portions of the Forest where they are currently found (i.e., the Warner Mountains and other suitable habitats outside of the Medicine Lake Highlands).

**41. COMMENT:** DEIS 3-176: "Neither the yellow-bellied sapsucker nor its habitat is managed on the Forest." Timber harvest may reduce suitable snags near riparian areas. (1248)

**RESPONSE:** The Riparian Prescription and snag management guidelines will assure that suitable habitat is managed for red-breasted and red-naped sapsuckers (formerly called yellow-bellied). Timber harvest will probably not have a significant effect on these species.

**42. COMMENT:** DEIS 3-171 (osprey—opportunities): What specific snag retainment and recruitment plan for areas adjacent to water sources has been proposed in LMP-DEIS or elsewhere to ensure suitable osprey nesting habitat? (1248)

**RESPONSE:** Forest-wide Standards and Guidelines address specific snag and live tree standards, and other management requirements for osprey.

**43. COMMENT:** The hairy woodpecker and the yellow-bellied sapsucker are too common and widespread across North America to merit discussion in this context. (1252)

**RESPONSE:** Both species are good MIS for snags because they are primary excavators. Hairy woodpeckers are conifer forest generalists on the Modoc, and red-breasted/red-naped sapsuckers (formerly called yellow-bellied) are indicative of riparian hardwood stands. Both are MIS because they are ecological indicators for other species dependent on similar habitats.

## 86 - Goshawks

**1. COMMENT:** Osprey provisions for 30-acre buffers surrounding each nest are unnecessary. No need for special provisions other than the availability of nesting platforms. (LMP 4-43 (a)). (1252, 126)

**RESPONSE:** We developed osprey standards and guidelines to ensure continued use of nest sites. S&Gs are based on habitat requirements of the species as documented in the literature, and modified for conditions specific to the Modoc National Forest. A habitat capability model was developed and reviewed by biologists familiar with the species and its requirements.

**2. COMMENT:** The Department of Fish and Game code calls for buffers of 5-20 acres, and you have called for buffers of up to 160 acres. It has not been conclusively proven that goshawks need old growth. (1009, 1230, 126)

**RESPONSE:** The Plan states that we will manage 50-100 acres of habitat for goshawk nest stands per territory, not 160 acres. Habitats managed for goshawks can contribute to old-growth seral stage allocation; and where they occur in old growth, they are considered part of the old-growth allocation. Goshawk nest stands are not necessarily old growth; both mature and old-growth habitats are considered suitable for nesting goshawk habitat.

**3. COMMENT:** Goshawk pairs needed to maintain a viable population is 73 pairs. The MNF current has 71 pairs. Why does the PRF manage for 100 pairs? The major problems with managing goshawks above MMRs is:

- MMRs already have built in safeguards concerning perpetuation of the species.
- the goshawks habitat requirements is for late seral type stands "old growth".
- a nest territory calls for an active nest stand of 25-80 ac. and an alternate nest stand. Total 50-160 ac. per territory.

**DEIS 3-160:** If the MNF manages for an additional 27 territories, that would be an additional 1350-4320 ac. of old-growth timber excluded or modified from timber production. I recommend that the committee request mgt for no more than the MMRs requirement of 73 pairs/territories on the MNF. (126)

**RESPONSE:** We developed the population network for this species from Regional management guidelines which are based on a habitat capability model developed by the Modoc National Forest and reviewed by other species experts.

If we followed minimum spatial distribution guidelines per Regional direction, then 73 pairs would be required for the Forest. This population level has no safeguards built into it. Thus, 100 pairs were selected to provide that buffer. The current estimated population on the Forest is 254 pairs.

Please refer to the previous comment for a discussion on the size of nest stand and applicability to old-growth management.

**4. COMMENT: 4-122. Goshawk. Does the minimum viable population allow for a catastrophic loss of habitat, i.e., wildfire? (364)**

**RESPONSE:** We based the population network for goshawks on minimum spatial distribution guidelines developed at the Regional level. Under the Preferred Alternative, we selected 100 pairs as a management goal — 27 pairs above the number considered to be viable. One of the reasons for this allocation was to provide a hedge in the event of catastrophic habitat loss, such as wildfire. Please note that the population network referred to in your comment is for the Current Alternative, not the Preferred. See the two previous comments for discussion on how we determined the population network.

**5. COMMENT: On page 4-41 of the Plan, goshawk guideline (a) provides for the protection of 100 nest stands. The DFG recommends that this number be increased to at least 120 to account for the uncertainty in estimating minimum viable population. Guideline (b) should provide for the establishment of 120 acres per 10 square miles rather than 50 acres per 18 square miles of protected nesting territories. (364)**

**RESPONSE:** Standards and Guidelines for goshawks were developed and reviewed by biologists that are familiar with the habitat requirements of this species. One hundred territories is above the population network calculated to maintain a viable population (73 pairs). Based on the literature, optimum territory size for goshawks is approximately 7,500 acres (12 square miles). Under medium habitat capability, approximately 11,500 acres (18 square miles) is considered appropriate. Forest-wide Standards and Guidelines recommend habitat of at least medium habitat capability (per the habitat capability model). Thus, we determined that 50-100 acres per 18 square miles is the minimum for a nesting pair.

**6. COMMENT: Proposed 50-acre territories is below that recommended by published documents. The old-growth requirement for the goshawk should be a minimum of 125 acres. The DEIS (p. 3-160), States that "73 pairs (of goshawks) would ensure population viability." However, there aren't any references or other documentation to support that statement. The Plan should document all references regarding the habitat type and area needs, as well as population size and distribution for maintaining viable populations. (661)**

**RESPONSE:** The population network viability for goshawks was based on a habitat capability model developed and reviewed by biologists familiar with the species' habitat requirements. Using these habitat requirements, we

determined that 73 pairs would meet spatial distribution requirements over the Forest. The goshawk habitat capability model is located in the Supervisor's Office. See the previous two questions for further information.

**7. COMMENT: DEIS 3-162:**

- How can an understanding of goshawk needs (needs of all MIS) come solely from monitoring timber sales without antecedent baseline inventories and research on goshawk numbers, nest sites, habitat allocations?
- Why were goshawk studies terminated? How long should such studies be continued? Funds necessary to assure study continuity. Under Endangered Species Act, T&E species must demonstrate nesting, roosting and other use of substitute territory. Is not this practice appropriate for sensitive goshawk species as well as most other Forest species likely to be endangered by timber/livestock/commodity emphases?
- Studies, inventories on goshawks, budget, completion dates. similar information on all other MIS species. (1248)

**RESPONSE:** Excellent baseline data exists for goshawks on the Warner Mountain and Devil's Garden Ranger Districts which have designated their share of the 100 territories proposed in the Plan. The Big Valley and Doublehead Districts are still in the process of designating their territories. We have been conducting goshawk inventories since approximately 1980. The Modoc National Forest developed management guidelines for this species that have been adopted on a Regional basis. Thus, the Modoc has excellent baseline information for goshawks by which management practices can be assessed.

Goshawk studies have not been terminated. We monitor nest sites, and will continue to monitor them when the Plan is implemented. See Plan Chapter 5 — *Monitoring*.

**8. COMMENT: DEIS 3-161 (goshawk — current mgt): [MNF should not relegate] LMP-DEIS planning to timber sale planning stage. What is Forest legal jurisdiction for this slippage? Are LMP-DEIS adjuncts of timber sale planning?**

**DEIS 3-162:** What are the differences between the two ways of designating [goshawk] territories? Would not NFMA responsibility to improve species/habitat require protection of active nest sites? Assure that (critical) habitat not impaired unless equivalent alternative nesting sites are utilized by the species. (1248)

**RESPONSE:** Goshawk territory allocation is not necessarily relegated to the timber sale planning stage. We have already designated most territories on the Forest. Active nest sites are the highest priority for territory designation.

We manage designated nest stands with an objective of maintaining or improving the stand for nesting goshawks.

For those districts that have not met territory allocations (because active nest sites have not been found), then territories are designated using criteria stated in EIS Chapter 3—*Affected Environment*. We designate during the project planning stage of an environmental analysis. Forest-wide Standards and Guidelines, and Raptor Management Prescription (Plan Chapter 4) discusses direction for managing goshawk territories.

**9. COMMENT: Raptor RX:**

- P. 4-102 S&G a.1.—Change to (S) to conform with Endangered Sp. Act.
- P. 4-103 S&G b.3.—Change 2nd sentence to “other times, administratively close area to ORV use if conflicts arise.
- P. 4-105 S&G a.2.—Change entire standard to “predator control and pesticide use requires consultation with U.S. Fish & Wildlife Service.
- P. 4-106 S&G b.4.—Same change to standard as previous comment.
- P. 4-108 S&G 1.b. and 2.b.—Differentiate between system vs. temp. Roads. Emphasize use of temporary roads, which are later obliterated or closed.

**RESPONSE:**

- P. 4-102 a.1. will remain a guideline because each case may be handled differently and not according to a measurable standard.
- P. 4-103 b.3. This change was incorporated into the Final Plan.
- P. 4-105 a.2. This guideline essentially states this.
- P. 4-106 b.4. This guideline essentially states this.
- P. 4-108 1.b and 2.b. We will determine the type of road construction on a site-specific basis.

**10. COMMENT: Peregrine falcons, [DEIS] page 3-158:** It might be added that the number of known breeding pairs of peregrine falcons in California in 1987 was 80, with 146 fledged young from natural production and managed sites (Jurek, per. Com.) (364)

**RESPONSE:** We have included 1989 data which is the most recent available.

**11. COMMENT: Ospreys, page 3-170 the DEIS should indicate that this species is on the DFG's list of bird species of special concern. (364)**

**RESPONSE:** This information is included in EIS Chapter 3—*Affected Environment*.

## 087 - Modoc Sucker

**1. COMMENT: The agency has insufficient information to conclude that the Modoc sucker ever resided in Willow Creek and should not attempt to establish the fish in that creek. (11)**

**RESPONSE:** Based on the distribution of the species in other tributaries to the Pit River, there is reason to believe that the Modoc sucker *did* reside in Willow Creek. In 1985, a possible hybrid was caught in the stream. Whether the suckers currently in the creek are “Modoc suckers” or hybrids, the recovery plan for the Modoc sucker requires establishing enough populations so that in the event of catastrophe, the species will likely survive. Willow Creek is under investigation for being such a refugium stream.

**2. COMMENT: I am not in favor of planting the Modoc sucker in Willow Creek or Dutch Flat Creek. (699)**

**RESPONSE:** We are currently investigating both creeks for the purity of their Modoc sucker populations. If we find pure strains in the creeks, “planting” will not occur. If we find hybrid strains as we suspect for the Willow Creek population, or if enough genetic impact has occurred that only pure Sacramento suckers are now found (complete introgression), then “planting” would mean reintroducing a species that was historically present in the stream. This procedure follows the Modoc Sucker Recovery Plan's direction to expand the distribution of the endangered species to at least historical levels, and to include refugium streams to increase the chances of species survival in the event of a catastrophe in other Modoc sucker streams.

**3. COMMENT: It has been brought to my attention that the Forest Service is going to poison the trout in Willow Creek, and plant the Modoc sucker. Willow Creek runs through private land and would affect land owners. (891)**

**4. COMMENT: On page 4-216: Why would the Forest Service plan on killing privately planted trout on privately owned sections of Willow Creek to allow the Modoc sucker to be transplanted? Recommend an environmental and an economic impact statement should be prepared before any action is taken to move these species, since the threatened and endangered species protection act is very restrictive to management activities where threatened and endangered species occur. (1283)**

**RESPONSE [to comments 3 and 4]:** Rainbow trout (specifically the redband subspecies), as well as speckled dace and Pit sculpin, are historical co-inhabitants of streams with the Modoc sucker. Therefore, these species are kept

in the stream along with the sucker in order to maintain a complete community of fish.

The method used is to remove as many as possible of the target fish, including all native species; place them in holding tanks, treat the system, then return the target fish to the system.

Brown trout, brook trout, and other species that are not native to the area did not occur historically with the Modoc sucker or redband trout. These non-native fish will probably be removed from Modoc sucker streams.

The Forest Service will not do the chemical treatment nor will it work on private land. Chemical treatment is under the jurisdiction of CDFG, as is any manipulation of a fish population. The role of the Forest Service in the Modoc Sucker Recovery Plan is mainly to improve stream habitat for the species on Forest lands. We also conduct the required environmental analysis if CDFG wishes to treat creeks on Forest land.

**5. COMMENT: 3-160.** The section on opportunities for the Modoc sucker should note that a chemical treatment of Rush Creek may be required to eliminate hybridized suckers if the fish ladder is eliminated to create a barrier. This section should also provide for the potential acquisition of private lands to secure at least two new streams where "pure" populations can be established (3-167). (364)

**RESPONSE:** Establishing populations in two systems outside the Turner and Rush systems is noted in Chapter 3. Land acquisition is listed in the Modoc Sucker Action Plan, to which the Forest is a signator.

Directions for chemical treatment are addressed in the Modoc Sucker Action Plan. Actual treatment and any fish population manipulation is the responsibility of CDFG and, therefore, beyond the scope of the Forest Plan. The environmental analysis for chemical treatment projects on the Forest would, however, be conducted by the Forest Service in cooperation with CDFG.

**6. COMMENT:** Protect and restore habitat within the historic range of these species. Restoration of habitat may require restoration of water to the streams as an integral part of restoration of riparian and instream habitat. (364)

**RESPONSE:** This is the intent of stream habitat rehabilitation (see Chapter 4). Water is not missing through diversion, so there is no means of direct restoration of water to the system. By improving riparian areas, it may be possible to raise water tables, thereby making summer

flows possible through slower release of water into the system.

**7. COMMENT: 4-42. (5).** all streams in the historical range of the Lost River and shortnose suckers should be managed (1) as directed in the Riparian Area Management Prescription, (2) to improve flow and water quality conditions and (3) in accordance with the sucker management or recovery plans that may be developed in the future. (364)

**RESPONSE:** We have added to Standards and Guidelines that we will manage Lost River and shortnose suckers in accordance with any recovery plan that may be developed in the future. As with all water systems, direction for water quality is to improve water quality conditions. This can include flow, such as providing instream requirements for beneficial uses, as well as other water quality parameters.

**8. COMMENT: Plan 4-208: Management Area 44 - North Adin - is discussed.** The DFG recommends that this section note that the area contains Dutch Flat, Rush, and Johnson Creeks, all critical streams for the Modoc sucker. Dutch Flat Creek has been identified by the inter-agency Modoc sucker working group as the highest priority stream for restoration. On page 4-232 of the Plan, MA 59 - Happy Camp - is discussed. As noted in the Plan, Hulbert, Washington, and Turner Creeks are important habitat for the Modoc sucker, and should be enhanced. The Plan should also specifically provide for enhancement of two important Modoc sucker spawning areas - Cottonwood Flat (tributary to Hulbert Creek) and Coffee Mill Gulch (tributary to Washington.) (364)

**RESPONSE:** In Chapter 4 of the Plan, the section on Management Area 44 discusses Dutch Flat, Rush, and Johnson Creeks. Regarding specific duties of the Forest with respect to habitat enhancement, under the Riparian Area Management Prescription we state that we will rehabilitate, which includes enhancement. We will also maintain critical Modoc sucker habitats in accordance with the Modoc Sucker Recovery Plan. The tributaries mentioned are considered part of the critical habitat.

**9. COMMENT:** On page 3-156 in Table 3-19, Forest management indicator species (MIS) under sensitive the Lost River and shortnose suckers are listed.

**On page 3-166:** Question how can you have a MIS that is hybridized? Question how can you have a MIS that has not been positively identified on the Forest for over 12 years?

**On page E-3 in the fish and wildlife monitoring techniques:** Why does it not sample the water to find if the species are actually there (i.e. electrofishing or measure population trends)? Question why is there no criteria or

procedure outlined for determining if the fish are pure forms of the sensitive species or are hybridized? Why does the Forest Service continue to use the shortnose sucker and the Lost River sucker as MIS's in light of the following fact? The Klamath Basin Threatened Fishes Recovery Team (comprised of representatives from State Fish and Game Departments, Fish and Wildlife Service, state universities and the Forest Service) which was formed approximately in the early 1970's disbanded in 1979 over an impasse concerning surveys to determine the distribution and populations of these species (AMS Wildlife Section S, pages 3 and 4). (1283)

RESPONSE: The Lost River and shortnose suckers were both federally listed as endangered species in 1988. Thus, they are treated as one type of MIS in the Forest Plan. Both species were found in the Willow Creek drainage in 1989 (USFWS surveys). Determining the purity of the shortnose sucker is beyond the scope of the Plan. The Forest is required to act in accordance with the listing of the two species, and to protect their habitat in the Willow and Mowitz Creek drainages whether or not the population is possibly hybridized.

10. COMMENT: Plan, p. 4-33. Recognition should be given to how important riparian habitats are to the survival and recovery of the Modoc sucker, shortnose sucker, Lost River sucker, and Goose Lake redband trout. Proper management prescriptions are needed to insure that riparian habitats are maintained and restored where necessary alongside streams that support the Modoc sucker, shortnose sucker, Lost River sucker, and Goose Lake redband trout. (1316)

RESPONSE: Under the Riparian Area Management Prescription (17), enhancing riparian areas is addressed in accordance with the Modoc Sucker Recovery Plan and future plans for the other two suckers. We added a section on the Goose Lake redband trout to the Prescription and to the Standards and Guidelines.

11. COMMENT: I would also like to see the Modoc sucker planted. If you are trying to get numbers up to get them off the endangered species, I think if you put them in the wildlife area it would be an excellent idea, especially the one in Ash creek and there is probably other places. (1398)

RESPONSE: The goal of all endangered species action plans is to increase populations to the point where they could be de-listed. The usual approach is to maintain populations where they are known to exist, and to re-establish populations where they historically existed. If existing or historic streams that are either suitable or recoverable for the species are insufficient, the Modoc Sucker Recovery Plan also calls for establishing populations in additional streams to increase the likelihood of

species survival in the case of a catastrophe to other Modoc sucker streams.

While the upper part of Ash Creek is probable historic habitat for the Modoc sucker, the lower Ash Creek Wildlife Area is most likely not historic habitat. The decision to develop a Modoc sucker refugium, a State refuge, in the wildlife area is beyond the scope of this Plan.

12. COMMENT: Plan, p. 4-14. Table 4-2 should include the shortnose sucker and the Lost River sucker among the species for which management prescriptions and objectives are established. These two species were recently proposed for addition to the list of endangered and threatened wildlife. Habitat for these two fishes occurs in the Modoc Forest in Willow, Boles, and Mowitz Creeks (tributaries to Clear Lake Reservoir). (1316)

RESPONSE: The Plan has been updated to reflect the endangered status of these species.

13. COMMENT: Regarding guidelines for T&E fish, separate guidelines should be established for the shortnose sucker similar to that proposed for the Modoc sucker. (This species, in addition to the Lost River sucker, should be listed under the heading of "threatened and endangered species" because listing is expected prior to publication of the final Plan.) (364)

RESPONSE: The Plan has been updated to reflect the endangered status of these species.

14. COMMENT: (DEIS) 4-119 there is no discussion on the effects of the alternatives on Lost River and shortnose suckers. (1317)

RESPONSE: Because the Lost River and shortnose suckers have been listed as federally endangered species, all alternatives provide measures to increase Lost River and shortnose sucker populations. The Forest will implement habitat improvements and protection in accordance with the forthcoming recovery plan for the species. Until the recovery plan is completed, protection and enhancement of their habitat is required of the Forest under all alternatives. Direction is outlined in BMPs for water quality for beneficial uses, and the Endangered Species Act, Section 7.

15. COMMENT: DEIS, p. 3-16. On Lost River and shortnose suckers, it should be noted that surveys are needed to determine the current distribution of these two fishes on the Forest. (1316)

RESPONSE: Surveys have been performed to determine species distribution. Additional surveys were conducted by USFWS in 1989. As Forest activities are proposed in sucker drainages, we will survey the drainages again for

up-to-date distribution, as well as to monitor species populations.

**16. COMMENT:** Plan, p. 5-12. In the monitoring and evaluation specifications for "riparian areas," we believe a 10% reduction in channel and riparian condition for streams that support the Modoc sucker, shortnose sucker, and Lost River sucker is too great a variation to allow before corrective action is called for. We recommend that the threshold for triggering remedial action be established at a reduction of 5% in channel and riparian conditions. (1316)

**RESPONSE:** The monitoring plan (Plan Chapter 5) has a separate section for the Modoc sucker. We added plans for the Lost River and shortnose suckers because of their endangered species status. For streams with the endangered fish species, we did not establish any percent of change that requires further action. It is listed as "any significant change." The monitoring itself will tell us what level of change should be considered significant and evocative of a change in actions. This significant change could be more or less than your suggested 5%, depending on monitoring results.

**17. COMMENT:** Plan, p. 5-12. In the monitoring and evaluation requirements for the Modoc sucker, the projected cost of only \$500 for the annual monitoring specified in this element does not appear adequate. We recommend that a more realistic allocation be provided for these important recovery actions. (1316)

**RESPONSE:** The cost estimate has been increased.

**18. COMMENT:** The Plan should allow for protection of rare and endangered species in only the areas they now are found. (11)

**RESPONSE:** One of the reasons endangered species become endangered is that their current distribution and amount of suitable habitat are no longer sufficient to maintain the species population. For this reason, we need to expand the distribution of endangered species. For the most part, expansion is from current to an historic distribution. If the historic habitat is degraded and cannot sufficiently maintain the species, the distribution will be expanded to include non-historic habitat in order to increase the probability of the species survival. As a federal agency, the Forest Service is required under the Endangered Species Act to promote the conservation of any threatened or endangered species.

**19. COMMENT:** Plan 4-118: What data exists to show that the Modoc sucker's range ever included streams that they are not presently occupying? (126)

**RESPONSE:** Determinations of historic distributions are based on several factors, including presence of a species

or hybrids of the species, the geologic history of the drainages, the habitat requirements of the species, and the history of past events (human-caused or natural) that changed the habitat.

**20. COMMENT:** We believe that the shortnose and Lost River suckers should remain on the sensitive or endangered species lists until the question of hybridization is resolved. Even if hybridization of present populations is established sometime in the future, restoration of "pure" stocks to historic habitat should be a goal. (364)

**RESPONSE:** Both suckers were added to the federal endangered species list in 1988. They are now, therefore, on the Forest's T&E list. Implementing any restoration plan of "pure" stocks is beyond the jurisdiction of the Forest Service and the scope of the Plan. However, in accordance with the Endangered Species Act, the Forest is responsible for the conservation of threatened or endangered species. The Forest will rehabilitate, enhance, and maintain those drainages that the two species use.

**21. COMMENT:** The fish section contains some misspellings and incorrect genera: the Sacramento sucker should be *Catostomus* not *Catastomus*. The Lost River sucker should be in the genus *Catostomus* not *Chasmistes*. The shortnose sucker is *Chasmistes brevirostris* not *Chasmistes breverostris*. (364)

**RESPONSE:** Actually, the genus of the Lost River sucker is *Deltistes*. This and the species name of the shortnose sucker have been corrected. *Catastomus* is now *Catostomus*.

**22. COMMENT:** Page 4-256 of the Plan, MA 65 - Steele Swamp - is discussed. The Plan fails to note that Willow and Boles Creeks are important spawning streams for the Lost River and shortnose suckers. (364)

**RESPONSE:** The importance of the creeks to the suckers is covered under MA 66 - Clear Lake.

**23. COMMENT:** Lost River and shortnosed suckers, 3-167 of the DEIS Table 3-22 lists streams inhabited by these species. Mowitz Creek should be added. (364)

**RESPONSE:** With the recent discovery of the suckers in Mowitz Creek (1989 USFWS survey), we have included Mowitz Creek in the Plan on any list of Forest-owned habitat for the suckers.

**24. COMMENT:** Plan, p. 3-41. Species proposed for endangered or threatened status do receive special consideration during the interval between publication of the proposed rule and the final determination. (1316)

**RESPONSE:** If your comment is in reference to the Lost River and shortnose suckers, the two species have been federally listed as endangered, and are now considered

under the Forest's T&E species list. Actions regarding their habitats will be in accordance with their forthcoming recovery plans.

**25. COMMENT: (DEIS) 3-167. The shortnose sucker should remain on the Regional Forester's sensitive species list until the question of hybridization is resolved. (1317)**

**RESPONSE:** The shortnose sucker has been federally listed as an endangered species. It is now on the T&E species list.

**26. COMMENT: Suckers - RMP 3-155 to 160 - the multiple-use concept can still apply in those areas with T&E species. (530)**

**RESPONSE:** Multiple-use will frequently require compromises on the parts of all users involved. Under the Endangered Species Act, the Forest Service, as a federal agency, is responsible for promoting the conservation of threatened and endangered species. Therefore, a compromise that results in a negative impact on the population is not allowed. If, however, analysis indicates that another use of a riparian area will not have an adverse effect on endangered species, that use may be allowed.

**27. COMMENT: On page 3-159 of the MNF DEIS: "Except during spawning, the Modoc sucker species prefer large shallow, muddy bottomed pools with partial shade and cool temperatures." Willow Creek is a small warm watered creek with a bottom that ranges from coarse sand to rough rock. (1061)**

**RESPONSE:** Willow Creek is a stream that could be improved so that it would contain suitable habitat for the Modoc sucker as well as rainbow/redband trout, an historic co-inhabitant with the sucker. With respect to what constitutes Modoc sucker habitat, the wording in the DEIS has been corrected so that "prefer" is changed to "is most abundant in." The fact that the suckers are most abundant in "muddy bottomed pools" is more a reflection of habitat availability than of habitat preference.

**28. COMMENT: Numbers of suckers are far higher than discussed in DEIS. (1145)**

**RESPONSE:** A recent estimate of the total Modoc sucker population is at 1,500 (Jack Williams, former USFWS, now with BLM WO). This new figure is reflected in EIS Chapter 3 - Affected Environment.

At some times of the year, as in early summer before the usual drop in the juvenile/young-of-year population, there may be more than 1,500 Modoc suckers. However, the critical portion of the population is that portion which can reproduce; i.e., suckers that will mature and survive until the next spawning season.

**29. COMMENT: DEIS 3-159: "Modoc suckers..also in 1980, CDFG and the MNF jointly developed a Recovery Action Plan which identified major problem areas and actions necessary for species recovery."**

- Cost of Plan; length of study. In what ways might this cooperative endeavor be a model for other MIS inventory/studies?
- What actions have been implemented in Modoc sucker plan? What studies completed on "identified major problem areas"? (1248)

**RESPONSE:** Actions we have implemented has been added to the EIS Chapter 3 - Affected Environment. Other than using the Action Plan as a guideline for actions to protect and enhance other MIS, the Action Plan would not be very useful as a "model for other MIS inventory/studies." For endangered species, individual recovery plans have been or will be developed. Likewise for other MIS, inventory and monitoring plans will be developed for each individual species. A program's actions and timetables for other species depend on their individual habitat requirements, sensitivity to impacts, life history requirements, etc. Furthermore, the Modoc sucker plan involved other agencies. Inventories and studies for Forest MIS can only address habitat management for a species and give direction only to the Forest.

**30. COMMENT: DEIS 3-167: "Lost River and shortnose suckers...because past studies conducted on these species made no attempt to determine numbers, current populations are unknown."**

- past studies — proposed future ones — study specification.
- what was determined by past studies? (1248)

**RESPONSE:** Past studies focused on the distribution of the two species in the Lost River drainage. Some habitat measurements were taken. However, without good population information to go along with them, analysis of critical habitat parameters has not been possible.

**31. COMMENT: DEIS, p. 3-159. In the discussion on the Modoc sucker, it should be noted that Dutch Flat Creek is likely to contain hybrid fish. (1316)**

**RESPONSE:** EIS Chapter 3 includes a section on those streams that are considered to contain pure strain Modoc suckers. With respect to the Dutch Flat Creek population, genetic studies on the purity of the population have not yet been performed. Whether or not the population is determined to be pure or hybrid, the Forest has the responsibility under the Endangered Species Act to manage the drainage for endangered species.

**32. COMMENT: It is bad to have the Modoc sucker spoil our fishing — it should be eliminated. (365)**



RESPONSE: Managing habitat for the conservation of the Modoc sucker should not conflict with recreational fishing. Furthermore, habitat improvements for the Modoc sucker are the same habitat improvements that improve water quality and habitat condition for redband trout, which were historically found with the sucker and will be maintained as part of the native fish community.

33. COMMENT: The Modoc sucker is strictly a trash fish and the moneys used to propagate them could be used to a much greater advantage. (366)

RESPONSE: Under the Endangered Species Act, the Forest Service has the responsibility to promote the conservation of any threatened or endangered species, including the Modoc sucker.

34. COMMENT: Putting out money on the Modoc sucker is absolutely bunk. (366)

RESPONSE: Under the Endangered Species Act, the Forest Service has the responsibility to promote the conservation of any threatened or endangered species, including the Modoc sucker.

35. COMMENT: The pit river sucker is obviously a pet project and I feel it is not in the public's interest to change things. It has been doing fine, and I am sure it will keep on doing so if it is not bothered by [a] biologist. (808)

RESPONSE: Under the Endangered Species Act, the Forest Service has the responsibility to promote the conservation of any threatened or endangered species, including the Modoc sucker. To this end, the Forest will manage streams to improve habitat condition so that it can support the species as well as its historic co-inhabitants, rainbow/redband trout, speckled dace, and Pit sculpin. With respect to the effects of biologists, any biologist who works with an endangered species does so under strict restrictions of the U.S. Fish and Wildlife Service.

36. COMMENT: Copy of comments I addressed to the BLM and their replanning analysis in March of 1980. I feel these comments dealing with range and wildlife pertain to the MNF in future planning as well. In referring to the Modoc sucker, I am wondering if this is the trash fish found in irrigation ditches and creeks or is it the permittee grazing livestock on public land. (1387)

RESPONSE: The Modoc sucker is probably not the fish that you see in irrigation ditches.

37. COMMENT: On the list of endangered species, I want to comment on two species. The Modoc sucker and the peregrine falcon. Enjoy them and leave them alone. They are sensitive and bothering their habitat will only encourage their extinction. I'm in favor of the Care plan and support SOC. (1063)

RESPONSE: Under the Endangered Species Act, the Forest Service has the responsibility to promote the conservation of any threatened or endangered species, including the Modoc sucker. To this end, the Forest will manage streams to improve habitat condition so that it can support the species as well as its historic co-inhabitants, rainbow/redband trout, speckled dace, and Pit sculpin.

38. COMMENT: The Modoc sucker — what a joke! Leave it alone — if it becomes extinct so what. That's God's will — drop the entire program. (1145)

RESPONSE: Under the Endangered Species Act, the Forest Service has the responsibility to promote the conservation of any threatened or endangered species, including the Modoc sucker. To this end, the Forest will manage streams to improve habitat condition so that it can support the species as well as its historic co-inhabitants, rainbow/redband trout, speckled dace, and Pit sculpin.

## 088 - Bighorn Sheep

1. COMMENT: Expand bighorn range, and decrease livestock allotments accordingly. The best expansion is into Cottonwood and Owl creeks, allowing much more practical boundaries for herd management. Expand into the North Warners; the best possibility there is Soldier Creek. AMPs there should be managed with that potential in mind. (708)

RESPONSE: In late 1987 and early 1988, the entire bighorn sheep population in the South Warner Mountains were lost in an all-age die-off. The suspected cause of the die-off was a pneumonia bacteria (*Pasturella haemolytica* — type a) most likely transmitted from domestic sheep or goats.

Currently, the Forest is part of an interagency team evaluating the potential for bighorn reintroductions in northeastern California. We developed several additional Forest-wide Standards and Guidelines for bighorn sheep that provide direction for reducing conflicts with domestic livestock and establishing new populations of bighorn sheep on the Modoc National Forest.

In the southern Warner Mountains disease transmission concerns need to be resolved both on the Forest and on private lands adjacent to the Forest in Surprise Valley, prior to another re-introduction. To be successful, this venture will require commitments from the Forest, CA Department of Fish and Game, livestock permittees and private landowners.

2. COMMENT: Bighorn sheep herd in South Warner [should be] supported. (81)



**RESPONSE:** The southern Warner Mountains are considered excellent bighorn sheep habitat, and are the highest priority for re-establishing bighorn sheep on the Modoc.

**3. COMMENT:** Reduce or eliminate livestock grazing allotments in this and other areas where such livestock grazing poses a threat to native species. We especially recommend a reduction or removal of livestock grazing in the South Warner Wilderness to at least protect the California bighorn sheep in this crucial habitat. (274)

**RESPONSE:** We added Forest-wide Standards and Guidelines to provide direction for managing livestock relative to potential bighorn sheep reintroduction sites. See also the previous comments.

**4. COMMENT:** [Proposed Plan] P. 4-60 Element c 4: The Experimental Stewardship Program should be included when developing the Bighorn Sheep Plan. (1153, 1071)

**RESPONSE:** The Experimental Stewardship Committee will be included in developing a bighorn sheep recovery plan.

**5. COMMENT:** [Proposed Plan] P. 4-42 3-A: A reintroduction and management plan should be in place prior to the reintroduction of any species. (1153)

**RESPONSE:** We agree. A recovery plan for northeastern California is currently in preparation which will provide the framework for future bighorn re-introductions.

**6. COMMENT:** Contributing factor to the bighorn sheep die-off – selenium. (364)

**RESPONSE:** Selenium is not considered the major factor in the die-off. The most probable cause of the die-off was a bacterial pneumonia, transmitted by domestic livestock. See response to comment #1 in this section.

## 089 - Viable Populations

**1. COMMENT:** Neither the Plan nor the DEIS describe exactly what a viable population is considered to be in terms of estimated numbers and distribution of reproductive individuals. In no case is there a description provided of how viable population levels are actually calculated or the assumptions, probabilities, and risks associated with that level. (364, 661)

**RESPONSE:** There is a great deal of debate among ecologists regarding the concept of viability. The textbook answer is: in order to ensure the continued existence of a species (viability), a minimum of 500 reproducing individuals within a species or sub-species are needed. In the strictest sense, viability relates to a specific species over its

entire geographic range. A species that is extirpated from a portion of its geographic range may still be viable.

In 26 CFR 219, direction pertains to maintaining viable population levels at the planning area level—in this case, the Modoc National Forest. For many species, viability cannot be met on a single forest.

At the Forest level, the major concern with viable population is relative to species which are classified threatened, endangered or sensitive. For threatened and endangered species, recovery plans are the main guidance for maintaining viable populations of these species. In the Forest Plan, management direction for these species meets or exceeds direction in the recovery plan. Where recovery plans do not exist, management is closely coordinated with the U.S. Fish and Wildlife Service.

For most of our species, we manage in accordance with habitat capability models that were developed for these species. These models are species-specific and have habitat requirements for high (preferred) and medium (required) habitat capabilities. Habitat capability models were developed by biologists familiar with the species, and were reviewed by species authorities. We determined populations for several of our MIS species based on these models. See EIS Chapter 3—*Affected Environment*.

Viable populations of most the MIS cannot be met on the Modoc National Forest alone. For example, only a small portion of the Forest is known for its pileated woodpecker habitat. To support a viable population as defined previously, the Klamath, Shasta-Trinity and Lassen National Forests would have to contain sufficient habitats for these species. Likewise, although this Forest has nesting sandhill cranes, most of the important nesting habitat for this species is located elsewhere. Viable populations of species such as wolverines, with large home ranges, may require management on a state-wide basis.

A goal of the Forest Plan is to ensure a commitment to managing habitats at a level commensurate with the species occurrence on the Forest. By managing habitats in accordance with the habitat capability models (medium habitat as a minimum), we believe that the Forest is providing for the maintenance of viable populations.

**2. COMMENT:** Management is only described for management indicator species. I object to the idea that all we are shooting for is viable populations. (708)

**RESPONSE:** Viability is viewed as a minimum standard. For most of our species, we are managing towards habitat conditions that will exceed viability requirements. See also the previous comment and response.

**3. COMMENT:** Species forced to exist in minimal habitats with minimal populations will become locally extinct because of catastrophic events. These species need better

protection which it appears that the MNF will only commit to when they are declared to be rare or endangered. Designated high quality habitat dispersed throughout the MNF will maintain these species. These areas should be depicted in each MA in the MA direction section. (1260)

RESPONSE: As stated in the previous responses, viability for some species cannot be achieved within the Forest boundary alone. In addition, for most of our MIS we are managing at levels that exceed viability requirements. Limited habitats, such as old growth, are distributed Forestwide to minimize loss from catastrophic events. The goals of the Forest are to assist in recovery of threatened and endangered species, and to ensure that sensitive species do not become threatened or endangered. We believe that Forest-wide Standards and Guidelines, management prescriptions, and management area direction meet this intent.

4. COMMENT: Is it the Modoc NF goal to maintain only "viable populations" of harvest species? (364)

RESPONSE: No. Forest objectives include ensuring the viability of all plant and animal species.

5. COMMENT: I would like to give my approval to the Forest Service Plan. Modoc National Forest has a unique position of being a protector of many wildlife species. Let's make their existence a little easier. (1049)

RESPONSE: Thank you for your support.

## 092 - Threatened and Endangered Species

1. COMMENT: Timber harvest in areas of potential eagle habitat should be modified or eliminated. (342)

RESPONSE: In bald eagle nest territories and winter roost areas, we will manage to improve or maintain habitat quality for this species. The Raptor Management Prescription (Plan Chapter 4) addresses specific direction, and applies to all bald eagle nest territories and winter roost areas. Forest-wide Standards and Guidelines outlines specific direction for managing golden eagle nest territories.

2. COMMENT: Goals and objectives. Regarding the Plan's wildlife and fish goals listed on page 4-9, the goals pertaining to threatened, endangered and sensitive species (3 and 4) provide that recovery goals shall be attained for T&E species and viable populations of sensitive species shall be maintained through maintenance of habitat quality and quantity. These goals should, first, make clear that State of California T&E species are included, and second, that critical habitat will be identified where it is not set forth in a recovery plan. Regarding wildlife and fish objectives described on page 4-19, the DFG recom-

mends that the Plan should include objectives for all T&E, candidate, sensitive, and *de facto* rare species of animals and plants that exist in the Modoc NF, or describe the manner in which they will be developed (as required in CFR section 219.19(7)). (364, 707, 661)

RESPONSE: Two State of California threatened species have been added to the MIS species list, Swainson's hawk and sandhill crane. The changes recommended for p. 4-9 regarding Calif. T&E species are included in the final Plan. Habitat objectives for all threatened, endangered and sensitive species are located in the Forest-wide Standards and Guidelines (Plan Chapter 4). Population objectives were not set for some of these species because the extent of their occurrence on the MNF and current population sizes are largely unknown. For additional information, see comments relating to MIS (resource 084).

3. COMMENT: Documents present suggestions for content, format of plan but fail to present plan: DEIS 3-158: "Opportunities...mgt. direction could be improved through plans for [bald eagle] territory and roost areas which are mutually acceptable to the MNF, CDFG, and the USFWS."

- Specific legwork, programs of cooperation between agencies, budgets, research completion dates should be specified.
- How can allocations for timber, livestock, bald eagle and other planning Elements be made without baseline bald eagle and other MIS data? (1248)

RESPONSE: The purpose of EIS Chapter 3—*Affected Environment* is to provide existing information on the status of management activities—not to specify detailed management. The Raptor Management Prescription states that bald eagle nest territory and winter roost management plans will be prepared for each nest territory or winter roost site. We will include specific direction in these documents. The Prescription states that all management activities will maintain or enhance habitat conditions in these areas. We have excellent baseline data for all our bald eagle nest sites, and one winter roost area. For other MIS, see responses to comments in found in that section (resource 084).

4. COMMENT: The Preferred Alternative designated an area south and east of Lava Beds National Monument for management under the Raptor Management Prescription. Ensure that all areas indicated as daytime roosting areas in Kiester's work and referenced in the "Caldwell—Cougar Bald Eagle Winter Roost Management Area Plan" prepared by Maurice S. Fassenfest and David A. Sinclair of the Doublehead Ranger District, dated November 1978, be included under the Raptor Prescription. Portions of sections 3, 4, 9, 14 and 15 in T44N, R4E may have been inadvertently excluded. The NW corner of sec-

tion 3 as prescription element 12-14. This area is very close to Lava Beds National Monument's Caldwell Butte nighttime communal roost and includes both heavy and light daytime roosting areas. (1316)

RESPONSE: Thank you for the above information. We will manage the Caldwell-Cougar bald eagle winter roost area in its entirety under the Raptor Management Prescription. Lava Beds National Park and the Modoc National Forest are preparing a joint document that will provide management direction for this roost. The document includes both the primary and secondary zones identified by Fasenfest and Sinclear.

5. COMMENT: Tionesta (63): Lava Beds south boundary eagle roost prescription. The entire roost area along the south boundary should have the Raptor Management/Wildlife Prescription. (708)

RESPONSE: Please refer to the previous comment for delineation of the Caldwell-Cougar bald eagle winter roost area.

6. COMMENT: While northeastern California provides habitat for about half of the bald eagles wintering in the State, the Modoc NF does not provide half of the habitat. The Modoc NF receives relatively little use by immigrating waterfowl. The Tulake Basin (not Forest land) is the largest concentration point for waterfowl. (364)

RESPONSE: We agree. EIS Chapter 3—*Affected Environment* explains this fact. The Forest is significant for bald eagles in that it provides a portion of roosting habitat for birds that forage in the Basin.

7. COMMENT: [Proposed Plan] 4-41. a. (1)(b). "The Modoc NF will attempt to manage for recovery of the species." The wording attempt to should be deleted. (364)

RESPONSE: We changed the standard the final Plan to state that the Forest will assist in the recovery of this species.

8. COMMENT: Individual species comments. Bald eagles, on page 2-69 of the DEIS (Table 2-5) "annual outputs" are expressed in terms of number of "active nests" or "potential nests". These are inadequate for monitoring population trends, because one breeding pair may have one or many alternate nests within their territory. The management unit should be the "active territory" or "potential territory". (The same is true regarding peregrine falcons.) In addition, for base year 1982, files indicate that Modoc NF supported one possible and five known active territories. In 1986 and 1987, this had increased to seven active territories. On page 3-157, the DEIS states that the number of pairs of bald eagles in northern California is 51 pairs; rather, in 1987, it was 66 occupied breeding territories. (364)

RESPONSE: The intent of the EIS and Plan is to manage nest sites as territories. We changed the final documents to reflect territories as defined in your comment. We also updated EIS Chapter 3—*Affected Environment* to reflect more recent nest information for the Forest.

9. COMMENT: Species-specific guidelines should include, but not be limited to the following: incorporation of the guidelines from both the "Pacific States Recovery Plan for the American Peregrine Falcon" and the "Pacific States Bald Eagle Recovery Plan" as they relate to the Modoc NF. (661)

RESPONSE: We used these documents to determine population goals for these species in the Plan, and we added them as references to the Standards and Guidelines for both of these species.

10. COMMENT: In addition, although approximately half of the entire California population of wintering bald eagles (about 500 birds) occur in this area, only 3.1 percent of Forest lands are managed for raptors. The Plan predicts a 60 percent increase in fishing, hunting, and non-consumptive use, but does not discuss a seemingly significant opportunity to increase public awareness of endangered species management by promoting controlled eagle viewing. (707)

RESPONSE: We developed the Raptor Management Prescription primarily for goshawks and bald eagles. Forest-wide Standards and Guidelines (Plan Chapter 4) provide additional direction for other raptors that are MIS. The Raptor Management Prescription is applied to all known bald eagle nest territories and winter roost areas. The Forest is significant for bald eagles in that it provides a portion of roosting habitat for birds that forage in the Basin. We feel that management direction for raptors is more than adequate to ensure the protection and management of habitats for these species.

11. COMMENT: Bald eagles: Most of the Caldwell-Cougar roost is in raptor management classification in the Preferred Alternative. However, to the west of fruit growers' land, clearcuts and partial cuts are planned. This is too close to the night roost, and includes some moderate-use day roost. Up near the Cougar roost, in heavy-use day roost, there is partial retention zone, and some modification in moderate-use day roost. There is modification VQO in the Raptor Management Prescription adjacent to the Cougar night roost in heavy-use day roost area, and more modification VQO in two areas of raptor management in moderate-use day roost. Since raptor management is supposed to have a VQO of retention or partial retention, someone has made a mistake. Protect Modoc Lake, the bald eagle summering area. (708)

**RESPONSE:** Thank you for the information. We will manage all known day and night roost areas in the Caldwell-Cougar roost under the Raptor Management Prescription. No timber harvest is planned in these habitats on national forest lands. As your comment notes, VQO objectives for areas managed under the Raptor Management Prescription are retention or partial retention. No VQO of modification is designated in the Caldwell-Cougar management area. The importance of Modoc Lake for summer bald eagles is unknown. Birds that use the Medicine Lake territory could use this area for foraging. It is probably of secondary importance to these birds. As a minimum, we will apply the Riparian Prescription to Modoc Lake to protect the fishery in that lake.

**12. COMMENT:** Support recovery efforts for the listed threatened and endangered species on the Forest. Increase the populations of these species so they may be eventually delisted. (807)

**RESPONSE:** Your request is a major goal of the Plan, and is so documented in Chapter 4.

**13. COMMENT:** [Proposed Plan] P. 4-41 A 1 b: Isn't the eagle population stable or increasing? P. 4-43 Osprey a: What is the definition of an active nesting site? Used once every 20 years? (1153)

**RESPONSE:** The bald eagle population appears to be increasing in California. It is still listed as an endangered species. An active nest (territory) is one that is currently occupied by a nesting pair.

**14. COMMENT:** A sensitive species should not be treated as if it were endangered. Habitat for game species, especially waterfowl and big game, should be given priority. (1311)

**RESPONSE:** The goal for sensitive species is to manage them so that they do not become listed as threatened or endangered. Normally, sensitive species are not managed as if they were threatened or endangered because the risk of their extinction is less than T&E species. Threatened and endangered species are given the highest priority for management, followed by sensitive species. These categories include species where viability is a concern. The remaining species—harvest, ecological indicators and special interest species—have lower priorities for management.

**15. COMMENT:** I urge you to classify this NF as a national wildlife-biological preserve and national critical habitat areas to save all life including the bald eagle, peregrine falcon, Modoc sucker, goshawk, willow flycatcher, CA bighorn sheep, marten, Lost River sucker, shortnose sucker, and mountain lion. (14)

**RESPONSE:** The Forest Service is a multiple-use agency and as such is mandated to manage all resources responsibly. See specific comments regarding these species in the MIS section (resource 084).

**16. COMMENT:** The bald eagles and other endangered species of Modoc NF need an environment clear of traces of man in order to try and save their already diminishing populations. (414)

**RESPONSE:** We believe that the Plan provides strong direction for the fish, wildlife and botanical resources. We also believe we can maintain these species above viable population levels. See also the previous response. (831)

**17. COMMENT:** Threatened species are all part of the evolution of the universe. You can't stop change, nor is it right to do so, or to try to do so. Nor is it right to deny scores of jobs so one species might survive.

**RESPONSE:** Federal law mandates that the Forest contribute to recovery efforts for federally endangered and threatened species under the Endangered Species Act (1973) as amended in 1988.

**18. COMMENT:** 4-41 23. wildlife and fish — 1. bald eagle a. winter roosts: my family and I have observed bald eagles wintering in Lake City/Mill Creek Canyon. (333)

**RESPONSE:** Thank you for the information. This information will be forwarded to the Warner Mtn. Ranger District. If the roost site lies on national forest lands, we will designate the area as a bald eagle winter roost site and manage the site under the Raptor Management Prescription.

## 096 - Sensitive Plants

**1. COMMENT:** We are disturbed with the levels of disturbance to sensitive plant habitat that would result from implementation of the PRF. DEIS 4-74 describes the probability of disturbance by alternative. These relative levels range from highest for RPD, low for the PRF and lowest for RBU and AMN. These projected levels of disturbance could in fact require the eventual intervention by the USFWS to list the species as T&E. This is contrary to the MIR established by the region. Calif. Native Plant Society requests that the MNF modify their actions to substantially reduce risks to sensitive plants to a low level. (1214, 1018)

**RESPONSE:** The Modoc National Forest has a strong commitment to manage sensitive species in a manner that ensures their population viability on national forest lands. All threatened, endangered, and sensitive species are assessed for any proposed project in a site-specific environ-

mental analysis. This commitment is emphasized in Forest Standards and Guidelines (Plan Chapter 4).

**2. COMMENT:** Cal. Native Plant Soc. requests that the final Plan and EIS include a full discussion of impacts to sensitive plants and how the MNF intends to reduce or eliminate these impacts. If the MNF does not have this info, CNPS requests that an EA methodology be developed which will generate this info prior to undertaking intensive mgt. of Forest resources, or the renewal of grazing leases. (1214)

**RESPONSE:** Impacts to sensitive plants, and how these can be mitigated, are best addressed through the format of Species Management Guides. The Modoc National Forest currently has no Species Management Guides. Long-term plans call for preparation of guides for all sensitive species. This commitment is reflected in the monitoring section of the final Plan (Chapter 5), which has been revised in response to this comment. Further, potential for impacts to sensitive plant species is analyzed and discussed in site-specific environmental analyses and biological evaluations prepared for conference with the Forest Service prior to implementing any project.

**3. COMMENT:** In the absence of Species Management Guides, CNPS feels the only responsible management for MNF is total avoidance of impacts to sensitive species. This should be stated in the Plan and DEIS. (1214)

**RESPONSE:** The monitoring guidelines in the final Plan have been changed as follows: "There will be no impacts to plant populations that do not have a Species Management Guide/Plan, unless recommended by the Forest Supervisor" (Chapter 5). A standard has been added which states: "Allow no disturbance of identified sensitive plant habitat without direction from Interim Management Guides, Species Management Guides, or a site-specific Environmental Analysis" (Chapter 4).

**4. COMMENT:** Plan 3-27 states that no changes in the current grazing strategy are necessary for sensitive plant protection. I cannot agree with that blanket statement. Instead, each population of sensitive plants should be individually assessed to see if current or proposed grazing impacts are detrimental. (676, 364)

**RESPONSE:** The Plan Chapter 3 *Summary of the Analysis of the Management Situation (Sensitive Plants)* has been amended in response to your comments.

**5. COMMENT:** Plan 4-8. Sensitive plants. The Plan should require an evaluation of intensive land uses, such as livestock grazing, logging, etc., where sensitive species occur. (364)

**RESPONSE:** These topics are addressed in Species Management Guides. The Plan provides for preparation of

Species Management Guides. The guides will specify types of research and exclosure studies that are appropriate for each taxon. In the absence of interim or final Species Management Guides, we will evaluate impacts to sensitive plant populations in site-specific environmental analyses.

**6. COMMENT:** The Plan has omitted any mention of opportunities to upgrade the status of sensitive plant species. (364)

**RESPONSE:** The Forest Service Manual (FSM 2672.32 10/86 Amendment 52) directs us to include objectives in forest plans to ensure viable populations of sensitive plants throughout their geographic ranges. These are displayed in the Plan, Chapter 4 – Forest Standards and Guidelines.

**7. COMMENT:** There are no specific indications of the intent to complete the Modoc NF inventory and survey such species to determine their locations, status, trend and management sensitivity to various USFS projects. The DEIS and Plan need to provide for the completion of such inventories and surveys. (364, 1214)

**RESPONSE:** The Modoc N.F. has prioritized eleven sensitive plant species on the basis of sensitivity to different land management practices, habitat requirements, species endemism, etc. Several species need additional information. We will focus inventory efforts on high priority species, and those species and populations that could be impacted by land management practices.

**8. COMMENT:** The following statements should be added to the MIRs in the DEIS:

- Sensitive plant species, although not subject to the provisions of the Endangered Species Act, will receive special management to prevent their placement on federal lists as discussed in FSM 2670.3.
- The Modoc NF will develop species management guides for all of their sensitive plants.
- The Modoc NF inventory of sensitive plants will be completed before the next round of Forest planning. (364)

**RESPONSE:** Management implementation requirements are defined at the Regional Office level, and little discretionary control exists regarding their application at the Forest level. However, as stated in the Forest Plan, sensitive species will be managed so that they will not be federally listed.

Regarding your first suggestion, Forest Service Manual direction is not necessarily reiterated in the Plan.

Regarding the second suggestion, we revised the monitoring section to reflect the requirement for preparing Species Management Guides.

9. COMMENT: Plan 4-34— This is insufficient as a description of what the Modoc NF intends to do regarding the task of keeping the sensitive plant species off the official federal lists. The Plan should include specific guidelines (see suggested MIRs) regarding Modoc NF inventory efforts for sensitive plants, monitoring plans and a schedule for completing the species management guides on all sensitive plants on the Modoc NF. Further, botanical surveys in proposed project areas should be specified to occur at the appropriate season when the plants in question can be identified.(364)

RESPONSE: We changed Forest Standards and Guidelines in response to this and other comments.

10. COMMENT: We suggest that the following minimum implementation requirements be adopted in the Plan: Sensitive plant species will be managed in a manner to prevent their placement on federal threatened and endangered lists as discussed in FSM 2670.3. (661, 672)

RESPONSE: This statement is made in Plan Chapter 4 (Management Direction), under Forest Standards and Guidelines.

11. COMMENT: One additional area of concern to the Calif. Native Plant Soc. is the mgt of sensitive plants during the period before species mgt. guides have been prepared. The interim mgt. of sensitive plants could be crucial to their long-term viability because during this stage it is possible to make decisions that could significantly adversely affect them. (1214)

RESPONSE: We revised monitoring guidelines in response to this and other comments: "No impacts will be allowed to occur to plant populations that do not have a species management plan unless directed by the Forest Supervisor as a result of site-specific environmental analysis, and where appropriate after conference with the U.S. Fish and Wildlife Service."

12. COMMENT: The monitoring Plan refers to interim and existing species mgt. guides, yet these are not mentioned elsewhere in the documents. Calif. Native Plant Soc. feels strongly about MNF having a commitment to the preparation of species mgt. guides. These guides take a species-wide, and Forest-wide look at sensitive plant mgt. They identify the habitat needs, mgt. constraints, opportunities for enhancement, and make determinations of what populations are required for the long-term preservation of the species.

CNPS feels strongly that species mgt. guides are necessary, critical tools for mgt, and request that MNF should make a firm commitment in the Plan to prepare these guides. (1214)

RESPONSE: We acknowledge that Species Management Guides are an important component of sensitive plant

management, and provisions for their preparation have been added to the monitoring plan, as well as the Management Direction (Chapter 4 ) section of the Plan.

13. COMMENT: Plan 3-27 & DEIS 3-100: If surveys focus on known populations of listed species, unknown populations and/or rare species not currently known from the MNF will never be recognized and protected. Calif. Native Plant Soc. opposes this approach and will not tolerate operating under such insupportable assumptions about the distributions of sensitive plants. The MNF is poorly known from a botanical standpoint. Relying on existing info will result in future impacts to sensitive species unless substantial changes in philosophy and methods are enacted. (1214)

RESPONSE: We are aware of the deficiencies of existing plant distribution and population information. The Forest's philosophy in the last several years has been to actively support the logistics of outside research projects. These projects have included work on the taxonomy and distribution of *Poa fibrata*, efforts to generate comprehensive species lists of the Warner Mountains, and research to compare alpine floras of the Warner Mountains and the Jarbridge Mountains. To date, two species have been added to the sensitive plant list as a result of these projects, and more are likely to follow. In the meantime, site-specific searches for sensitive plants are conducted when potential areas of impact are evaluated. We will continue to rely on and encourage these and similar projects, regardless of the status of our botany program.

14. COMMENT: App. B (Res. & Tech. Needs) identified the need for inventories of geology, soils, riparian areas and cultural resources. A Forest-wide botanical inventory of sensitive plant species needs to be included here as well, and completed over the next planning period. (1214)

RESPONSE: Your comments have been incorporated into the Research and Technical Needs section of the Plan (Appendix B).

15. COMMENT: Calif. Native Plant Soc. feels that: 1) project and Forest-wide inventories should be executed by qualified botanists, and 2) "floristic" and not "predictive" surveys should be conducted for all projects with moderate to high levels of ground disturbance, and for areas receiving heavy use such as grazing allotments. The PRF's proposal to continue grazing and convert thousands of acres of mixed conifer and eastside pine into tree plantations are areas where floristic inventories provide the only method to ensure that sensitive species are not overlooked and subsequently lost. (1214)

RESPONSE: Regional direction (FSH R-5 2609.25 1.11b) states that plant surveyers shall be selected based on their familiarity with the plants and plant communities of the

area, and that training shall be provided in sensitive species identification and identification of their habitats. A professional botanist shall supervise the preparation of the species management guides. Site-specific surveys are conducted in suitable, previously unsurveyed habitat, prior to ground-disturbing activities.

16. COMMENT: The following taxa should be added to the table on [DEIS] 3-98 and 3-99 as potential sensitive species pending further evaluation. Recent field surveys have strongly indicated that these taxa should be considered sensitive: *Astragalus inversus*, *Carex halliana*, *Cryptantha subretusa*, *Cupressus bakeri* ssp. *bakeri*, *Dimersia howellii*, *Erigeron acris* var. *debilis*, *Iliamna bakeri*, *Penstemon cinereus*, *Phacelia inundata*, *Pogogyne* sp. nov. (Jokerst in prep.), *Polygonum polygaloides* ssp. *esotericum*, *Rorippa columbiae*. In addition, the following lists plants that should be on the Modoc NF watch-list of potential sensitive plant taxa that may occur on the Modoc NF: *Camissonia minor*, *Carex sheldonii*, *Chenopodium gigantospermum*, *Corydalis caseana* var. *caseana*, *Epilobium oreganum*, *Gratiola heterosepala*, *Hackelia cusickii*, *Navarretia subuligera*, *Orcuttia tenuis*, *Penstemon shastensis*, *Poa rhizomata*, *Polygonum bidwelliae*, *Polystichum kruckbergii*, *Spartina gracilis*, *Thelypodium brachycarpum*, *Thermopsis macrophylla* var. *argutata*. (364, 500, 661, 672)

RESPONSE: *Polygonum polygaloides esotericum* has been confirmed and added to the Forest's sensitive plant List. The other species are potential sensitive plants for which information is lacking. These have been placed on a Forest Watch List.

17. COMMENT: 4. Monitoring programs for all sensitive, state-listed rare, threatened and endangered, and federally-listed threatened and endangered species shall be implemented to determine baseline population sizes, population trends and habitat requirements before the next round of Forest planning. Without such specific and clear direction regarding this rare and important resource applied to all alternatives, it is not possible to visualize how the Modoc NF will "manage sensitive plants to ensure that they do not become threatened and endangered by Modoc NF activities." (364, 1214, 1316)

RESPONSE: See Forest Plan, Chapter 5 - *Monitoring and Evaluation Requirements*.

18. COMMENT: On page 3-156, the DEIS lists MIS for the Modoc NF. No sensitive plant species are so identified. This is a major omission. All rare plants, including sensitive, threatened, endangered, etc., should be designated MIS to help avoid conflicts with management activities. (364, 1218)

RESPONSE: Sensitive species are essentially managed as management indicator species; i.e., they are managed to

maintain viable populations throughout their range on the Modoc NF.

19. COMMENT: On page 3-30 to 3-35, the DEIS discusses diversity, but includes no discussion of rare plant species. This should have been included as part of the discussion on richness, one component of diversity. The number of plant taxa and the numbers of rare plant taxa contribute to the diversity on the Modoc NF just as to the number of vegetation types present. (364)

RESPONSE: We acknowledge that sensitive plants are components of biological diversity. We also recognize the rarity of their numbers or habitat. They are designated as sensitive in order to receive an emphasis appropriate to their status.

20. COMMENT: *Management Direction*: Sensitive plant species aren't mentioned in future condition or mission; they are finally mentioned in goals. There are no sensitive plant objectives. (708)

RESPONSE: Objectives for sensitive plants are found in the Plan, Chapter 4—*Management Direction*—under Forest Standards and Guidelines.

21. COMMENT: Special interest area designations should be considered if this would protect a species. (708)

RESPONSE: Special Interest Areas (SIAs) are those areas recognized by the Forest Service as having special significance for recreational, scientific, cultural, or educational use. We set aside these areas and protect them for their special characteristics. Some areas of the Forest are suitable for SIA designation because of botanical characteristics, and provision for these have been included in the Final Plan.

22. COMMENT: MNF sensitive plant program appears to be one which receives little funding, is a low priority, w/o a staff botanist capable of designing and implementing an effective day-to-day program. Without this kind of attention the sensitive plant program does not have the visibility to be controversial. Calif. Native Plant Soc. has little confidence that sensitive species are receiving the care and protection required by Forest Service policy and law, especially when we note that a large number of species currently receive no attention on the Forest. We request the MNF make the changes necessary to improve the effectiveness of the program. (1214)

RESPONSE: The Forest Sensitive Plant Coordinator is a collateral duty; district biologists have responsibility for field surveys for sensitive plants. We protect known populations of sensitive plants.

23. COMMENT: The projected \$500 annual cost seems to be a gross underestimation of the true cost of conduct-



ing the required pre-disturbance floristic surveys and long-term monitoring. (1316)

RESPONSE: We have amended projected costs in response to your comment.

24. COMMENT: CNPS requests that the below S&Gs be adopted by MNF and incorporated into the Plan. All sensitive plant populations will be actively managed by conducting the following activities:

1) Habitat will be provided all sensitive plant species found on the MNF sufficient for their continued existence, and if feasible, their declassification as sensitive or Threatened and Endangered (to "recover" the species).

2) Mgt. of Calif. State listed rare, T&E species shall be coordinated, and efforts to promote the delisting of State-listed species shall be made where changes in Forest mgt. would contribute.

3) Conducting floristic inventories of project sites and areas of ground disturbance.

- reconnaissance will be performed by personnel with botanical and field expertise in sensitive plant mgt.
- potential impacts to populations shall be documented and mitigative actions taken to eliminate significant impacts.

4) Forest-wide inventory for sensitive plants shall be completed before the next round of Forest planning.

5) Species Mgt. Guides, that function as recovery plans, will be prepared. Guides shall: provide background and status of the species; identify possible undiscovered sites where a species may occur; identify enhancement opportunities; locate core or critical areas determined necessary for long-term protection; and define activity constraints. (1214)

RESPONSE: We revised Forest Standards and Guidelines in the Final Plan. Some of the above concepts were included. Items 1, 2, 3, and 5 are included in Forest Service Handbook R-5 2609.25 - *Threatened and Endangered Plants Program Handbook*, and will be used on the Modoc NF.

25. COMMENT: In the Plan under *Future Condition of the Forest*, Calif. Native Plant Soc. requests the following information be provided for sensitive species: 1) which species will have habitat protected, and what proportion of the known populations will be protected; and (2) which, if any, species could possibly be delisted as a result of Forest mgt. (1214)

RESPONSE: We have not changed Forest Mission and Goals. The desired future condition of the Forest is embodied in Forest Standards and Guidelines, Management Prescriptions, and Management Area Direction (Plan

Chapter 4), which translate the Forest Mission and Goals into more specific direction and practices.

Standards and Guidelines specify that management activities will not lead to the listing of any sensitive species.

26. COMMENT: I support the PRF because it will manage and protect sensitive plant species as though they were officially classified as threatened or endangered. (7)

RESPONSE: Thank you. Your comment has been noted.

27. COMMENT: Seeding is especially damaging to native species. This should be discouraged. (708)

RESPONSE: We prescribe seeding for disturbed areas where impacts to native species is not a consideration.

28. COMMENT: Calif. Native Plant Soc. is very concerned about ongoing impacts to sensitive plant populations and their habitats, and the mgt. philosophy on the MNF which has allowed these impacts to occur. The Plan 3-27 states, "Because sensitive plants probably existed and survived 100 years of grazing, no change in current grazing strategy is necessary." This type of simplistic approach to sensitive plant mgt. is seriously flawed and could lead to the further decline of certain species. Studies done by the Sh-T NF on *Calochortus longebarbatus* var. *longebarbatus* found dramatic differences between grazed and roadside populations (Jokerst, 1983). Is the MNF aware of this study? How can the Forest assume all is well with species that continue to be impacted when no supporting data is gathered? (364, 676, 708, 1214)

RESPONSE: We agree with your comment that the quoted statement in Draft Plan 3-27 is erroneous; we have removed it. *Calochortus longebarbatus* var. *longebarbatus* is prioritized for a Species Management Guide.

29. COMMENT: Sensitive species' habitat should also receive protection from destruction or adverse modification. In order to maintain plant diversity at levels currently found in the Modoc NF, it will be necessary to ensure that viable populations of all species are maintained. (364)

RESPONSE: See Plan Chapter 4 *Standards and Guidelines—Sensitive Plants* which addresses sensitive plant management.

30. COMMENT: DEIS 3-100 states that areas of known populations are surveyed before land disturbance or exchange. It is not stated, however, that suitable habitat for sensitive plants where there are not known populations is to be surveyed, as it should be before any disturbance takes place. I would like to see added to the sensitive plant guidelines on Plan 4-34 the following statement: "Inventory suitable habitat for additional populations of sensitive plant species." (676)



**RESPONSE:** We modified Forest Standards and Guidelines as a result of this and similar comments.

**31. COMMENT:** Under Management Area Direction (Plan, pages 4-158 to 4-268) there should be a discussion about the sensitive plant populations of each area. Details about each population may not be known, but these gaps in knowledge should be acknowledged and used as references for future surveys. (364, 676, 1214)

**RESPONSE:** We modified Management Area Direction (Plan Chapter 4) in response to this and similar comments.

**32. COMMENT:** Plan 3-27: When listing sensitive plant species, scientific names as well as common names should be used, since common names are not universally uniform. (676, 1387)

**RESPONSE:** Both scientific names and common names are listed in EIS Chapter 3 *Affected Environment*. We used scientific names throughout the remainder of the document because common names are inconsistent, nonexistent, ambiguous, or misleading.

**33. COMMENT:** Reasons for species being classified "sensitive"—grazing pressure perhaps? (1248)

**RESPONSE:** The Regional Forester lists plant species as sensitive when population viability is a concern. This can happen when (1) a significant downward trend in population numbers or density occurs or is predicted; (2) a significant downward trend in habitat capability, would reduce a species' existing distribution, occurs or is predicted; or (3) numbers are so low or distribution so limited that special management consideration is required to maintain presence and viability, regardless of current trend.

**34. COMMENT:** DEIS, pp. 3-98 And 3-99. Only three of the nine plant taxa described on these pages will remain candidates in the forthcoming update to the notice of review for plants. They are *Eryngium mathiasiae*, *Mimulus pygmaeus*, and *Poa fibrata*. (1316)

**RESPONSE:** Thank you for this information.

**35. COMMENT:** Two other candidate plants, the Deschutes Milk-Vetch (*Astragalus tegetarioides*) and Greene's Mariposa Lily (*Calochortus greenei*) may occur in the Modoc Forest. The former species is known from Ash Valley, the latter species has been reported from "Forestdale" (northeast of Taylor Mountain). Both of these plants are Category 2 candidates. (1316)

**RESPONSE:** Thank you for the information on *Astragalus tegetarioides*. The collection of *Calochortus greenei* to which you refer stored at the Jepson Herbarium, University of California, Berkeley. It was recently examined (3/19/87), confirmed to be *Calochortus longebarbatus* var.

*longebarbatus*, and so annotated. The plant was subsequently removed from the Modoc N.F. sensitive plant list.

**36. COMMENT:** Endangered flora: If juniper were felled and just let lay that these species would come back at a rapid rate. (387)

**RESPONSE:** Thank you for your comment. We agree that this technique may be applicable to juniper types on the Modoc. It will be evaluated in preparation of a juniper management plan to be completed after release of the Forest Plan.

## 098 - Snag Management

**1. COMMENT:** Snag recruitment should be considered only on a site-specific basis where professional mgrs can show real need exists.

**RESPONSE:** Your comment is essentially what is proposed in the final Plan. We will manage snags as stands are brought under treatment. The goal is to meet Regional guidelines for snag densities (1.5 snags per acre as a minimum), over the rotation period of the stand. See Forestwide Standards and Guidelines (Plan Chapter 4) for specific information. (2)

**2. COMMENT:** Snag management is portrayed as an MMR on the MNF when in reality the MMR is to provide for viable populations. Without a documented need to protect the viability of a particular species, the costs are simply too great. Snag mgt should be dropped in its entirety until a proven need is shown. (21, 1006, 1007, 720, 1252)

**RESPONSE:** The snag standards in the Forest Plan are based on Regional guidelines for snag management. These guidelines were developed after reviewing the literature and consulting with biologists familiar with the habitat requirement of cavity-dependent species. Their findings suggest that average minimum requirement for most cavity-dependent species is approximately 1.5 snags per acre. Below this level, viability for these species cannot be assured. Snag management at this level assumes that these snag densities are met on 100% of the forested area (or available habitat).

On much of the Modoc, particularly in eastside pine stands, our densities are significantly below 1.5 per acre, mostly the result of historic heavy logging and management to eliminate snags. In the Plan, we provide direction to improve snag densities on the Forest to meet habitat requirements of cavity-dependent species over the long term.

**3. COMMENT:** 4-45 snags (1) (a) Should this be something to be adopted or rejected in the FORPLAN alterna-

tives? 1.5 snags/acre seems to be rather finite measure – please explain research if any? (126)

- (1). (C) Where is the economic analysis and effect on ASQ? Why is this presented as a fact rather than an alternative?

RESPONSE: The effects of snag management were modeled in FORPLAN in terms of expected reductions in ASQ due to snag management. We compare this information by alternative in EIS Chapter 4—*Environmental Consequences*. The response to the previous comment explains why 1.5 snags per acre was established as a snag management standard.

4. COMMENT: 1. Snag densities data base—how was the data base for snag densities determined? The LRMP states that transects and other field evaluation were done. We need to know:

- a) What percentage of the land was transected?
- b) Was the percent statistically valid?
- c) Was the transects representative of the timber types present?
- d) Was the acreage allocation by timber type correct?
- e) Who did the field work?

If the snag-dependent species currently on the Forest have viable populations with only 0.2-0.6 snags/ac, why does the Forest need to manage for more than the current snag density?

What are the economic effects of “no salvage logging” on the Modoc National Forest?

What are the economic impacts from snag management plans on the Modoc?

- a) Timber volume lost PNV, interest, future losses (including salvage)
- b) Timberland acreage lost to snag retention
- c) Cost to topping trees & snag recruitment
- d) Management cost by forest service
- e) Timber purchasers cost do to new regulations
- f) How does snag management relate to KV funds?

Summary: [snag recruitment should generally be discontinued and done only on site-specific basis where a demonstrated need exists.] (126)

RESPONSE: We conducted transects to determine snag densities mostly in eastside pine on Devil's Garden Ranger District; silvicultural data and other information supplemented snag density data. No statistical tests were done. We believe this information is adequate to display needs in the Land Management Planning document. Snag densities displayed in the EIS are also supported by ongoing

research by the Pacific Southwest Experiment Station (PSW).

Continuing research by the PSW addresses the question of viability. This study is evaluating cavity-nesting bird densities as they relate to snag densities in eastside pine. Insufficient data prevents us from determining whether we have viable populations of cavity-nesting species where snag densities are low.

The effects of salvage logging are included in economic analyses for managing snags. Generally, those trees that would be salvaged are future snags. On a site-specific basis, we consider salvage logging only where sufficient snags and replacement snags exist to meet the standards.

EIS Chapter 4—*Environmental Consequences* discusses reduction in ASQ due to snag management. Because we will conduct snag treatment on acres treated for timber, we could use K-V funds to create snags. This would be done on a site-specific basis. See Plan Chapter 4, Forestwide Standards and Guidelines, for further information.

5. COMMENT: As stated in App. G, p. 6, the volume would be reduced by 6.6 MMBF in the 1st decade for a loss of \$38.8 million in PNV. (153)

RESPONSE: This was the expected reduction in ASQ in the Draft Plan. Under this assumption, we managed to achieve snag density standards within 3 decades on all forested acres. The final Plan states that we will manage stands as they are harvested, and leave enough snags and replacement snags for the rotation of the unit. As a result, ASQ is reduced. See EIS Chapter 4—*Environmental Consequences* for specific information.

6. COMMENT: Snag fire potential and suppression costs, safety hazard potential, diseased insect and animal damage associated with host snag trees, snag falling rates and the data base for snag densities were never fully analyzed in the Plan. (231)

RESPONSE: The contribution of snags to increased fire potential and suppression costs is insignificant. The contribution of snags to disease and animal damage is unfounded. On the contrary, snags provide nesting habitat for bird species that feed on insects that could cause disease outbreaks in forested habitats. Thus, the management of snags may help buffer forests from disease. Snag falling assumptions are based on research in Oregon and are explained in EIS Appendix G—*Snag Management and Modeling*. Appendix G also explains the basis for existing snag densities. See also previous responses.

7. COMMENT: Snag modeling. The reductions in timber harvest and the potential receipts from pine timber needed to create snags is the direct result of the uncritical adoption of the Regional snag policy numbers for the

**Modoc NF.** This data could help define the naturally occurring snag levels on the Modoc NF. A few old-growth, undisturbed pine stands still exist on the Modoc NF where naturally occurring numbers of snags can be found. I inventoried and reported on one of these stands when I was on the Modoc. All this data suggests that the current standard has never been met for site IV eastside pine stands over their rotation. My research indicates that about 19% of the standing inventory would be necessary to implement these standards unless a very expensive topping program is maintained. Recent experience on the Bird and Quaking Fire salvage would seem to indicate this. The logistics of providing for an even distribution of snags over time and topography in future young growth stands have not yet been solved. Since natural stands produce snags in clumps at widely varying times and places a great deal of effort will be required to maintain the relatively even distribution required by the current standards and guidelines. (256)

**RESPONSE:** We agree with part of your comment. Snags are not evenly distributed over the landscape and tend to be clumped over time and topography. We know that historic eastside pine stands had shorter fire intervals. The suppression of fire, increased livestock grazing, and high-intensity logging altered these stands significantly. The results were the conversion of understory vegetation from grass/forbs to shrubs, the reduction in mean stand diameter, and the encroachment of juniper and white fir into these stands. Therefore, essentially no undisturbed stands of eastside pine exist on the Modoc. The change in Forest structure undoubtedly had an impact on the number and sizes of snags in these habitats.

We suspect that eastside pine stands never had snag densities that are found in westside Sierra Nevada or northern California mixed conifer or fir stands. We know that an aggressive snag removal program existed on the Forest up to 25 years ago. Although we can't demonstrate historic snag levels, we believe that the EIS and Plan offer reasonable goals for snags on the Forest.

The PSW is conducting research on the relationship between snag densities and cavity-dependent bird species populations. This information will be used as a basis for future snag management direction.

**8. COMMENT:** Snag and downed materials and mgt proposed in the Plan are excellent. Where high habitat capability for snag and downed exists, snag and downed log levels should be maintained at those levels. (500)

**RESPONSE:** Thank you for your support.

**9. COMMENT:** Snag recruitment-RMP [proposed Plan] 4-45 to 47: We do, however, oppose your proposal to treat sound trees to produce snags. Snag recruitment must not include sound, marketable timber trees. (530)

**RESPONSE:** We will use sound trees to produce snags on a site-specific basis. We will create snags from live trees only in timber harvest areas and habitats designated specifically for wildlife purposes, where snag densities are below those stated in the Forestwide Standards and Guidelines (Plan Chapter 4).

**10. COMMENT:** No compensation for snag densities below MMRs which are also undoubtedly extremely low. What compensation necessary? How achieved? Likelihood of achievement under PRF? (1248)

**RESPONSE:** Under the Preferred Alternative, we will manage snag levels that are below MMRs to levels prescribed in the Forestwide Standards and Guidelines. We believe that we will be able to meet snag objectives by the 6th decade, with the exception of burn areas and current plantations. We will manage on a site-specific basis: we will manage snags on acres harvested, with enough snags and green trees retained to meet objectives over the rotation period of the stand.

**11. COMMENT:** Your snag density guides appear to be a bare minimum. A total of 1.5 snags per ac. represents suboptimal numbers, especially for the larger (over 24" dbh) snags. You pay little attention to non-avian users of snags: what species is the relationship between animal numbers and snag density; what are the seasonal uses of snags? (664)

**RESPONSE:** We based snag management direction on Regional Guidelines that were developed by reviewing the literature and by biologists familiar with habitat requirements of cavity-dependent species. The standards are a minimum objective for snags. The emphasis in the Plan tends to be related more to avian species because these are easier to monitor. We believe that if we meet snag standards for these species, then the needs of non-avian species will also be met. The marten is an example of a non-avian species that was chosen partially for its dependence on snags and down logs.

**12. COMMENT:** The Forest is currently deficient in snags and the levels set for the Forest are only MMRs, not the optimal numbers for such species as pileated woodpeckers. We should continue to blow the tops off green trees and existing snags. (708)

**RESPONSE:** Thank you for your comment. We will top snags on a site-specific basis as necessary to meet snag Forest-wide Standards and Guidelines.

**13. COMMENT:** The snag issue. There has been urging by some to renew salvage logging while the snag situation is being studied. I feel this would be unwise. Snag densities are so low the addition of a few snags by natural mortality will not bring the snag numbers up to any

foreseeable minimum that the snag study may establish. (807)

RESPONSE: We will not consider salvage sales where snag deficits exist. The only areas where salvage may be considered are wildfire areas, or where sufficient snag/tree densities occur that allow for existing and replacement snags.

14. COMMENT: In order to determine the number of snags required, there needs to be a "breeding pair" and "cavity-nester" inventory done. (1009)

RESPONSE: We agree. The PSW is in the second of a five year study to determine relationships between snag densities and cavity-dependent bird populations in eastside pine. We will use the results of this research to modify snag standards and guidelines that currently exist in the Plan.

15. COMMENT: Modoc should not have started this practice until the new Forest Management Plan was passed. (893)

RESPONSE: NFMA requires that all resources receive balanced consideration in planning processes. The availability of snags for cavity-dependent species is an important concern on the Modoc National Forest. We believe that that Preferred Alternative provides a reasonable approach to maintaining and improving snag densities for these species. See previous comments for specific information.

16. COMMENT: I support snag recruitment by topping live ponderosa pine trees until the MMR for snags of that species is met Forestwide. Further research is superfluous. (900)

RESPONSE: Thank you for your support. We feel that further research is necessary to validate cavity-dependent species requirements on the Modoc.

17. COMMENT: The snag management program needs critical review. There is not an alternative in the DEIS that provides another option. (1062)

RESPONSE: Snag densities prescribed in the Plan are management requirements for all alternatives. They were developed at the Regional level and are applicable to all Forests in Region 5. The literature and professional expertise suggest that snag levels prescribed in the Plan are necessary to maintain viable populations of cavity-dependent species.

18. COMMENT: The Modoc should rigorously explore all alternatives to provide habitat for cavity-nesters that are less impactful on the ASQ and PNV. The Modoc should clearly discuss the assumptions the snag habitat requirements are based on and identify uncertainty related to those assumptions. (1070)

RESPONSE: Snag levels prescribed in the Plan were based on Regional guidelines for snag management that were, in turn, based on known habitat requirements of various snag-dependent species. Maintaining snags will undoubtedly have an impact on ASQ and PNV, but this does not preclude our responsibility to manage for all resources as defined in NFMA and 36 CFR (Code of Federal Regulations) 219. Appendix G—*Snag Management and Modelling* display assumptions for snag habitat requirements; previous responses to comments in section also explain them. We believe that management direction stated in the Plan will provide for cavity-dependent species while minimizing the impact to ASQ.

19. COMMENT: The Modoc failed to involve the public in developing its snag requirements. More importantly, the requirements for snags are not the result of interdisciplinary analysis as the NFMA regulations require. (1070)

RESPONSE: As stated in previous comments, snag standards and guidelines were based on Regional direction. This direction applies to all Forests in Region 5. NFMA states that all resources (including cavity-dependent species) will be considered in land management planning. We believe that the snag standards in the Plan are reasonable. They provide minimum management guidelines for cavity-dependent species to ensure that populations of these species are retained on the Forest. The Forest Plan is an interdisciplinary product. It was developed by resource management specialists from a myriad of resource backgrounds, including foresters and silviculturists.

20. COMMENT: The Scarface and Gerig fires alone produced 47,000 acres of snags in one year. The restraint applied to determine how or which snags will be counted results in a snag program which duplicates habitat which is provided as the result of other constraints and which serves no justified purpose. (1282)

RESPONSE: Although burn areas can exceed snag standards the first few years following a wildfire, they usually become deficit within 10 years of the burn. Burn areas are also incapable of producing snags for recruitment purposes. For these reasons, burn areas were not included as areas that will be managed for snags.

Snags in burn areas are important for some species such as purple martin and Lewis' woodpecker. However, when snags in burn areas fall down, those burn areas remain snag-deficient until replacement trees mature to sufficient size and can be managed for snags. This can take more than 100 years. Thus, these acres do not duplicate other areas for snag production.

21. COMMENT: DEIS 3-175: Since snag inventories are essential baseline for FMP-DEIS, what are plans to ob-

tain this data necessary for design of FMP-DEIS rather than procrastinate to timber sale-project level?

**DEIS 3-193:** What insects and reptiles need to be considered MIS to represent snag species? Reptile, e.g., to represent down-wood?

**DEIS 3-195:** Since baseline data on snags are unavailable and monitoring is, therefore, impossible, how can FMP-DEIS be legal documents under the provisions of NFMA and NEPA? (1248)

**RESPONSE:** As mentioned previously, the PSW is in its second year of a research study to quantify snag-density requirements for maintaining viable populations of cavity-dependent species. We will use this information to modify snag-density requirements in the Plan. We will apply snag standards will be applied at the project level, when timber management activities are planned. This appears to be the most cost-effective way to ensure that snag densities are met.

We believe that by managing snag and down log densities as prescribed in the Plan for existing MIS, we will meet requirements for insect and reptile species dependent on similar habitats. Martens require down logs for denning and foraging sites, and several cavity-nesters use down logs for foraging.

Snag baseline levels are based on the best information available to the MNF; and were derived from field surveys and the known literature for cavity-dependent species. NFMA requires that all resources be considered in planning endeavors. NEPA essentially requires us to incorporate scoping, analysis and disclosure in the environmental analysis process. We feel that our approach to the snag management issue meets both of these Acts.

**22. COMMENT: DEIS 3-194:** Inventory at FMP-DEIS stage on current snag-density and snag needs in juniper vegetation type. Snags in juniper type under heavy pressure from fuelwood gathering. What MIS represents juniper vegetative type? Impact of firewood cutting on juniper/wildlife. (1248)

**RESPONSE:** Snag densities for juniper are discussed in the Forest-wide Standards and Guidelines (Plan Chapter 4) for snags. Snag densities in juniper are probably not a limiting factor for cavity-dependent bird populations in these types. Most juniper cut for firewood on the Forest are green trees. In addition, because of the juniper's rapid expansion in the last century, most of the trees are young and of small diameter.

Juniper habitats were identified as a major concern on the Forest because of the abundance of this vegetation type. In fact, the expansion of juniper on the Forest has probably had an adverse effect on several Forest MIS (including sage grouse, pronghorn, deer, and Swainson's hawks) by

reducing the availability of historic habitats for these species. Although, some of these species may be dependent on juniper for some portion of their life cycle, their populations have apparently not been limited. The Forest is responsible for producing a juniper management plan that will provide guidance for managing these stands.

**23. COMMENT: DEIS 3-195:**

- Why do burned areas inevitably become snag-deficient? measures to avoid the inevitable.
- Other areas also seem inevitably to become snag-deficient. what are the reasons/causes outside of burned areas for snag deficiencies?
- If sanitation salvage were not undertaken in burned and other areas, would snags be of sufficient numbers to withstand inevitability factor? @Bull comment = Impact of sanitation salvage on insect and wildlife populations/habitat. (1248)

**RESPONSE:** Burned areas become snag-deficient because of their inability to produce replacement snags. After existing snags and other burned trees fall down, there are no replacements. We have attempted to increase the snag lifespan for existing snags by topping them; but ultimately they will become snag-deficient. Snags are deficient in other forested habitats because of past logging and snag eradication programs. Currently, we do not permit salvage harvest unless sufficient snag or replacement tree densities exist to meet standards in the Plan.

**24. COMMENT: DEIS 3-195:** "No matter...what methods are used to increase the time a snag will stand" snag deficiency occurs. What methods are used? How extensively throughout the Forest? Have snags been spiked to keep them standing? To what degree does inevitability factor mitigate against any kind of snag mgt.?

Are alternatives, including PRF, also dominated by the inevitability factor as measured by the resource reduction, removal, extirpation trend outlined in FMP-DEIS? (1248)

**RESPONSE:** The most effective method known to increase snag longevity is topping, which apparently extends the life of a snag by up to 3 times (30 years). Spiking snags will not enhance their natural longevity, but may discourage illegal firewood cutting.

**25. COMMENT: DEIS 3-196 (snag levels/recruitment):** are RPA timber targets the inevitability factor? Do timber sales affect snag situation in other sections of Forest in same way as eastside pine forest? (1248)

**RESPONSE:** You refer to EIS Chapter 3—*Affected Environment*, or the current situation on the Forest. Standards for snags are displayed in the Plan Chapter 4, Forest-wide Standards and Guidelines for snags. We developed the standards to ensure that snag and replacement snag den-

sities are managed in harvested areas during the rotation period for these stands. Using this strategy, we believe that we will reach desired snag densities on the Forest within six decades.

**26. COMMENT: DEIS 3-196 (snag study): does this study apply to eastside pine forest type only? (1248)**

**RESPONSE:** Yes; however, it may also apply to other forest types where snag deficiencies are documented.

**27. COMMENT: DEIS 3-175 states that snag-density is less than 1 snag per ac. Forestwide and .5 per ac. in eastside pine.**

- What inventories provided this info?
- Since snag-density is below standard Forestwide and in eastside pine, particularly, and major five-year study is proposed on present conditions and remedial measures, what opportunities can be promoted for moratorium during study period on Forest activities affecting snag producing areas? Interim Forest timber/road /sanitation salvage/firewood/snag retention/recruitment/ enforcement etc. Policies pending outcome of studies.
- Can FMP-DEIS be completed and validated without this snag (and other) vital element(s)?
- In what ways is the snag study a model of other necessary studies such as major investigations of each MIS and species represented (in addition to snag-dependent species)?
- Nature of snag study, specific study features. Budget breakdown.
- What other forests involved? Nature of cooperative tasks among participating Agencies. How extensive is participation by PSW in snag study, and in past and prospective studies on the Forest? Can this experimental research approach be brought to each forest so that in a sense each Forest becomes a research station in addition to its other functions?
- Is CDFG involved in snag study, also adjacent region, as well as ODFW? (1248)

**RESPONSE:** Baseline snag data was collected mostly on the Devil's Garden Ranger District, and supplemented by silvicultural data and observations by Forest personnel. Eastside pine is the only strata known to be deficient in snags . A moratorium on logging is considered unnecessary. Standards and Guidelines (Plan Chapter) provide direction for retaining snags and recruitment trees for snags. We believe that information collected on snags is sufficient to provide direction for future snag management.

PSW is currently studying eastside pine to determine relationships of snag densities to cavity-nesting

populations. The study proposal for this project contains specific information regarding methods and costs. This document is located in the Supervisor's Office. Progress reports of findings to date are also available. This study has a steering committee that involves Forest Service, Calif. Dept. of Fish and Game, and industry representatives. Oregon Dept. of Fish and Wildlife is not involved in the study.

**28. COMMENT: DEIS 3-194: No snag-density info on juniper vegetative type. DEIS 3-48: Study proposal to obtain data on accessibility to juniper woodlands, including means to control access and cutting operations so that other limits are achieved.**

- What data exist on thermal and hiding cover for deer in western juniper subject to firewood cutting?
- Are standards established and enforced to promote proper cutting patterns?
- Standards for VQO considerations.
- Date of completion, budget for juniper studies listed in FMP, App. B.

**DEIS 3-51: what species besides deer are adversely affected [by woodcutting juniper]? MIS for juniper stands. (1248)**

**RESPONSE:** See a previous response to comment #1248 that discusses cavity-dependent species in juniper habitats. For further information on juniper/deer relationships, see responses to comments on deer management (resource 100). Forest-wide Standards and Guidelines (Plan Chapter 4) discusses Deer cover/forage ratios direction.

Visual quality objectives are stated in the various management prescriptions. A VQO map accompanies the EIS and Plan documents.

We will prepare a juniper management plan for the Forest to provide further direction managing these habitats. This plan will involve State agencies, other federal agencies, and interested members of the public. It should be completed within two years of the Final EIS and Plan.

**29. COMMENT: DEIS 3-195: justification for allowing snag cutting in "designated units for lodgepole pine". Difficulties of enforcement, measures to improve enforcement. (1248)**

**RESPONSE:** Snag densities are not deficient in most lodgepole pine habitats. We will consider cutting snags only in designated areas where sufficient snags exist to allow densities above those prescribed in the Plan.

**30. COMMENT: Snags (down wood, slash piles, culls presumably) are already deficient. Present snag-dependent species population have no doubt severely declined from earlier periods. Indication of numbers of snag-de-**

pendent species (and all other species – MIS especially) over past decades, including pre-Columbian period. (1248)

RESPONSE: At this time, only eastside pine stands are snag-deficient. Cavity-dependent species in these habitats have probably declined both in number of species and in populations from historic times. The extent of this decline is largely unknown.

31. COMMENT: We support the snag S&G MMRs but don't think that they can be met with clearcutting. As clearcuts cover more area there will be fewer acres that meet snag standards. Without snags in these decades the dead and down material standards which we support cannot be met either. (1260)

RESPONSE: Under the guidance of the Final EIS and Plan we will only manage snags on treated acres, with enough snags or replacement trees for the rotation of the treated stands (estimated 120 years). In this way, we believe we can maintain snag densities prescribed in the Plan as a harvested stand proceeds through various stages of succession. Following management direction for snags should also ensure that down log standards are also met.

32. COMMENT: The snag management program and the extra goshawks are two examples of Forest land being removed from production thus, reducing timber receipts to our districts. Out of our \$5,000,000 budget, \$757,000 is currently from the timber receipts. Decreased income

from Forest receipts can lead to the reduction of phasing out of education programs. (693)

RESPONSE: The management of goshawk nest stands should overlap substantially with vegetation seral stage requirements; thus, no additional loss in revenues should occur for goshawk management. The Forest recognizes that managing snags will have an affect on ASQ and resulting PNV. However, we are also responsible for ensuring that species dependent on snags have suitable habitat. Economic impacts of implementing the Preferred Alternative is documented in EIS Chapter 4—*Environmental Consequences*.

33. COMMENT: Snag management. Continue snag recruitment until it can be scientifically demonstrated that snags are of no value in a balanced and healthy forest environment. (706)

RESPONSE: Thank you for your comment. Research provided from PSW should help us resolve this issue. (See previous responses in this section highlighting PSW research.)

34. COMMENT: [Proposed Plan] 4-47 dead & down: (2) (a): Are we going to create 1 log/acre or take what's available? (C) "yard logs" – at whose expense? (126)

RESPONSE: If necessary, we will leave a minimum of 1 down log per acre as specific areas come under treatment. The yarding of logs could be done using several methods; e.g., using K-V monies or using wildlife habitat improvement monies; or as a part of the timber sale contract.



## 100 - Mule Deer

**1. COMMENT:** Many of these animals winter on private land. Any herd increases will have an affect on local landowners. We suggest that any plans to increase herd numbers also include plans to address depredation to private landowners by the herds. (530, 1067)

**RESPONSE:** The objectives of the Forest Plan address only impacts to lands administered by the Forest Service. The Forest is committed to providing habitat to support deer populations at levels prescribed in the California Deer Herd Plans. An increase of deer on the national forest lands does have the propensity to increase depredation of private lands on the winter range. At this time, the extent of this depredation, and the resolution of this concern is largely unknown.

**2. COMMENT:** Summer range is not the problem, with the deer it's your winter range. There are two reasons that you have trouble with the deer. Hunting pressure in the high country and no winter feed for the deer. Is the feed that you leave in the mountain ranges by reducing livestock numbers going to help feed the deer population in december January, February and March? (1032)

**RESPONSE:** Although winter range is a major concern in the management of deer herds, summer range was also identified as a concern on some portions of the Forest. Hunting pressure probably has a negligible effect on the deer population. The heavy hunting of bucks changes the composition of the deer herd (more does), but has only a minor effect on the total population. The conversion and decline of deer winter ranges is probably the most limiting factor on deer herds in Modoc County. However, most of the deer winter range lies outside Forest boundaries. One objective in the Plan is to ensure that sufficient summer range is available to meet needs identified in the deer herd plans prepared by the California Dept. of Fish and Game.

**3. COMMENT:** (DEIS) 4-120: with a majority of rangeland in "poor" or "fair" condition, it does not seem plausible to meet deer forage needs with the projected livestock use. 4-140: There are also possible conflicts with the ODFW herd management objectives. (1317)

**RESPONSE:** For the purposes of analysis and comparison, forage was made available to deer at a level commensurate with the deer herd goals as stated in the CDFG Deer Herd Plans. After estimated forage needs were met for deer, the remaining forage was available to livestock. We used the forage allocation model defined in Appendix L of the Plan only as an approximation of forage conflicts between deer and livestock. Specific analysis will be required further at the allotment management plan level. ODFW concerns were added to the section dealing with

possible conflicts with federal, regional, state and local land use plans.

**4. COMMENT:** [Plan] 4-9 (paragraph 5) it is questionable that Forest direction will achieve the goal to "provide habitat quality and quantity necessary to meet the Forest's share of population objectives" for the Interstate deer herd. A much more aggressive program will be required to solve existing livestock grazing problems. (1317)

**RESPONSE:** Please refer to the previous comment. Determining deer forage is an important step in preparing individual allotment management plans. We feel that Forest-wide Standards and Guidelines (Plan Chapter 4) provide sufficient direction to ensure that habitat needs for deer are met.

**5. COMMENT:** In the DEIS Ch. 3, Pg. 183, Under range, states that we have an "inadequate knowledge of herd requirements." I feel more extensive population studies should be done before any forage base for deer is attempted to be directed toward winter range for the Warner Mountain herd. Many of these deer winter on private lands of ranchers who hold Forest permits. Any reduction of livestock use of Forest land for these ranchers, will cause the rancher to intensify his utilization of his own property. These areas are critical for deer wintering, with this intensifying of livestock use of these lands, there can also be created a backlash towards wildlife. (1296)

**RESPONSE:** The Forest in cooperation with CDFG is conducting studies on deer in the Warner Mountains. The objectives of this study are to identify limiting factors affecting the recruitment of fawns into the adult population, and to develop management objectives and strategies to increase the productivity of the deer herd.

As stated previously, we will evaluate forage needs at the allotment management plan level. See the two earlier comments regarding the Forest's responsibility to manage habitats for deer when they are using the Forest. We agree that studies on winter ranges outside the Forest are necessary and should be encouraged.

**6. COMMENT:** Would the deer population naturally increase if there was more juniper control? Decreasing the cattle numbers should not be a consideration in this issue. More accurate and more current forage measurements should be taken on fall and winter deer ranges and all other ranges as well. (1063)

**RESPONSE:** Juniper encroachment is a major factor in the decrease of forage on the Modoc National Forest. Treatment of juniper stands is a viable method for enhancing forage conditions for both deer and livestock. We will address the need for decreasing livestock numbers during



the preparation of allotment management plans on a site-specific basis. In revising AMPs, we will address forage availability and its allocation between livestock and wildlife.

**7. COMMENT: 3-72: Vegetation preferred by deer:**

- extent and impacts of competition and conflict between livestock and deer.
- vegetative-associations affected by clearcut practices.
- effect of agriculture (timber monoculture) on vegetative associations preferred by deer. (1248)

**RESPONSE:** EIS Chapter 3—*Affected Environment* addresses vegetation communities preferred by deer. The potential for forage competition between deer and livestock is also addressed in the EIS. For planning estimates, forage was made available first to meet estimated deer needs. The remaining forage was allocated to livestock. We will address specific allocations at the allotment management plan level. The effect of timber management practices on deer varies considerably. The production of early seral stages can improve deer summer and transitional range. Eliminating bitterbrush and other forage shrubs on winter and transitional ranges could have an adverse effect on deer. We developed the Timber-Forage Prescription (Plan Chapter 4) in part to balance timber management and deer habitat requirements. See resource 102 for further discussion.

**8. COMMENT: [DEIS] 3-180 (paragraph 1) forage needs for the Interstate herd should reflect mgt. goals, not the current population level. 3-181 (Paragraph 2) there are clear management objectives for the Interstate deer herd (see comments on 3-204, ). 3-184 (Paragraph 6) there should be no livestock grazing on winter range after June 30, or on transition range after September 30. (1317)**

**RESPONSE:** We developed forage needs for deer from the management goals in the CDFG's deer herd plans; they are specific for each herd. The Forest is co-signator to these plans, and they are incorporated by reference. Our analysis, located in EIS Chapter 3—*Affected Environment* and Appendix L, includes both the current situation and management in relation to meeting deer herd objectives.

Forest-wide Standards and Guidelines (Plan Chapter 4) provides direction regarding forage allocation for deer on the winter range. Seasonal restrictions for livestock on deer winter and transition ranges may not be useful. In the Rangeland Management Prescription, utilization levels are provided for shrub species on deer winter and transition ranges. This direction will ensure that sufficient forage remains for deer when they are using the area. We will address additional forage requirements for deer site

specifically in the allotment management planning process.

**9. COMMENT: [Proposed Plan] P. 4-113 C: poor standard. What are you going to do, shoot the deer if they over utilize bitterbrush and there is no livestock grazing on an allotment? This should be a guideline not a standard. Bitterbrush utilization is also dependent on the number of bitterbrush plants per acre, deer concentrations and livestock grazing. P. 4-117 A-6-a and b. Make these guidelines rather than standards which will allow you greater management flexibility. (1153)**

**RESPONSE:** The Rangeland Work group developed an additional guideline in the Rangeland Management Prescription under Wildlife (Plan Chapter 4). This guideline states that bitterbrush will be allocated on an allotment-by-allotment basis, and that forage allocation will be split equally between deer and livestock (50% each of the 40%).

In the final Plan, we have not changed the standards to which you refer in the draft on page 4-117. As standards (vs. guidelines) they provide specific direction on the sizes of treatment units on summer and winter ranges. And because they are specific (and measurable), they should be considered standards.

**10. COMMENT: [DEIS] 2-47: forage in excess of minimum requirements should be allocated to reduce energy expenditure is of extreme importance on transition and winter ranges; therefore, forage allocations for deer and antelope need to be immediately calculated into all allotments. (1317)**

**RESPONSE:** We based these values an average derived from a literature review. We will allocate deer and livestock forage site specifically during allotment management planning.

**11. COMMENT: 3-76, 3-79: Why [is] wildlife not considered in original assessment [for forage needs for deer and pronghorn and other wildlife]?**

- nature of original assessment. Procedure for making assessment. Date, plan for periodic assessments.
- areas allocated to wildlife that livestock would not use.
- 22,100 AUMs = 67% of current wildlife forage needs. Why wildlife—needing protection and enhancement—shortchanged?
- What other wildlife besides deer and pronghorn dependent on range? Forage needs and deficiency for these species. (1248, 1214)

**RESPONSE:** We did not consider forage partitioning for deer and livestock in original assessments and allotment management plans because we did not know the requirements of deer nor recognized when these were done. Many

allotment management plans were done 20+ years ago. Concerns about competition between livestock and deer were largely unknown at that time.

The portion of your comment referring to stocking rates relates to the current condition on the Forest. See EIS Chapter 3—*Affected Environment* and Appendix L. Converting current deer numbers to AUMs resulted in 32,985 deer AUMs on the Forest. Based on the estimated total AUMs of available forage, 122,500 AUMs are currently allocated to livestock and 22,100 AUMs (67% of the current requirements) are allocated to deer. Under the Preferred Alternative, forage estimates increase to 47,900 AUMs by the end of the 1st decade to meet current deer numbers. By the 5th decade, forage available for deer is 50,700 AUMs which approximates the management goals for deer in the state Deer Herd Plans.

It is important to note that the deer and livestock forage model used in the EIS is only an estimate. We used it primarily as a tool to determine the potential for deer and livestock conflicts. We will conduct site-specific analyses of forage competition concerns during allotment management planning.

The major concern with forage availability is deer. Pronghorn consume considerably less, and are much less populous than deer on the Forest. We believe that meeting the deer forage requirements will also suffice for pronghorn needs. The important issue with pronghorn is forage quality, not quantity. Pronghorn are selective feeders; they forage on specific parts of plants. Plan Chapter 4 provides direction for allocating forage for pronghorn in the allotment management planning process in the Forest-wide Standards and Guidelines.

**12. COMMENT:** Mule deer winter range should not cause any reduction in timber harvest and vice versa. Thermal cover is a vertical rather than a horizontal environmental phenomenon and there is no justification to provide super abundant areas of such habitat. One of the greatest detriments to optimum mule deer populations is that 90% of the vegetation is in the form of trees not available for forage. Browse availability is the primary critical factor in overwintering deer and this resource is most compatible with productive forest management. (1252)

**RESPONSE:** Management for deer winter ranges should not significantly reduce timber harvest activities. The major detriment to deer resulting from timber management on winter ranges is the loss of shrub understories. The Timber-Forage Prescription was developed to assure the maintenance of forage species (primarily shrubs) for deer use. See resource 102 for further information.

**13. COMMENT:** 1. What affect do predators have on fawn survival and thus on the rate of herd increase? 2.

What effect will the removal of private lands as wintering areas have on the deer herd? 3. If we experience another deer herd die-off, as explained in Ch.3, pg. 179, will it be due to summer forage conditions created by the Forest Service on private ground? (1296)

**RESPONSE:** Predators are a natural component of ecosystems. Their populations normally fluctuate with the availability of prey species. In relation to deer, predators can have a significant impact on fawn survival depending on deer population levels and habitat suitability. Much of the habitat management (or lack of it) on Forest land has favored predator populations by increasing concealment of predators. This has been demonstrated in several ungulate populations. Ongoing deer research in the Warner Mountains suggests that fawn survival is high during the first 3 months following parturition. At this time, we do not believe predation is major limiting factor for this deer herd.

Much of the deer winter range is on private lands. This is especially true for the Warner Mtn. deer herd. Removing this land base as a deer winter range would probably have substantial impacts on the deer herd.

We doubt that a major deer die-off result from enhanced summer range on Forest Service lands. Our responsibility is to ensure that we can meet the demand for deer as stated in CDFG's deer herd plans. We recognize that deer herds will not expand beyond the carrying capacity of the winter range.

**14. COMMENT:** What are the limiting factors for each deer herd in the Modoc NF? (810)

**RESPONSE:** Limiting factors for the deer herds are described in EIS Chapter 3—*Affected Environment*, and more explicitly in the Deer Herd Management Plans developed by the Calif. Dept. of Fish and Game.

**15. COMMENT:** [DEIS 3-181 to 184] 3-184: List the specific plans, studies, inventories, policy changes to implement each of these proposals. Budgets, completion dates.

- Define disagreements between FS and CDFG over deer and other species and consideration of CDFG concerns in PRF.
- Forest is signatory to deer herd mgt. plan and, therefore, is obliged to carry out these programs. Indication that Forest is helping implement these mutually accepted mgt. Needs. Nature and degree of participation of forest in deer herd mgt plans.
- Impact of chemical release (herbicides) on deer forage in transitional range. (1248)

**RESPONSE:** The information provided the portion of the Affected Environment which you referenced is background information on deer herds and how other re-

sources affect these herds. Plan Chapter 4—Forest-wide Standards and Guidelines, management prescriptions and management area direction—addresses specific management direction for deer.

We developed the Preferred Alternative using, in part, management objectives in CDFG's deer herd management plans. Forage estimates in the Plan were developed to meet objectives in those plans. See previous comments in this section that discuss the deer herd management plans.

We will not use herbicides on a large scale on the Forest. The impacts from herbicide use on deer transitional range will be negligible.

**16. COMMENT: LMP App. B-5, #1: What other deer herds besides Adin lack "range boundary", "migration pattern", "habitat improvement needs" assessment and related research/inventories? Why are these crucial data unavailable after all the funds and effort spent on deer herd mgt plans? (1248)**

**RESPONSE:** Deer herd boundaries, which were delineated based on CDFG's work, are theoretical. Until telemetry work is done to determine specific migration routes, extent of summer range, and the demographical nature of deer herds, this information will have to suffice. Most telemetry work is the responsibility of CDFG. The Forest Service is responsible for habitat improvement and management. Obviously, the two go together. After studying deer herd habitat use patterns, the Forest can then propose specific habitat improvement projects to benefit deer. For the most part, deer herd management plans are generic and were used primarily to develop goals and objectives for managing deer herds.

**17. COMMENT: What are lessons learned in mgt terms from the decline and fall of this allegedly protected harvest species of such great importance to Forest mgt.? Since attention-getting deer are in decline, what is the likely fate of unattended species? (1248)**

**RESPONSE:** The subject of deer declines is a complicated and often misunderstood issue. Individual deer can use habitats over hundreds of square miles during the course of a year. Habitats can include variations in ownership patterns, vegetation patterns, land use patterns, and numerous other factors. Each deer herd must be examined individually to assess the potential limiting factors. The Forest Plan used applicable CDFG deer herd plans to devise management strategies which ensure that habitats are available for deer in sufficient amounts to meet herd objectives. Deer are not the only species considered in the Plan. We also address management indicator species, sensitive plants, fish species and several habitat components to ensure that biological diversity

would be maintained. Please refer to resources 084, 096, 081, and 080 for further information.

**18. COMMENT: Maintain mule deer winter range capable of supporting a 40% increase in the Devil's Garden Interstate Mule Deer herd. (1303)**

**RESPONSE:** The Plan estimates forage to allow for an increase in the Interstate deer herd from 8,200 deer to 10,000 deer (18% increase) in the first decade of implementation; it remains roughly at this level through the 5th decade. This number of deer corresponds with goals in the Interstate Deer Herd Plan prepared by the Calif. Dept. of Fish and Game.

**19. COMMENT: Deer and antelope levels you wish to manage for are derived from some conversation with CDFG. I do not believe either of you have sufficient data to know what the potential is. These species are in a depressed state and their present numbers, herd size, or their movements are not well documented. Your mgt assumptions or models are founded on false data. (806, 1066)**

**RESPONSE:** We derived assumptions and based our models on the best available information. The CDFG addressed current and potential population levels in their deer herd plans. These were based on demographical information on the deer herds collected for more than 25 years. The Forest Service used range and timber vegetation typing to assess suitability of habitats for deer. We feel that the information available is useful in assessing impacts of livestock and timber management activities on deer; and for developing management strategies for managing deer at populations levels stated in deer herd plans.

**20. COMMENT: [Proposed Plan] 4-44—Wildlife—9.c.: There is a documentation that shows ideal mule deer habitat to be 40% cover/60% forage of which 100-20% of cover is required to be thermal cover if habitat security is sufficient through road closures. (126)**

**RESPONSE:** Preferred cover/forage rations depend on the season of use. Forest-wide Standards and Guidelines for deer vary between winter and summer transitional range. Likewise, the importance of security areas varies depending on the time of year. Security areas are important in the early summer (fawning) and fall (hunting season).

**21. COMMENT: [Proposed Plan] P 4-110 Element C Wildlife 3-2: What constitutes cover for deer? (1153)**

**RESPONSE:** Thermal cover is defined as a tree crown closure of at least 60%; or a 75% crown closure of shrubs.

Hiding cover is vegetation conceals at least 90% of a deer at 200 feet.

**22. COMMENT: Plan 1-2: Add the Adin deer herd management to those plans "incorporated by reference." (364)**

RESPONSE: This was done.

**23. COMMENT: 4-196. The Long Bell MA includes summer deer range which is productive deer habitat. (364)**

RESPONSE: This statement was added.

**24. COMMENT: Manage for sufficient habitat to support deer numbers in the CDFG deer herd mgt. plans. (551)**

RESPONSE: Goals in the Plan reflect those in the Calif. deer herd plans.

**25. COMMENT: The deer population in [the DG Interstate deer herd] appears to have declined as much as 75% from peak population level estimates over the past 40 years. 1987-88 head counts on summer range on the Oregon side by ODFW tally, substantiate the Interstate herd to be 67% of its herd mgt objective. A limited one-week season is being proposed. However because of trade-off made years ago for Oregon's excess bucks, ironically Calif. has increased the hunting pressure on the Interstate herd with a separate third season hunt annually, (regular rifle, late bow, later muzzleloader). (558)**

RESPONSE: Establishing hunting seasons is under the jurisdiction of the Calif. Dept. of Fish and Game and, therefore, beyond the scope of the Forest Plan.

**26. COMMENT: In order for the deer herd to increase some changes will have to be made in the present hunting regulations. Some type of effective predator control must also be implemented. (1277)**

RESPONSE: These concerns are the responsibility of the U.S. Fish and Wildlife Service (predator control) and Calif. Dept. of Fish and Game (hunting seasons). Both are beyond the scope of the Forest Plan.

**27. COMMENT: Planting bitterbrush in the Lava Beds area will continue to fail as long as you plant in the middle of a deer herd. (1145)**

RESPONSE: Bitterbrush seeding projects in the Lava Beds area have been relatively successful. To avoid deer depredation of young plants, we have fenced areas to deer and livestock following seeding. When the Plants are approximately 3 feet high, we will remove the fence. We are currently in our third year of seeding.

**28. COMMENT: NFMA states that we maintain "and" (not "or" as in). Evidently 67% of what is needed is**

**allocated to deer. Does this allocation meet deer herd planning needs? (1248)**

RESPONSE: This comment refers to EIS Chapter 3—*Affected Environment* and describes the current condition of the Forest. The Preferred Alternative estimates forage needs for deer to meet current numbers in the 1st decade. By the 5th decade, we estimate that forage will be available to meet deer herd plan goals.

**29. COMMENT: FLW benchmark: with respect to deer populations and habitats, you present the following:**

- mule deer populations will increase with abundance of forage,
- less forage will be available to livestock,
- the value of mule deer forage will be higher than that of livestock forage, &
- you are not improving deer habitat.

After the first 3 statements, the fourth needs clarification. (1263)

RESPONSE: The fourth statement refers to direct habitat improvement projects specifically for deer. Under the FWL benchmark, deer increases would result primarily from reallocating a greater percentage of the available forage to deer, and using timber harvest methods that would enhance deer habitats.

**30. COMMENT: [DEIS] 3-156 the population goal for 20 percent above 1982 levels does not reflect the mule deer management objectives of ODFW. Management objectives set by ODFW are based on available habitat (see comments, page [DEIS] 3-204). (1317)**

RESPONSE: This table (at the beginning of the Wildlife section in EIS Chapter 3) refers to RPA goals for mule deer, resident trout and cavity-nesting species. The PRF Alternative manages deer well above this level. See previous comments for additional information.

**31. COMMENT: Some of the population goals for deer herds are not realistic because the plans were prepared without consideration for the effect of land ownership patterns on the deer. (807)**

RESPONSE: Deer herd plans were developed by the Dept. of Fish and Game. Population goals were based on the characteristics of each deer herd, including available winter ranges, available habitat, desired habitat utilization levels, and herd demographics. The process varied for each deer herd.

**32. COMMENT: Suggested that winter range be managed for 50/50 and summer range be 40/60 of cover to forage on each management area. Hiding cover needs to be considered as a part of the cover requirement. And, as described in Appendix B (B-3) "quantify the relationship**

between thermal and hiding cover and deer forage." Forage requirements and the ability of the Forest to maintain adequate levels of both forage quality and quantity should be further described. The forage requirements in the LRMP are about half of what is described as necessary for bioenergetic demands. (1279)

RESPONSE: We derived cover/forage ratios from research, and modified them to apply to the Modoc National Forest. Appendix B identifies research needs on the Forest. After we identify the relationship between thermal and hiding cover for deer, we can apply this information to resource management situations. The deer forage model was developed to provide an analysis of livestock/deer forage competition. We will conduct specific analyses during the development of allotment management plans. We feel that the deer forage model provides a reasonable assessment of forage competition concerns. As with any model, many assumptions were made. As we learn more about deer biology specific to the Modoc, we can update this model.

33. COMMENT: [There have been] significant contributions made to the numbers and quality of wildlife currently on the Forest by the cattlemen and there is no mention of this in the Plan. (1403)

RESPONSE: We agree that the development of water sources and use of private lands by deer and pronghorn for winter ranges have been beneficial practices for these wildlife species.

34. COMMENT: Meadows should have cattle exclosures of sufficient size to allow increased fawning areas. (1341)

RESPONSE: We will manage meadows according to the Riparian Management Prescription. Improved riparian habitat conditions will be beneficial for fawning habitat. Fencing riparian areas is one management option for ensuring the protection of meadow habitats. However, many riparian areas can be managed without large-scale fencing projects.

35. COMMENT: [Proposed Plan] 4-14. Table 4-2—Wildlife and Fish—deer population estimates. How were they determined? (Base year populations should be recalculated using the change in ratio program). What percentage of populations is the Modoc NF claiming? (364)

RESPONSE: We derived deer population estimates from CDFG's deer herd plans. CDFG suggested that numbers stated in the Draft were also sufficient for the Final EIS and Plan. Thus, these figures were never modified. The percentage of populations claimed on the Modoc National

Forest are discussed in EIS Chapter 3—*Affected Environment* and Appendix L.

36. COMMENT: Why are the pronghorn increasing beyond land capabilities and deer who utilize similar range need more AUMs? Has any consideration been given to Salwasser's theory of the 70-year cycle? That area has been heavily grazed early in this century yet the deer numbers increased throughout the 30's. What caused that sudden drop? (1272)

RESPONSE: Deer require more AUMs than pronghorn because they are larger and are less selective in their foraging behavior. Deer consume an average of 6.5 pounds of forage per day, whereas pronghorn consume an average of only 1.0 pounds of forage per day. Livestock grazing and fire suppression at the turn of the century increased shrubby vegetation types that were beneficial to deer. As a result, deer populations increased significantly. We believe that juniper encroachment has significantly reduced the amount of available forage for deer and livestock, and may be a reason for the decline in forage availability for both of these resources.

Deer declines in the western United States have received considerable attention in recent years. Population fluctuations are a normal phenomena for essentially all wildlife species. Factors attributed to recent deer declines in the western United States include: habitat loss as a result of human alteration, human disturbance, forage competition with livestock, incompatibility with livestock, climate changes, and seral stage changes.

## 101 - Deer Forage

1. COMMENT: The limiting factor of deer herd expansion is not explained. Depredation by coyotes and condition of fawning habitat (on private lands) are major factors. The Plan addresses forage as the limiting factor, whereas providing more feed possibly would not improve deer number. The Plan also does not address the cohabitation on public and private lands that the deer use during their annual travels. If there is an increase of 50 percent of the deer population on public lands, does this mean that private landowners will feed twice the number of deer in the winter months? Many ranches suffer economic losses when deer eat hay stacks and alfalfa fields. A plan that will synchronize public and private deer management will be a great benefit to the deer. (1066, 503)

RESPONSE: In most wildlife populations, including deer, several limiting factors may occur. Suspected limiting factors on Modoc deer herds are explained in EIS Chapter 3—*Affected Environment*. In the Forest Plan we emphasize identifying limiting factors on the Forest and finding resolutions for these concerns. A concern we identified

was the availability of forage for deer while they are on the Forest.

We developed direction for management of deer levels prescribed in the Plan from CDFG's deer herd plans. The Forest has the responsibility to manage a forage base that will support deer at levels identified in the deer herd plans. Increasing the amount of forage allocated for deer on the Forest will probably not be sufficient to increase deer numbers. If other limiting factors, such as poor condition of the winter range and predation are not resolved, then deer numbers will probably not increase above the levels that limits the herds. We recognize that many deer using the Forest for summer and transitional range, also use private lands in the winter months. We agree that federal and state agencies, and private land holders need to work together to develop a management scenario that will provide for deer.

**2. COMMENT:** An important goal of the present plans is increasing the deer herd population on the Warners. Is the actual deer forage produced on the Forest known? Will the proposed increases cause greater pressure on the adjacent landowners? It is our opinion that the Forest is not producing the natural browse deer prefer. (1221)

**RESPONSE:** We developed the deer herd goals stated in the Forest Plan from goals of CDFG's deer herd management plans. Forage estimates were based on production capabilities of vegetation communities. We used these to estimate AUMs available for herbivores, including deer and livestock. Whether proposed increases will cause greater pressure on adjacent landowners is largely unknown. The ability for a deer herd, or any wildlife population, to increase is based on the year-round carrying capacity of the habitats on which they are dependent. If forage isn't available on the winter range to support deer numbers per the herd goals, then they will probably not increase to those goals. The Modoc has the responsibility of providing the habitat conditions necessary to meet our commitment to deer herd goals. See the previous comment and reponse for further information.

**3. COMMENT:** We are in disagreement on the statements relative to the competition for forage between the cattle and deer population. (1244)

**RESPONSE:** The forage allocation model was developed primarily to determine if competition between deer and livestock for forage is a concern on the Forest. The analysis has a broad scope and was not intended for site-specific recommendations concerning the reduction of livestock on the Forest. The deer/livestock forage model indicates a concern regarding the availability of forage for deer and livestock. We will conduct site-specific analyses the allotment management planning process. See EIS Chapter

3—*Affected Environment* and Appendix L—*Mule Deer Forage Requirements* for details.

**4. COMMENT:** Stewardship has been proven to provide a solution to conflict and is an excellent method to address permittee concerns that we cannot live with, listed as follows: reduce livestock grazing to meet deer management numbers. A) Winter feed for the deer herd; B) Too big a percentage of overlap of feed figured. No credit of forage for deer on unsuitable range. (1071)

**RESPONSE:** The Experimental Stewardship Program will be used to facilitate allotment management planning on the Warner Mountain District. On all districts, we are developing Technical Review Teams to address the effects of livestock grazing on other resource values. These teams will include permittees, range conservationists, wildlife and fisheries biologists, and other specialists as necessary. Concerns regarding forage competition between wildlife and livestock will be addressed at this level.

**5. COMMENT:** Deer forage demand: The MNF recognizes that deer consumption rates and diet preferences change by season (as noted in DEIS L-3 and [proposed] Plan 4-45); these differences in AFCR are not reflected in Table L-1. Instead, the MNF utilized the spring/summer AFCR of 6.5 deer/AUM for all seasons when calculating current and herd goal AUM demands. By applying the appropriate AFCR for each season, current estimated deer forage demand would be reduced by approx. 4,300 AUMs. This constitutes an error of 13%. Since the MNF utilized a subtractive process (i.e., total available forage minus deer forage demand = forage available for livestock) in the allocation approach, the proposed reduction in livestock grazing would be decreased by 4,300 AUMs. The process of rounding values for the daily AFCR results in an over estimation of deer forage requirements. E.g., utilizing the actual value of the winter season AFCR of 2.8 lbs/day equates to 11.9 deer/AUM as opposed to 11.0 deer/AUM utilized by MNF. When the rounding error and the use of the appropriate AFCR by season are considered, estimated deer forage demand on the MNF would equate to approx. 27,750 AUMs or approx. 16% Less than shown in the document.

MNF bases the determinations of percent of deer diet comprised of bitterbrush, grasses, and forbs by season on Leach (1956), Wallmo and Regelin (1981), and Salwasser (1979). Upon review of this literature, RCI disagrees with the MNF's interpretation of the results by these authors. Based on Table 3 of Leach (1956) the contribution of bitterbrush, grass, and forbs to fall deer diets would have been 64% as opposed to the 82% portrayed on DEIS L-3. In term winter range, the DEIS shows a figure of 70% as opposed to the averaged value of 48% derived from Table 3 of Leach (1956) Leach's summer range value, Table 4,

for percent diet composition of bitterbrush, grass and forbs is 52%.

Based on these values, utilizing MNF's methodology, applying the appropriate AFCR by season, and not rounding the daily AFCR to whole values, the current estimated forage demand for deer would be approx. 18,000 AUMs. Based on the MNF forage allocation procedures, use of this estimated current deer forage demand figure would result in >4,000 AUMs of available forage instead of an over-allocation of forage as portrayed in the DEIS.

Upon review of Tables 6-9 and 6-10 of Salwasser (1979), RCI was unable to derive the 85% and 45% diet overlap figures presented in DEIS App. L. An important point regarding these food habits results are the standard deviation values associated with the data. These values suggest that the results are extremely variable and that the reliability is questionable. Deer food habits results are not necessarily "hard facts", but rather very rough approximations based on limited samples which are not exact reflections of deer diets.

Assuming that the "65%" value associated with Wallmo and Regelin (1981) as cited on DEIS L-3 is based on figure 37 of that citation, RCI contends that the MNF misinterpreted the data. MNF utilizes the 65% figure to support the use of the 85% and 45% of deer diets comprised of grasses and forbs as presented in Salwasser (1979).

Data used to construct Fig. 37 was derived from Kufeld, et al (1973) and is based on the modification of food habit results through an arbitrary ranking system. It would have been more appropriate (in terms of the MNF's methodology) to have used the averaged results of the various food habits studies themselves. Having done so, the results would have shown that the average percent contribution of grasses and forbs to deer diets for all food habits studies during the spring and summer was 50% as opposed to the 65% value for the modified data. The 50% value, incidently, compares favorably to the 52% value derived from Leach (1956).

The AFCR (a weight measurement) is the product of percent composition of diet comprised of bitterbrush, grass, and forbs (expressed in percent by volume) times total pounds consumed (weight). Consequently, the assumption is made that the percent by volume of bitterbrush, forbs, and grasses is equivalent to the % by weight. The validity of this assumption is questionable.

Since a portion of the total deer population is comprised of yearling animals and they consume less forage than adults, it would seem reasonable to make this allowance in determining total deer forage demand. The result would be a further decrease in estimated current deer forage demand.

Assuming that current deer forage demand and deer forage demand associated with the deer herd goals are 18,000 AUMs and 28,500 AUMs, respectively, would there be a substantial change in the analysis results of the alternatives? What would the ramifications be to the economic, social, and range issues of the PRF?

Is deer habitat on MNF the limiting factor of the Interstate, Glass Mtn., Warner Mtn. and Adin deer herds in all cases? If not, wouldn't the reduction of livestock to allocate forage to achieve deer herd goals be unwarranted?

Recognizing that current and projected deer forage demand plays an important role in the EIS analysis, why weren't the appropriate seasonal AFCR values utilized in DEIS Table L-3?

MNF cites Leach (1956) as the source for the 82% and 70% figures for % composition of diet comprised of bitterbrush, grass, and forbs for the fall and winter seasons. Where specifically in Leach (1956) are there values presented? Why does MNF consider these values as more appropriate than the 64% and 48% values derived from Table 3 of Leach (1956)?

Why does MNF consider the 85% value for % composition of diet contributed by grass and forbs during the spring and summer more appropriate than the value of 52% of Leach (1956) as supported by the 50% value of Kufeld, et al?

Would the MNF concur that the procedure used in the Plan and DEIS to establish AFCR and deer forage demand has the very real potential to produce inaccurate results? (1217)

RESPONSE: As with most models, we had to develop assumptions that would portray conditions specific to the Modoc National Forest. We feel that the assumptions in this model were realistic in depicting habitat conditions on the Modoc and in determining deer needs for planning purposes. The deer forage allocation model was an attempt to identify forage needs for deer in the land management planning process, and to address these needs with respect to domestic livestock. The deer/forage model should be viewed in relative terms. It was not intended to be a site-specific forage resource allocation, but rather to identify concerns regarding forage availability. We will determine site-specific allocations during the allotment management planning process.

We converted deer forage needs to AUMs so that we could compare them with livestock forage needs. As a basis for the model (EIS Appendix L), we used deer weights, daily forage consumption for each season, dietary overlap for each season, and the time of use on the Forest. Under current management, 22.1 M AUMs of forage are available for deer. The model estimates a need for 32.8



M AUMs of forage to meet current needs. To meet deer herd management goals, an estimated 51.8 M AUMs will be required.

Current, 122.5 M AUMs are available for livestock. Assuming that the total AUMs available do not change significantly, then AUMs available for livestock would have to be reduced to accommodate deer AUM needs. Again, these are estimates, and will require more specific analysis at the allotment management plan level.

Site-specific data does not exist locally to make precise predictions of forage availability and diet overlap. The model takes the following into consideration:

- (1) Deer forage selectivity. Much more than minimal forage allocation is needed to ensure that deer requirements are met. Although assumptions in the model may be conservative, they should be used as a safeguard to ensure that needs for deer are met.
- (2) The model should be viewed as a tool to compare relative differences in alternatives, and the resulting impacts on deer. Assumptions in any model are open to debate. The main purpose of the model was to identify limiting factors for deer, and how each alternative addresses these factors.
- (3) Until a more refined model is developed that undergoes peer review, this model should be used as a baseline to display deer forage needs.
- (4) Specific forage allocations will be addressed at the allotment management plan level.

**6. COMMENT:** What rationale is used by MNF to prioritize deer use over livestock use? Are there any legal or regulatory requirements which mandate the MNF to manage for deer herd objectives at the expense of livestock grazing? (1217, 1255, 603)

**RESPONSE:** We developed our goals for deer population levels from objectives in CDFG's deer herd plans to which are co-signators. In addition, RPA goals state that, as a minimum, deer population goals in forest plans should be a minimum of 120% above the 1982 population levels.

**7. COMMENT:** Reserve fall green up for wildlife on winter range. (1303)

**RESPONSE:** The major concern on deer winter ranges is maintaining sufficient browse (bitterbrush) for deer. Standards and guidelines in the Range Management Prescription for wildlife provide specific direction for livestock use on deer winter ranges. These will ensure that sufficient forage remains on the winter ranges for deer.

**8. COMMENT:** While the draft states that the present acreage allotment only suffices for 67% of the current forage needs, no supplementary facts are offered. Is there unreasonably large deer and pronghorn mortality due to

lack of forage? Since wildlife populations are uncontrolled, what measures, if any, are implemented to keep wildlife from using forage allotments of other animals? (1304)

**RESPONSE:** The model was developed primarily to assess potential for forage competition between livestock and wildlife. See previous comments and EIS Appendix L for further explanation of assumptions in the model. The model indicates that forage for both deer and livestock is a limiting factor in deer population expansion. Wildlife populations are controlled to a certain extent by hunting, which is a Dept. of Fish and Game regulated activity. The Plan displays estimated forage available for deer and livestock that will allow continued livestock grazing at near-current levels, and the management of the deer herds at population levels prescribed in deer herd plans. The concern about deer using forage allotments of other animals is minor. A more significant concern is the regulation of livestock to ensure forage availability for wildlife.

**9. COMMENT:** Deer winter range is not adequately delineated and management direction is not adequate. The goal for cover should be 50 percent of the area in well distributed thermal cover stands. Again, the shrub component needs management emphasis. Livestock grazing on winter range should be discontinued after June 30. Roads should be minimized (approaching zero miles open roads) and no ORV use should be permitted between December 1 and March 31. (1317)

**RESPONSE:** Forest-wide Standards and Guidelines and management prescription direction address specific management direction for deer winter ranges. Winter ranges have been delineated and are located in the Forest data base in the Supervisor's Office. Direction for managing deer winter ranges is based on the literature and consultation with Calif. Dept. of Fish and Game personnel familiar with deer biology. We strengthened Forest-wide Standards and Guidelines for deer (Plan Chapter 4) regarding road construction and ORV use.

**10. COMMENT:** [Plan] 4-44 (9.a.) The desired thermal-cover/forage ratio for deer on winter range is 50/50. The goal should be to ensure thermal cover does not go below 50 percent on winter range, or to manage for improvement approaching 50 percent where cover is lacking. (9.B.) Transition and summer range should be managed to provide for minimum of 40 percent cover well distributed over the area. Monitoring units should not exceed 10,000 acres. (1317)

**RESPONSE:** We feel that the major concern on our deer winter ranges is the quality and quantity of forage browse (primarily bitterbrush). Thermal cover standards in the



Plan Chapter 4 are sufficient for meeting deer seasonal cover requirements.

**11. COMMENT:**[Proposed Plan] 3-21. Supply and demand—first paragraph. the last sentence of the first Paragraph needs to be more specific on the assessments for wildlife. What is available for wildlife? Are “current forage needs” for wildlife being fulfilled in AUMs considerations? If not, why not? Third paragraph – what is the demand analysis for wildlife?

We question the reasoning for the forage allowances for livestock and Wildlife. Because a very limited number of livestock operators have obtained a vested interest in grazing on the Modoc NF is not sufficient justification to continue this preferred treatment. Wildlife associated recreation provides much more benefit to the user public than livestock but does not receive commensurate forage allotments. Such statements as ranchers have “always been dependent on public ranges,” “reducing forage would force ranchers to move livestock to lands that currently are producing hay” and “forage reduction would also place increased demands on other forage sources, thus bidding up the price of these feed supplies” indicate the Plan’s bias toward livestock and against wildlife. Is catering to limited number of livestock owners at the expense of an important wildlife resource in the best public interest? (364)

**RESPONSE:** The forage availability analysis described in this section reflects the current situation. The Preferred Alternative provides deer forage requirements and direction for incorporating them into resource management activities following Plan implementation. EIS Chapter 3—*Affected Environment* contains the demand analysis for deer, and is based primarily on deer hunting demand. The section you refer to here deals primarily with livestock grazing. Reducing livestock for any reason would have an adverse affect on the individual permittees and the local community.

The Plan attempts to balance the needs of wildlife with livestock grazing demand on the Forest. Under the Preferred Alternative we manage deer habitat to facilitate goals specified in the State Deer Herd Management Plans, and recognize the need for livestock reductions where adverse effects on wildlife cannot be mitigated.

**12. COMMENT:** Pronghorn and deer should be managed for improved habitat trend rather than a specific forage allocation. Forage allocations for deer and pronghorn are considered an MMR that needs to be verified. (500)

**RESPONSE:** The Forest-wide Standards and Guidelines (Plan Chapter 4) provide direction for forage quality, cover requirements, water requirements and other management considerations for deer and pronghorn. Forage

requirements shown in the Plan represent estimates. We will make allocations site-specifically in allotment management plans. These allocations will be monitored.

**13. COMMENT:** The Interstate Deer Herd Mgt. Plan (CDFG, 1982) indicates that Sandberg’s bluegrass, lupine, buckwheat and cheatgrass are important components of the DG herd’s spring diet. As such, an improvement in ecological range condition would likely necessitate a decrease in % composition of these species. Assuming that MNF attains its goal of “good condition” for rangelands, would there be a decrease in the carrying capacity of the deer spring ranges? (1217)

**RESPONSE:** An increase in ecological condition probably would not significantly decrease forb species important to deer spring diets. Species such as lupine and buckwheat would still be a part of these stands. Other species of palatable forbs and grasses would also become available.

**14. COMMENT:** Issues that should be required include the true bioenergetic requirements for ungulates. Seasonal variations on energy levels from inadequate adjacent ranges. An example would be, where winter range is inadequate, studies have shown, increased energy requirements of spring and summer range. Home range sizes increase for deer when resources are jointly used by livestock. Information provided in the DEIS could be improved on page 2-47, as stated earlier. In the section 3-178 through 3-186 there could be expanded to better describe the ecological relationship. This is better described in Appendix L. (1279)

**RESPONSE:** The citation you reference in the proposed Plan on p.2-47 refers only to Standards and Guidelines applicable to all alternatives, and is not meant to be an ecological appraisal of deer and livestock interrelationships. DEIS 3-178 to 3-186 is a brief description of the current deer herd situation on the Forest. Again, it was not meant to provide a detailed analysis of deer and livestock interrelationships. In the Final Plan, Appendix L is referenced in this section.

**15. COMMENT:** [Proposed Plan] Old (decadent) mountain mahogany stands provide important food and cover for deer on winter and transition ranges. Due to its high value for deer, a cautious approach should be taken to the manipulation of mahogany until successful projects can be demonstrated. (1317)

**RESPONSE:** We agree. The Calif. Dept. of Fish and Game and other interested publics will be involved in developing projects to enhance deer habitats. Projects will

## 102 - Timber-Forage Prescription

first be done on an experimental basis until successful regeneration of these stands can be demonstrated.

**16. COMMENT:** Conversion of forage requirements of AUM equivalents is the best idea of any forest plan reviewed. Behavioral modifications related to bioenergetic requirements should be considered. The relationship between forage available and population level should also be included in the evaluation of forage requirements. (1279)

**RESPONSE:** The forage allocation model was meant to be a broad-based model for use in determining forage competition between deer and livestock. Although crude, it does evaluate bioenergetic requirements by season-of-use, and evaluates forage requirement for current and proposed population levels.

**17. COMMENT:** As to the planting of brush for deer and fencing the area off, why not go to an area where the deer are not grazing at this time and plant the brush and develop water so the deer can come in and browse when the brush has grown so it can survive grazing. (961)

**RESPONSE:** Your suggestion is within the realm of habitat improvement opportunities. A major concern is the geographic area use patterns that deer have developed. Deer tend to use the same winter and summer ranges year after year. Habitat improvement projects done in areas where deer use is light or non-existent may not be used. Our priority is to ensure that existing high-use areas are properly managed; then we will expand into less-used areas.

**18. COMMENT:** L-3. dietary overlap. Sage and juniper are very important in the diet of several wildlife species. Sage is important forage to livestock. (364)

**RESPONSE:** In certain seasons, sagebrush and juniper can be important to wildlife diets. In general, though, these are not limiting forage classes. Deer that rely entirely on sagebrush and juniper for forage will do poorly (as will livestock). EIS Appendix L the need for high quality forage to minimize forage competition between deer and livestock.

**19. COMMENT:** Also wildlife do use water facilities (water holes, troughs, windmills) on private land and range. This is an added expense and competes with livestock. (971)

**RESPONSE:** Wildlife will use water facilities that are developed for livestock. In some instances, these enhance habitat availability for wildlife. The extent of competition

for water between wildlife and livestock at livestock water developments on the Forest is probably not significant.

## 102 - Timber-Forage Prescription

**1. COMMENT:** Timber-Forage Prescription. Plantation failures were traced back to poor site preparation which allowed vegetative competition to deplete the upper soil horizon of moisture before the newly planted seedlings could develop a strong root system. Therefore I see a real potential for reforestation failures if you implement the Timber-Forage Prescription on about 1,500 acres each year.

Page 4-11 of the [proposed] Plan shows that the acres allocated to the intensive timber prescription for 50 years are less than the acres allocated to timber-forage and page 4-13 shows 2,900 acres of regeneration per year, but I did not see a summary of the Timber-Forage Prescription to be implemented in the first decade (the acres are shown for each management area). Since the very need to implement this prescription rests on the assumptions made about future forage production on the transitory range these assumptions need to be verified as early as possible. I believe that normal timber plantations with the relatively wide spacings and frequent thinnings prescribed on the Modoc NF will be found to produce at least the minimum levels of forage needed to meet range goals. (256)

**RESPONSE:** We developed the Timber Forage Prescription to provide timber harvest opportunities while maintaining or enhancing forage quality and quantity for deer. Although under this prescription timber will not be managed at full yields, it does provide a balance between timber management and deer forage requirements. This prescription is currently being tested. The Timber Forage Prescription does not preclude clearcut harvesting, but provides direction for maintaining forage for deer. The 2,900 acres of regeneration mentioned in your comment are RPA goals. The Preferred Alternative states that we will regenerate 3,800 acres per year. This includes those acres treated in the Timber-Forage Prescription. Four site preparation options are available under this prescription. An important facet of this prescription will be monitoring. As we apply this prescription and learn more about understory responses and growth yields, we will fine-tune the prescription.

**2. COMMENT:** Hackamore (53): The Interstate Deer Herd uses this area, and it is not a good idea to program such a large area to a still-experimental prescription so quickly. Bitterbrush may not regenerate in clearcuts, adequate populations must be left during timber harvest. Adequate thermal cover is a necessity. (708)

**RESPONSE:** The intent of the Timber-Forage Prescription is to ensure that we maintain important forage species during timber harvest activities for deer. As mentioned previously, an important part of this prescription will be monitoring. As we learn more about the responses of forage to this treatment, we can fine-tune the prescription.

**3. COMMENT:** The standards and guidelines in many instances are unrealistic and unattainable. Examples of this are: "(S) within deer winter range and transition habitat allow an annual (July-April) average of no more than 40% utilization of bitterbrush by deer and livestock combined. How do you regulate deer usage of bitterbrush? It is conceivable that deer could eat more than 40% of the annual growth of bitterbrush before cattle are allowed in the area, especially if deer numbers are increased (pers. Comm. Salwasser Mar. '83). Will cattle be allowed in an area if deer have consumed more than 40% of the annual bitterbrush growth? (1283)

**RESPONSE:** The Rangeland Work Group modified this standard and guideline so that the allocation will be split 50% for livestock and 50% for wildlife. Thus, 20% consumption of this bitterbrush by livestock will be permitted. The remainder will be left for wildlife and regeneration purposes. We will apply this guideline where appropriate as allotment management plans are revised.

**4. COMMENT:** The (DEIS) in Appendix L—Mule Deer Forage Requirements states grasses, forbs and bitterbrush are important to the diets of both livestock and deer. They are the only vegetation types used to calculate total forage production and livestock capacities on grazing allotments. Salwasser states that bitterbrush is a valuable early winter forage. Its use declines by late January. Juniper, sagebrush, and grasses dominate the diet through mid-march. (Salwasser, Ph.d.thesis 1979). Why did the Forest Service neglect to include juniper and sagebrush in its forage production calculation? (1283)

**RESPONSE:** Bitterbrush, grasses and forbs are the most important forage classes for deer. Deer will eat sagebrush and juniper when preferred species are not available. They tend not to do as well on these diets. The same is true for livestock.

**5. COMMENT:** A large amount of the bitterbrush has become old with large plants that cannot be utilized by the deer. I believe this is a result of inadequate use of the plants. Also in many areas the junipers are crowding out the bitterbrush plants. (1277)

**RESPONSE:** We agree. Juniper encroachment has been a significant factor in forage reduction. Bitterbrush plants on some parts of the Forest receive sparse use. This is not the case on important winter ranges. Much of the bitterbrush on the Forest has become decadent as a result

of age — not just inadequate use of plants. Some stands are 80 years old.

**6. COMMENT:** Wildlife and fish. What is the Timber-Forage Prescription? (364)

**RESPONSE:** We developed the Timber-Forage Prescription to provide both timber and forage outputs. The goal of the prescription is to balance timber outputs and forage needs for deer. Plan Chapter 4 describes in detail this and all other management prescriptions. See previous comments that discuss this prescription.

**7. COMMENT:** Recommend that the Timber-Forage Rx be used where possible to harvest timber. (551).

**RESPONSE:** We are applying the Timber-Forage Prescription to nearly 10% of the Forest's land base, and about 40% of the area managed for timber.

## 103 - Deer on Private Lands

**1. COMMENT:** No consideration has been given to local ranchers who are going to have to feed a deer herd with a 50 percent increase. Any increase in grazing should be shared equally between livestock and wildlife and not giving it all to wildlife. (603, 154, 940, 992, 1025)

**RESPONSE:** We believe our forage estimates for deer and livestock are balanced in the Preferred Alternative. At the end of Decade 1, approximately 118.8 M AUMs of forage are available for livestock, and 47.9 M AUMs are available for deer. This should be sufficient to meet the current herd requirements for deer. We will address livestock and deer forage competition on a site-specific basis during the allotment management planning process.

**2. COMMENT:** [Re: Delta Lake allotment] — What considerations have you given ranches who border these allotments, 5 or 6 miles? We feed a great number of deer all summer and contend with them all winter. (698)

**RESPONSE = RESPONSE:** The deer forage model is applicable only to the Modoc National Forest. We analyzed the model primarily to determine the potential for deer and livestock forage competition. We will conduct site-specific analyses during allotment management plan preparation.

**3. COMMENT:** [Proposed Plan] P. 4-19 Wildlife and fish: There is no need to provide forage for deer on summer range if the winter range is not adequate to maintain said population of deer. Before reducing livestock grazing you should first look at year-round deer forage needs. What impact would increased deer numbers have on private landowners? What impact would increased deer numbers have on the local economy? What

percentage of the deer herd population winter on private vs. federal land? (1153, 1080)

**RESPONSE:** The Forest Plan only addresses deer needs for national forest lands in seasons when deer use these lands. EIS Appendix L describes in detail how forage needs were modeled for deer. As mentioned previously, deer populations will only increase if *all* their seasonal needs are met. The Forest intends to meet its commitment to deer herd management plan population goals for those portions of deer herds dependent on the Modoc National Forest.

**4. COMMENT:** The Modoc NF is only partially responsible for the support of the individual mule deer and pronghorn herds. These herds are also partially dependent upon other public and private lands. (364)

**RESPONSE:** We agree. Thank you for your comment.

## 110 - Pest Management

**1. COMMENT:** [Excerpt from the conservationist alternative]

The concept of integrated pest management is supported, but only where pest species are primarily controlled by predator species. To achieve this, sufficient macro and micro habitat must be maintained throughout the Forest to provide adequate populations of all predator species. (80) (364) (500) (1260)

**RESPONSE:** The effects of pests and diseases in the ecosystem are usually the result of a pest complex rather than the action of a single organism. Complexes also involve the host and vegetative conditions, environmental influences, pest population, and the effects of management activities. Integrated pest management recognizes interrelationships of the pest-host system. It also recognizes that insects, diseases, and destructive animals are important elements of forest and rangeland ecosystems, and are considered pests only when they impede management goals and objectives. In selecting pest management methods, all techniques (including chemical, biological, mechanical, manual and cultural) are considered on case-by-case, project level bases. Methods are selected according to site-specific analysis of biological effectiveness, cost, and effects on human health and the environment.

**2. COMMENT:** It is possible to remove dwarf mistletoe by prescribed burning. Since mistletoe is species specific, monocultures run a much greater risk of spreading the infection. I have done mistletoe burns in uneven-age stands which doubled as thinning burns. It is also possible to fell the infected trees to provide more fuel to get a hot enough fire to scorch out the mistletoe. This is ignored in DEIS Appendices I & P. Prescribed burning can also

be valuable in keeping uneven-age stands from converting to shade tolerant species. (708)

**RESPONSE:** This is a technique with which we are unfamiliar. T.R. Peace, in *Pathology of Trees and Shrubs* (1962) p.165, indicates "...that flame guns have been used to destroy *Loranthus* on Eucalyptus in Australia. The mistletoe can be withered without seriously damaging the tree, but it is doubtful if the parasite would be completely killed, and in any case the method could be used only on low and easily accessible trees." We believe our analysis is adequate and will proceed as displayed in the Plan.

**3. COMMENT:** I believe the Plan should clearly provide that the Devil's Garden RNA must be fenced to exclude cattle and firewood cutters. (16)

**RESPONSE:** The Devil's Garden Research Natural Area boundary is signed. Livestock will not jeopardize the RNA because grazing is limited by water shortage. In addition, rimrock on the eastern border virtually prevents accessibility by woodcutters and livestock from that side. The Forest has no plans to fence the RNA.

**4. COMMENT:** The southward invasion of the tent caterpillar on dispersed bitterbrush may have a direct yet unsubstantiated effect on declining deer numbers. Was pest control not considered due to herbicide curtailment, or wait-and-see remedy approach taken? (558)

**RESPONSE:** The invasion is a natural occurrence. While it may have caused some short-term losses of bitterbrush, many seedlings are now establishing themselves. We foresee no long-term detrimental effects to deer populations.

**5. COMMENT:** Why aren't there predator controls of coyotes on the forest land? (914)

**RESPONSE:** Predator controls are established on national forest land by the U.S. Fish and Wildlife Service on site-specific bases. The Modoc NF has exercised predator controls, usually in connection with cattle and sheep allotments.

**6. COMMENT:** Also strange are the various "treatments" proposed. Animal "pests" that are denigrated and slated for "treatment" are rabbits, porcupines, deer (p. P-22) and even pocket gophers. Cutting down any vegetation "infested" with "pests" definitely cuts down on diversity, and many of those "pests" help facilitate soil production. You have a lot to learn. With regard to soils, there is a naked effort to downgrade erosional problems due to clear-cutting and logging, as well as cattle-grazing. It is simply assumed that this will continue (p. 4-135; p. 4-139). Long-term soil nutrient deficits are not dealt with except by the prescription of fertilizers (as in Iowa). The probable cause of the deficits, removal of soil nutrients in the form of logs, slash, firewood and beef, is not confronted directly. The physical presence, in inches, of top-

soil to be washed off the surface by rain and snowmelt in your proposal, has been the result of thousands of years of forest canopy producing leaf litter, branches, trunks and stumps. If it were not for this property of the canopy, and the protection of the canopy, there would be no soil. Yet it is precisely this that the clear-cutting alternative (or rather, all six clear-cutting "alternatives") seeks to dispose of. (1253)

**RESPONSE:** There is no attempt to denigrate any animal species. The animals listed in Appendix P are listed as major potential wildlife pests. The Forest recognizes interrelationships of the pest-host system. It also recognizes that insects, diseases, and destructive animals are important elements of forest and rangeland ecosystems; and are considered pests only when they impede management goals and objectives. In selecting pest management methods, all techniques (including chemical, biological, mechanical, manual and cultural) are considered on a case-by-case, project level basis. Methods are selected according to site-specific analysis of biological effectiveness, cost, and effects on human health and the environment. Clearcutting does not automatically mean there will be no soil. Logging debris can substitute for the canopy in the role of soil protection. The Forest has examples of clearcuts which we believe weathered the 1986 storms very well; the soil is still in place. Please refer to Forest Standards and Guidelines (Plan, Chapter 4) for a complete discussion of soil productivity.

**7. COMMENT:** Pests - Plan p. 4-29 D. - Add "to prevent human-related diseases". (73)

**RESPONSE:** Your suggestion has been incorporated into the final document.

## 111 - Herbicides

**1. COMMENT:** The Calif. Native plant society opposes the use of herbicides, especially if the cut requires herbicides to provide a certain level of sustainable yield. Herbicides may also threaten the soil microbes that forest ecosystems require. Too many unanswered questions pertaining to herbicides remain to be answered. MNF should develop a plan that does not depend on herbicides. (273) (1031) (1048) (1177) (1214)

**RESPONSE:** For all alternatives we assumed that all methods of vegetation management are available, including limited use of herbicides. In the event that herbicides are not available on the Modoc NF, we will modify the Plan to reflect expected changes in timber yields and costs. EIS Chapter 2, Section E assesses expected effects of manage-

ment on harvest levels and costs with and without the use of herbicides.

The Plan tiers to the EIS for Vegetation Management for Reforestation which was released in 1988. This document rigorously discusses all aspects of vegetation management which includes the use of herbicides for reforestation, including a human health risk assessment.

Herbicide use, as well as other vegetation management activities, will be determined during site-specific project planning and documented in Environmental Assessments or Environmental Impact Statements as the project warrants.

**2. COMMENT:** Herbicides were not adequately addressed as an accompanying "tool" of even-age mgt. (27) (169) (333)

**RESPONSE:** Because the use of herbicides greatly concerns many publics, the Regional Forester has released a separate EIS specifically addressing the control of vegetation including the use of herbicides. The Plan tiers to the Vegetative Management for Reforestation EIS. In his Record of Decision, the Regional Forester noted in part that he had selected Alternative 1 (Emphasize Local Management Flexibility - Modified) to be the Regional policy. Alternative 1 allows the full range of methods for controlling competing vegetation, including the limited use of herbicides. The decision was made after fully considering physical, biological, economic, and other social effects of the eight alternatives fully analyzed in the EIS. Based on the EIS risk assessment and additional constraints required by the Regional Forester for the use of herbicides in this Region, we believe that any risks associated with herbicide use will be kept to acceptable levels; levels comparable to those commonly accepted by people in everyday life, such as driving cars or flying airplanes. In general, the modifications to Alternative 1 are:

- The use of herbicides containing inert ingredients listed by the U.S. Environmental Protection Agency (List #1 or #2) is prohibited except for herbicides in which fuel oil is the only listed inert ingredient.
- No herbicide will be used that is listed by the State of California in compliance with the Safe Drinking Water and Toxics Enforcement Act (Proposition 65), without first receiving a safe-use determination from the State Health and Welfare Agency.
- The herbicide fosamine will not be used because human health risks could not be adequately evaluated in the EIS; the available data for cancer and chronic toxicity are too limited.

**3. COMMENT:** We're supposed to borax our stumps. You're promoting the welfare of the wildlife and keeping

from endangering species, but we're putting out chemicals there which the Forest Service wants us to do. (1388)

RESPONSE: Borax is a chemical and, as with any chemical, its use should not be taken lightly. Borax is used to treat recently created stumps to inhibit the entry and eventual spread of *Fomes annosus* root disease. The use of this chemical in the manner prescribed on the label is not known to pose problems for wildlife or the environment.

## 120 - Geology

1. COMMENT: Areas within the Forest subject to particular geologic hazards should be shown on a map. Specifically, those areas identified as having a high probability for landsliding, mud flows, earthquake shaking and liquefaction, fault rupture, flooding, expansive soils, and accelerated erosion should be shown. Perhaps this will be done for the forest geologic resource inventory (GRI), but it should also be included here. (364)

RESPONSE: The Analysis of the Management Situation (AMS) for Geology includes maps displaying areas with a high probability for mass wasting and areas of known seismic activity, i.e., recent faults. The AMS is available for review in the Forest Supervisor's Office. We will develop site-specific information on a project-by-project basis. The level of detail will depend on our preliminary assessment of the probability of a geologic hazard occurring in the area.

2. COMMENT: Plan (page 3-13): we recommend that the GRI be incorporated by reference or in total, if feasible, into the final Forest Management Plan. (364)

RESPONSE: We will complete an order 2 and 3 (GRI) for landslides during FY 91-92. We will include the results from the site-specific survey in environmental analyses for future activities. Forest-wide Standards and Guidelines require that management activities protect resources from geologic hazards.

3. COMMENT: A geologic resources inventory should be completed in the 1st decade before the next planning round. The soils map and timber suitability determinations should be evaluated again when it is completed. (1260)

RESPONSE: See previous response.

4. COMMENT: The discussion of the geology of the Forest (page 3-52, et seq.) is much too brief to allow an accurate analysis or evaluation of geologic resources or geologic hazards. (364)

RESPONSE: The Analysis of the Management Situation (AMS) for Geology is a detailed description of Forest geology. The AMS is available for for public review at the Forest Supervisor's Office. In addition, the bibliography section of the Forest DEIS lists references offering a detailed geologic description of the Forest.

5. COMMENT: We [failed to find] "seismicity" in the glossary. (1263)

RESPONSE: The word was used in error. We replaced it with "seismic activity".

## 121 - Soil, General

1. COMMENT: Practices will not reduce soil organic material. Adopt soil compaction standards 1-4 in soils page 4-34 to #4, add in a manner that does not cause soil volume loss. The surface layer of organic material will be maintained. Trees will be planted through this material. Lop and scatter slash. Avoid any practice that destroys or retards mycorrhizal development. Adopt soils standards C, D & E on page 4-35. (500)

RESPONSE: Recent scientific research has shown the importance of maintaining adequate amounts of large and small organic material for maintaining long-term soil productivity. The soils standards and guidelines in the Plan include large and small organic debris. These standards and guidelines also outline to what extent we will allow compaction or soil volume loss. All soil-disturbing projects on the Forest are evaluated on a project-by-project basis with the intent to meet at least these minimum amounts.

2. COMMENT: Range site development and mapping: It is apparent that the level of intensity of MNF soil survey is too broad in which to permit an accurate delineation of range sites on the MNF. Attachment 1 provides the results of a review of a draft copy of the MNF Soil Survey manuscript performed by Mr. Chuck Saulisberry. Saulisberry is the former range site soils coordinator for Nevada (SCS liaison to BLM State Off.) and was instrumental in the development of the Surprise Valley-Home Camp area soil survey, which is included within the MNF soil survey boundary. Excerpts from attachment #1 which refers to the MNF draft soil survey include the following:

"My main concern with the survey is that the family-level mapping with only a few phases of soil families included, presents a much too broad taxonomic unit on which to try to closely tie a potential plant community. The series-level surveys bordering the MNF do a much more refined job and present a significant contrast to the MNF work."

"The MNF mapping attempted to develop range sites on their family level taxons without enough attention given

to phasing families so as to tightly restrict the plant community interpretation. This cannot be done using only general soil family characteristics. A count of the rangeland soil families shows that over half of them have been assigned two or more range sites."

"Inclusions shown on the Map Unit Descriptions (MUD) range up to 35%! Most of the MUDs are in the 20-25% range, and this may be accurate in view of the broad description needed to describe the soil family characteristics. The MNF mapping has up to 9 soils or land forms in their inclusion."

"The broad nature of the potential plant community description is shown by having both big sagebrush and low sagebrush in the same community in several sites. Normally this is not done, as production potentials for these species are vastly different and their environmental needs are not similar."

"If MNF persists in their efforts to hold to their determinations, then I would urge them to delete all references to inferences to the use or viability of SCS soils-site data which is not being used as intended. MNF should also refrain from using the term 'range site' which is widely accepted as the SCS term, and should develop their own terminology for NF plant communities."

Would the MNF concur that their delineation and determination of the extent of range sites on the forest represents a very rough estimate, and as such, that the estimate of current carrying capacity could be in error? (1217)

RESPONSE: The MNF Soil Resource Inventory (SRI) Order 3 is a reconnaissance level soil survey. It was designed for forest level planning, and for preliminary project level planning. With proper field verification SRI 3 soil surveys can be used for detailed resource management planning and for project level planning. The primary determinants in the design of capability areas in the LMP data base were *vegetative maps* in combination with the MNF SRI Order 3 soil maps. For the east side of the Warner Mountain Ranger District, the Surprise Valley-Home Camp soil survey, authored by the SCS, was used. This combination of soil and vegetation mapping, in addition to the high degree of documented SRI Order 3 qualifies these capability areas and the range sites assigned in the LMP data base as being adequate for detailed or project level planning purposes.

Why the high percent of inclusions and so many included soils in the map units? The percentage of inclusions in a typical SRI 3 map unit represents about 15-20% of the unit area. These inclusions represent every soil type, or land form which were observed in the unit during the field mapping. This includes dissimilar as well as similar soil types as mapped in the unit. In contrast, the SCS will only note the dissimilar soil types which may effect differences

in use and management, even if many included soils were recognized during mapping. An average of 15-20% inclusions is not out of line with National Cooperative soil survey standards and SCS policy, especially when this includes similar as well as dissimilar soils. Kinds and percentages of inclusions were approved by the SCS for the final correlation of the Modoc National Forest Soil Resources Inventory.

Why do many soil map units have two range sites identified for one named soil in the map unit description? Our mapping unit design and range of soil characteristics for each named soil in the map unit closely follow the SCS guidelines as set forth in the SCS National Range Handbook and the SCS California Notice #1 supplement to the above. Where these guidelines are not met in a mapping unit soil type, two range sites are listed with the first being the most prominent.

We find that low sagebrush exist on the shallower sites while big sagebrush exists on the deeper end. In fact, we typically find a low sagebrush/big sagebrush break at about the 14-16 inch soil depth on the Modoc Plateau Geomorphic Province. This is why we have described low sagebrush and big sagebrush as being in the same range site when soils may range from 10 to 20 inches in total depth.

Should we delete all references to the use of SCS soils and range data and drop the term "range site" from our soil survey manuscript? It should be emphasized again at this point that the MNF Order 3 soil survey is part of the National Cooperative soil survey effort which is administered by the SCS. We have had a memorandum of understanding with the SCS since the beginning of the survey effort. The SCS, as the leading agency, has participated in the preliminary review, at least five yearly progress reviews, the final field review and the final correlation review of our soil survey. For the past two years, the SCS has been reviewing and performing any final editing of the MNF soil survey manuscript for GPO publication. As in past reviews, the SCS will either make or suggest changes they feel are appropriate.

Pursuing this "range site" term one step further—the *Range Inventory Standardization Committee Society for Range Management* has suggested that the term "ecological site" would be better to use in lieu of either "range site" or "habitat type".

Does the MNF concur that these range sites give only a "very rough estimate" of carrying capacity due to our "delineation and determination of the extent of range sites on the Forest" and "that the estimate of current carrying capacity could be in error"? We feel that the MNF SRI Order 3 and the Surprise Valley-Home Camp soil survey, in combination with the 1:15,840 scale aerial color photo vegetation maps, has given us a reasonably accurate



delineation and determination of range sites on our Forest, both for this Plan and for preliminary allotment planning. Because there is *not* a strong linear correlation between range condition and forage availability, our estimate of carrying capacity is suitable only for programmatic planning. We will determine actual carrying capacity on the Forest and initial allotment stocking levels on an allotment basis through site-specific analysis and monitoring.

**3. COMMENT:** RCI provides the following recommendations to the MNF's Plan and DEIS. Please note whether MNF will adopt these recommendations, or if not, the rationale behind rejecting them.

**MNF should list their deviations from SCS methodology for determining range condition, clearly state that the assumption of range condition being linearly correlated to forage availability is not advocated by the SCS, and that the MNF "range sites" should be distinguished from SCS "range sites" since the two are not synonymous.**

**RESPONSE:** Please refer to the previous response concerning the term "range sites". The methodology for determining range condition in R5 is similar in most respects to that of the SCS. The major difference is that the SCS uses key indicator plants from that particular range site potential plant community in which condition is being measured, whereas R5 uses a master list of desirable species found in our regional range handbook. The Parker 3-step line transect, or semi-permanent condition/trend plots are the normal methods used in this determination.

It is true that the correlation is not linear between forage availability and range condition. We have rewritten range site descriptions in the MNF SRI Order 3 manuscript and no longer include this correlation.

**4. COMMENT:** The more marginal the timber site, the more organic material needs to be enhanced and protected. Much of the <20 timberlands and even the 80-20 timberlands are probably dependent on the water holding capacity of organic material and 200-300 year old buried decomposed large stems. Management practices that destroy this structure of these important ecological conditions and proposals to create bare mineral soil and windrow and burn are guaranteed to reduce long-term soil productivity.

**Measurements of soil organic material and bulk densities to determine levels before timber harvest on all sites proposed for timber harvest are needed. Future timber harvest should not occur until these factors have recovered to the pre-harvest levels. (1260)**

**RESPONSE:** We expanded the soil standards and guidelines in the Plan to include maintaining at least minimum desired levels of both large and small organic material.

Presently the Forest Experiment Stations and the Forest Service are working under a national cooperative agreement to do an in-depth study of the above issues on various benchmark soil types. The results from these studies may help us to refine S&Gs.

**5. COMMENT:** Plan 4-34—Soils S&G: A. (1) What is the "total allowable soil loss" used here? It should not be based on T-values used by the SCS. These are inappropriate for forest and rangeland sites. The Forest should use its best estimate, but in any event, should not permit erosion to exceed 500 lbs/ac/yr, on the average. (107)

**RESPONSE:** Soil loss tolerance "T" values were originally developed by the SCS for use as soil loss threshold values for maintaining long-term soil productivity. They were set up for use on agricultural and rangeland soils. Since that time, research has shown that natural soil formation rates are normally less than these assigned "T" values which range from 1 to 5 ton/ac/yr. Literature review by Earl Alexander, current R-10 Regional Soil Scientist, indicates that soil formation rates tend to range from about 1/4 to 1 ton/ac/yr. Under the Soils Standards and Guidelines section of the Plan we have set the allowable soil loss at 1 ton/ac/yr. This is based on the above literature review, and on our best estimate of what amount can be tolerated. In addition, during project work if we determine that 1 ton/ac/yr limit is too high for a soil type, we will assign the lower limit. That can range from less than 1/4-ton to 1 ton.

**6. COMMENT:** Plan 4-34—Soils S&G: B. (2) What is meant here by "fertilization" and why are fertilizers being used on our public lands? We oppose the forest plans to support agri-business by buying its "fertilizers" to artificially increase productivity which is being damaged by uncorrect livestock (and other) management problems. Doesn't this conflict with the Forest Plan commitment to improving water quality and riparian area conditions? (107)

[Same comment for 4-119—RX #11]

**RESPONSE:** Fertilization is an important silvicultural, range and wildlife management practice as well as an important soil and watershed rehabilitation practice. It is not intended to be used indiscriminately or take the place of other management tools such as proper livestock management. Fertilization can be used to increase growth, shorten periods of growing vegetation to a target size, increase growth in certain size classes to fill gaps in size class distributions, capture sites faster, and maintain or restore soil fertility where it has been lost. A standard 100 to 200 lbs/ac nitrogen application using urea fertilizer



under typical forest soil conditions results in none to only very minimal nitrogen leaching below the root zone. In addition, our own management constraints for fertilization projects prohibit fertilizer applications in riparian areas and stream zones. When these precautions are implemented, water quality and riparian zones are not significantly impacted.

**7. COMMENT: Pg 4-34 soil compaction: (1) Why not invoke these measures when soil moisture reaches plastic limit? Pg 4-34 erosion: (1) What is the documentation for this 10 to 20 year theory? Pg 4-35 erosion (2) "parallel to the slope" should be on contours? Pg 4-35 (3) range from 10-25 feet should be 10 or 25 feet? Pg 4-35 b. (3) What are "priority conifer plantations" and what are "subsequent site release treatments"? (126)**

**RESPONSE:** In response to public comment, we rewrote the soils Standard and Guideline section of the Plan. Most of the wording in your comment was changed. Priority conifer plantations refer to those plantations where soil or foliar nutrient analysis has shown a nutrient deficiency and a good response to fertilization is expected. Subsequent site release treatments refer to the idea that if a good response was indeed achieved, then the trees would then be well above the competing vegetation; and later treatments to reduce this vegetation from destroying the plantation would, therefore, not be needed. For the compaction comment, please reference the (1266) response below.

The 10-to-20-year figure mentioned on page 4-34 of the Draft Plan is expressing the normal time span between planned re-entries of a typical timber harvest unit. Management activities for that entry period will not exceed the total allowable soil loss for that time period. For example, if a commercial thin is planned in year 80 and followed in year 100 by a final harvest, then not more than 20 tons/ac of soil loss will be tolerated during that 20-year period.

**8. COMMENT: Pg 4-34 Soils—I find no prescription provided for high erosion hazard and mass movement areas. I question any logging, especially clearcutting, within these eastside watersheds. 37% of the water produced on the Forest does not meet established water quality objectives. I see evidence of such degradation in Mill Creek and other eastside streams, particularly during spring runoff and summer rains. I would urge all possible protection to the eastside Warner watersheds.**

**Pg 4-35 Soils. Erosion (3.)—mechanical vegetative disturbance. This statement conflicts directly with SMZs (listed DEIS 3-94). No vegetative disturbance mechanical or otherwise should be allowed within the 50-250 ft. width on stream class and side slope. This should be corrected.**

**Pg 4-39 21. Water—I repeat all objections made under soils above. (333)**

**RESPONSE:** We will address these concerns on a project-by-project basis. Generalized prescriptions and standards and guidelines for the Plan were not developed to document all possible strategies we may use to limit erosion; mass wasting, etc. for different watersheds, harvest units or project areas. The Soils AMS lists many measures to minimize erosion or mass wasting which are used in project prescriptions. During project planning, we specify and clearly define Best Management Practices and recommended soil conservation treatment measures relating to soil productivity protection for individual projects. Through proper project planning and implementation of these measures, we can manage all forested soils on the Modoc for timber harvest, including clearcutting in most cases. We may need to alter the size and spacing of clear-cut units, or even defer for a future re-entry period to mitigate the potential for high mass wasting or erosion hazard.

Concerning SMZs vs. natural drainage buffer widths, we are actually talking of two separate areas. The SMZ, as mapped and defined by the Hydrologist for water quality protection, normally includes prominent lower and mid-slope streamside zones with riparian vegetation. Surface water can be year-round to intermittent. Natural drainages mentioned in Section 4 (Soil S&G's) represent those areas not mapped as SMZs but still in need of protection due to excessive erosion which could be caused if disturbed. These areas normally represent the upper slopes of watersheds; surface water is normally only present during spring runoff.

**9. COMMENT: 3-29. Fertility. This section should address selenium levels in the Modoc NF soils and the potential impacts to wildlife. Low selenium may have been a contributing factor to the bighorn sheep die-off at the Lava Beds National Monument. (364)**

**RESPONSE:** Selenium levels on our soils tend to be very low. Tissue analysis of deer browse species both before and after an application of nitrogen and sulfur fertilizer showed selenium levels well below the accepted minimal amount needed by animals. The fertilization had no effect on foliar selenium levels. On the positive side, if a small amount of selenium were added to the fertilizer mix, foliar selenium levels could be brought up to desired levels. Prior to adding selenium, biological data will have to be substantiated. Because the level of selenium is typically low, it is unlikely a factor leading to big horn sheep die-off. See EIS Chapter 3—*Affected Environment*, wildlife, section 24.

**10. COMMENT: Evaluate all projects for soil water holding capacity changes. Exclude all consumptive and disturbing activities where soils or watersheds have been**

degraded and need restoration. Close areas with extreme and high soil erosion hazard ratings to off-highway vehicle use. Limit OHV use to existing roads and trails on soils with moderate erosion hazard ratings.

Monitoring is a part of the Forest Plan. Follow Best Management Practices while providing gravel and services to the public. Evaluate and modify any action that causes deleterious impacts. (500)

RESPONSE: Historically, most of the Forest has been open to OHV use in one form or another. Over the years this has resulted in unimproved trails becoming established in most areas. Due to the topography and layout of the land, these trails and OHV use areas tend to be congregated on the less sloping upper side slopes and ridgetops of soil map units and watersheds which may have an overall high or very high erosion hazard rating. In reality, OHV trails tend to be most prominent on areas which would have low or moderate erosion hazard potential if a more detailed soil survey were made.

The Plan contains specific management area direction for OHV use in sensitive areas. Sensitive areas include soils with a high or very high erosion hazard rating. Management area direction states, "On sensitive watersheds and other sensitive areas allow, OHV use only on established roads and trails...Restrict use or obliterate roads and trails, when necessary, to protect the soil resource and maintain water quality." This direction specifically applies to MAs 31, 32, 33, 34, 36, 42, 43, 44 and 61. Reference also Recreation standards and guidelines in Plan Chapter 4.

11. COMMENT: On soils identified as low in regeneration potential, activities which will favorably modify the microclimate to help ensure regeneration success will be planned. On soils identified as having a potential for mass-wasting, harvesting activities and road-work will be designed to reduce the risk. (500)

RESPONSE: This is precisely the sort of input that Soil Scientists working with other members of project teams develop when formulating alternatives on a project-by-project basis. These measures are incorporated into the analysis of site-specific projects.

12. COMMENT: Highest priority should be placed on protecting soil fertility. Erosion rates in excess of soil formation rates cannot be tolerated. Decline of soil organic material content must likewise be avoided. Compaction and removal of lands from timber production through road and landing construction should be minimized. (686)

RESPONSE: We agree. See previous responses and soil standards and guidelines in Plan Chapter 4.

13. COMMENT: Any prescribed burning for fuels management or site preparation should evaluate effects on soil fertility and nutrient cycling. (972)

RESPONSE: We evaluate these effects for each site-specific project. We incorporated into the Soil S&G section of the Plan new soil productivity guidelines which specifically relate to maintaining soil fertility and nutrient cycling through maintaining at least minimum amounts of large and small organic debris and soil organic matter.

14. COMMENT: Topsoil disturbance should be kept at absolute minimum levels. The damaged acres are of great rehabilitation concern. Emphasis for funding and project priorities should be on the stopping and healing of accelerated erosion on the 10,000 acres mentioned. New road construction should be prohibited in sensitive or sloping areas to limit further soil disturbance. (1030)

RESPONSE: We agree that topsoil disturbance should be minimal and that first priority should be to rehabilitate those acres subject to accelerated erosion. See the Soil S&G section in Plan Chapter 4.

We will analyze new road construction in sensitive watershed areas on a case-by-case basis. If we determine that a road cannot be developed without causing excessive soil erosion, mass movement or water quality degradation, then we will not permit its construction.

15. COMMENT: An increase in the ESI over the fifty-year planning period does not provide us with much confidence that water quality and associated beneficial uses will be protected in the future. The ESI for the Preferred Alternative in decade 5 is actually higher than for the Industry Alternative. Please explain. (1068)

RESPONSE: The ESI of 111 under the Preferred Alternative is marginally higher than the 110 under the Industry Alternative in the 5th decade. This is primarily because we have planned more acres of wildlife improvement projects and more livestock grazing AUMs for this decade under the Preferred Alternative vs. the Industry Alternative. Note in the EIS that the ESI is only an "indicator of potential erosion and sedimentation". By implementing BMPs, Soil and Riparian standards and guidelines, and sound conservation treatment measures on the ground, actual on-site and off-site erosion or sedimentation would remain in check—even under the worst case ESI of 151 under the RPD Alternative.

16. COMMENT: The California Native Plant Society is concerned about proposals to use seeding for erosion control. What types and sources of seeds are proposed?

CNPS advocates using only native seeds collected from the local region. (1214)

**RESPONSE:** We decide types and sources of seed at the site-specific project level. We normally select the types of seed from already established and desired varieties in the nearby areas. We use non-native types where the need for rapid establishment is driving concern. In the wilderness area, only native species will be used.

**17. COMMENT:** How was the "series" level soil survey (i.e., Surprise Valley-Home Camp soil survey) incorporated into the family level MNF soil survey in terms of range site delineation? Was current forage production within the Surprise Valley-Home Camp soil survey area which lies within the MNF considered in the total available forage figure for the MNF?

Why were Surprise Valley-Home Camp Range Sites 23-1 and 23-7 listed in Appendix G of the MNF draft soils report but not assigned soil taxons? Conversely, why were Range Sites 23-18 and 23-20 not listed?

How was range site data within the Surprise Valley-Home Camp soil survey incorporated in MNF soil survey? Does MNF contend that the correlation of 4 different range sites to 1 soil taxonomic unit is consistent with SCS criteria?

How do the existing SCS range sites which were utilized in the documents correspond to the MNF range sites (i.e., SCS Range Site 23-17 corresponds to which MNF range site, etc.)?

In relation to those range site descriptions which were developed "in house" by MNF, how many years of clipping data were they based on? Were relict study areas used as a basis for these range site descriptions?

Did MNF utilize the previously collected range analysis vegetation mapping results, which was performed in the 1960's to delineate the extent and location of range sites within soil families? (1217)

**RESPONSE:** Yes, we used the Surprise Valley-Home Camp (SV-HC) soil survey in considering total forage production on the Modoc N.F. The SV-HC soil survey was never incorporated into the Modoc N.F. SRI 3 soil survey. It was never meant to be. These documents represent two separate National Cooperative soil survey areas.

Yes, the forage production estimates from the SV-HC soil survey were included in the total available forage figure for the Modoc National Forest. We used range site data from the SV-HC soil survey, as well as range site data from several other adjacent SCS soil surveys, essentially as sideboards in formulating similar ranges sites and correlating estimated total forage production on similar soils with similar climatic conditions on the MNF.

There is no Appendix G. in the MNF SRI 3. We suspect you must be referencing some other report — perhaps the Range Analysis of the Management Situation. SV-HC Range Sites 23-1, 23-7 and 23-20 were assigned 2-digit codes in the LMP data base and are represented by 53, 50 and 56 respectively in the data base. Their use is described in the SV-HC Survey. Range Site 23-18 was never assigned a new 2-digit number because very few acres occur on the Forest. For productivity purposes it was correlated with the MNF SRI 3 Range Site 18. For comparison, the productivity estimate in a favorable year is 900 pounds/ac for the SV-HC 23-18 Range Site vs. 1,000 pounds/ac for the MNF SRI 3 Range Site 18.

A soil family will have from one to four (normally one or two) range sites assigned to it depending on its phase, moisture regime, or total soil depth. A couple of our soil family names have more than one range site assigned. When mapping soils at the family level, soil taxonomy is used plus normally the "common family name". The MNF mapped the Deven Family soil which is a Lithic Argixeroll in soil taxonomy. Lithic Argixerolls can be mapped in both aridic and xeric moisture regimes, which is exactly what we did on the MNF as advised by the SCS in one of their yearly progress review visits. This was carefully explained in the Deven Family soil pedon description under Range of Characteristics. In other words, soil scientist can readily discern from reading this pedon description that the author is actually describing the equivalent of two separate soils (if mapped at the series level). Those Deven Family soil map units mapped in the dryer aridic moisture regime represent one soil type under dry rangeland areas, while those mapped in the xeric moisture regime represent the other soil type mapped in the more moist rangeland areas. The extent and location of a soil family was first mapped in the field. The range site was then tied to this delineation — not the other way around.

Range site data from several adjacent SCS and BLM soil survey areas were used and compared with similar range sites and estimated total forage production for similar soils with similar climatic conditions as found on the MNF. This range site information from adjacent survey areas supplied us with examples, numbers and sideboards to keep us on line as we developed our own range sites. The range conservationist assigned to this task of developing range sites worked closely with the Forest Soil Scientist and with other range and wildlife specialists on each of the districts and those in the Supervisor's Office. All existing rangeland information pertinent to this project was used and analysed.

**18. COMMENT:** DEIS 4-139 [irreversible or irretrievable commitment of resources — soils]. What is worse case loss under each of the land-disturbing activities annually or by decades and alternatives? (1248)

## 122 - Soil Productivity

**RESPONSE:** Irreversible and irretrievable impacts are discussed in EIS Chapter 4—*Environmental Consequences*.

**19. COMMENT:** Increases in soil organic matter and decreases in compaction could be used to demonstrate improving range condition for all condition classes. (1260)

**RESPONSE:** This might be possible, but would be very costly to implement. Other methods (such as periodically monitoring potential plant community vegetative species condition and trend, or constructing semi-permanent silt fences to capture and measure amounts of soil erosion from a portion of a watershed) might prove more cost effective.

**20. COMMENT:** Standards and Guidelines on p. 4-34, The maintenance of long-term soil productivity. Entirely appropriate since the underlying soil is the basis for the well-being of all resources. However, the discussion proceeds to restricting skid trails to 15% of harvest area and using predesignated skid trails without qualification. Qualifiers, such as “when soil moisture dictates” or “as necessary,” would be appropriate. Otherwise, restricting skid trails to 15%, even in dry conditions on pumice soil, would preclude use of mechanical feller-bunchers, an unnecessary restriction. The requirement to yard cull logs some unspecified distance to achieve two to three logs per acre (all acres?) as discussed on p. 4-48 of the LMRP does not appear to be a very economic activity and again is presented outside the context of alternatives. (1266)

**RESPONSE:** We have rewritten the soil standards and guidelines. Please note the new wording addressing your comments in Plan Chapter 4.

**21. COMMENT:** Plan 2-6—Water and Soil: Good! Pg 4-34 (17) A: Soil compaction—good guideline. Pg 4-35 17 A: Erosion 3—Sound standard. (107, 1153)

**RESPONSE:** We appreciate your positive comments in these areas.

**22. COMMENT:** Upon completion of the Forest-wide geological inventory the soils inventory will be re-examined. (500)

**RESPONSE:** Forest-wide S&Gs (Plan Chapter 4) already direct that we will field-verify the soils inventory, or that we will complete a more detailed soil survey wherever major soil-disturbing activities are planned. We will follow

this direction regardless of whether a Forest-wide geological inventory is completed.

## 122 - Soil Productivity

**1. COMMENT:** Is basic soil productivity sufficient to support a long-term sustained yield of 75 MMBF? If so, would timber cutting need to be increased or included in certain areas to a greater extent than is the case in your Preferred Alternative? What kind of areas? What would the environmental effects be? (1021)

**RESPONSE:** Information from draft and published soil surveys which cover the Modoc National Forest indicates that the Forest’s basic soil productivity is capable of sustaining 75 MMBF. This, however, would mean that essentially all capable, available and suitable acres would be managed for timber production with little regard to other resource needs. This could be done in a manner which would maintain the resource; however, the cost for doing business and protecting the soil would increase, as we would be working more intensively and on acres of marginal and sensitive lands.

**2. COMMENT:** Management direction and S&Gs do not recognize the importance of maintaining soil organic material. (1260)

**RESPONSE:** The final Plan includes soil S&Gs for maintaining minimum amounts of large and small organic material for nutrient cycling and soil microbial activity. See Plan Chapter 4.

**3. COMMENT:** Modoc National Forest has extensive areas of friable soils, especially volcanic types, which the Forest recognizes as requiring special management and regeneration attention. We recommend that the SMA specifically account for these highly erodible situations, extend the protection area and prevent any forest activities that would result in erosion. (1295)

**RESPONSE:** We will analyze all proposed management activities which result in soil disturbance at the project level, when we can better identify the soil resource. Through an interdisciplinary approach, we will design management activities to protect the soil and maintain productivity while also providing goods and services to the public.

**4. COMMENT:** 4-18. Table 4-4, continued—Soil and Water—second paragraph: What does all this mean? (SRI Order 2, noninterchangeable areas, SRI 3 map units, etc.). (364)

**RESPONSE:** SRI is an acronym for Soil Resource Inventory. Soil scientists recognize five (5) orders (levels) of inventory. Order 5 is the most generalized reconnaissance

level, whereas Order 1 is the most detailed or site specific. An Order 2 inventory is still considered a detailed level soil inventory and is normally the accepted level for city, urban development, or farm management planning where agriculture is more intensively practiced. An Order 3 SRI is the most intensive of the reconnaissance level soil surveys (i.e., Orders 3, 4 and 5 are all considered reconnaissance level surveys) and is normally the accepted level of survey for forest level and rangeland planning purposes. SRI 3 map units are normally a two- to four-digit symbol on the soil map which is used to identify the soil mapped. These symbols are linked to the descriptive map unit which describes the soil(s), including many interpretations for use and management. Non-interchangeable is a term used to describe soils that are marginal as to commercial timber capability and/or suitability.

## 125 - Landslides

**1. COMMENT:** DEIS (page 4-43) a rating "high" is assigned to 15%, and no land assigned to a moderate or intermediate value. The lack of any land in the intermediate category seems unlikely, but no explanation of the rating (category) system is provided. We recommend, that a full explanation of the mass wasting potential scheme employed here be included in the final EIS. The final EIS should indicate whether mass wasting, includes the process of creep and whether the low potential for mass wasting would still apply to 85% of the Forest. (364)

**RESPONSE:** We will complete a Forest-wide Geologic Resource Inventory during 1990-1991. At that time we will delineate the moderate to low risk areas. We believe that most resource impacts are associated with high-risk areas; so we identified those areas first.

## 126 - Best Management Practices (BMPs)

**1. COMMENT:** It is difficult to evaluate whether BMPs will adequately protect the 350,000 acres of high or very high erosion hazard, 16,000 acres with high potential for mass movement, and 10,000 acres currently experiencing accelerated erosion. The Plan does not say whether these acres are on suitable timber land. (708)

**RESPONSE:** The acres you mention represent a compilation of all acres on the Forest which would fit these categories. Most are on moderate to steeply sloping rangeland soils unsuitable for commercial timber production. All these acres will be adequately protected and rehabilitated as necessary. We ensure protection on these areas through range allotment management plans, timber sale environmental assessments, and the judicious use of water quality BMPs and soil conservation treatment measures.

We will design watershed rehabilitation projects where needed to stabilize soils and enhance its productivity.

**2. COMMENT:** Strongly support efforts to monitor compliance with best management practices and to evaluate water quality and stream stability. More frequent evaluations than the proposed annual evaluation of BMPs where the situation warrants. Field logs of BMP compliance should be maintained at least weekly by the project coordinator and should not be left to an end-of-year evaluation. (1068)

**RESPONSE:** The annual monitoring as shown in the Forest Plan Chapter 5 represents only the compliance check and report for compliance with the Plan. We continue to monitor BMPs on a project-by-project basis.

**3. COMMENT:** These documents both recognize and support the requirement to meet Basin Plan water quality objectives, and that this is best accomplished using section 208 approved BMPs. This is as specified in the 1981 management agency agreement between the State Water Resources Control Board and the United States Forest Service. (194)

**RESPONSE:** Approved BMPs represent a crucial list of management tools which the Forest Service has been given responsibility to implement to meet water quality objectives. We recognize their importance and will comply with Plan direction and management agency agreements in their implementation.

**4. COMMENT:** The DEIS and Plan seem to assume that BMPs along with limited habitat improvements (e.g., 1.5 miles of stream improvement per year) will result in increased fisheries potential. Our experience indicates that fish and wildlife resources usually lose to budget cost considerations, inadequate consideration of fish and wildlife relative to other forest uses and inadequate implementation of BMPs. Fishery resources have not received adequate consideration in the past because the Modoc NF has not had a single fishery biologist on its staff. In order for fishery resources to be protected, qualified fishery biologists must be on the staff to participate in the Planning and evaluation process. (364)

**RESPONSE:** Since December 5, 1988, a fishery biologist has been on staff on the MNF. Fishery budget in the region has been on the rise for the last 4-5 years. The region has adopted "Integrated Approaches to Riparian Area Management" that advocates internal and external partnerships to promote efficient expenditure of funds in the improvement of riparian areas. Partnerships with range, fisheries, wildlife, timber and watershed have increased

funding for riparian-dependent resources. We expect this trend to continue.

**5. COMMENT:** Vague references to BMPs and lack of funding priority lead us to question the adequacy of the Plan, and the Forest Service's commitment to manage the Forest for uses other than timber harvest and livestock grazing. (671)

**RESPONSE:** We plan, design and implement BMPs at the project level for all management activities which may have an impact on water quality. At the Forest Plan level, it is impossible to provide details because BMPs are project- and site-specific. The BMP Handbook which contains a detailed description of each BMP is available for inspection and distribution to the public.

**6. COMMENT:** Plan Appendix N: However, broad, LRMP-DEIS are specific to the ground and species consideration and need a broad baseline of specific resource inventories, data. The project-by-project level applications of BMPs to specific sites are determined by specific land based LRMP-DEIS policy and strategies, like livestock allocations, namely exclusion from riparian areas. Based on specific knowledge of livestock impacts, conflicts, LRMP-DEIS can obviate some projects, recommend others. (1248)

**RESPONSE:** We conduct environmental assessments of all resources at the project level planning phase of all proposed management activities.

**7. COMMENT:** Support increased protection of streams, meadows and other water bodies from effects of logging and road construction. (1257)

**RESPONSE:** We agree. See previous response.

**8. COMMENT:** Modify timber sales contracts if new circumstances indicate that irreversible soil or water damage will occur. Adopt BMPs as minimum standards for timber practices. Evaluate BMPs for applicability to Modoc. Test assumptions and results of BMPs by monitoring. Monitor water quality to determine baseline conditions and effects from timber management activities. (500)

**RESPONSE:** We agree. Your suggestion and the intent of the Forest Plan are the same. We do and will continue to use BMPs for maintaining or improving water quality.

## 130 - Cultural Resources

**1. COMMENT:** ...apprehension and prosecution of anyone who destroys cultural resources. (500)

**RESPONSE:** People caught damaging, destroying or illegally removing protected cultural resources will be prosecuted for violation of one or more of the following: Antiquities Act of 1906, Public Law 59-209, Archaeological Resources Protection Act of 1979 and 36 CFR 261.9 (g,h).

**2. COMMENT:** There is no mention of specific objectives within the life of the Plan. Several important aspects of cultural resource management are not adequate: standards for evaluation of property types; monitoring schedule for known sites for natural degradation or vandalism; the lack of consistent procedures for project-related inventory/evaluation; the lack of a Comprehensive Cultural Resource Management Plan (CCRMP). (1316)

**RESPONSE:** The Preferred Alternative identifies as a goal a complete inventory of cultural resources for the Forest by the year 2050 A.D. We use current criteria for evaluating sites for National Register of Historic Places eligibility to determine site significance. Plan Chapter 5—*Monitoring* includes a cultural resource monitoring schedule. Procedures for project-related cultural resource inventory and evaluation are identified in Section 106 of the National Historic Preservation Act of 1964 (as amended) and counterpart Forest Service Manual direction. We have no plans for a separate Comprehensive Cultural Resource Management Plan (CCRMP); however, Chapter VIII of the Forests' Cultural Resource Overview (1983) presents some recommendations to that effect.

**3. COMMENT:** In general, the cultural resource standards and guidelines for management areas are not really standards and guidelines but specific performance objectives. As performance objectives, they completely lack any specific planning information of how or when they will be accomplished, and are not supported by the DEIS for the Preferred Alternative for the Forest. For example, portions of two historic trails, the Lassen/Applegate emigrant trails, are located within the Fandango, Stone Coal, North Adin, Devil's Garden, Crowder, Happy Camp, Steele Swamp, and Clear Lake management areas. Although there is a stated objective to inventory and nominate the trails to the National Register of Historic Places, there is nothing in the Plan to support the objective. This is the same situation with the important obsidian sources in the Fandango, Lake City, Patterson, Medicine Lake, and Black Mountain management areas, the rock art sites in the Devil's Garden, Steele Swamp and Clear Lake management areas, the high elevation prehistoric resources in the South Warner Wilderness management area and the Modoc War resources in the Clear Lake management areas. Cultural resources are not addressed at all in the Fitzhugh, Long Bell, Portuguese Ridge, Hackmore, Tionesta, Mears, and Mount Dome manage-

ment areas, presumably because no inventory has been made of the cultural resources in these areas. (1316)

**RESPONSE:** Plan Chapter 2 – *Public Issues and Management Concerns* states that one significant cultural resource site will be signed (for interpretive purposes) each year for two decades, and that two significant sites per year will be nominated to the National Register of Historic Places. We will nominate significant sites specifically identified within Management Areas. At two sites per year it will take time to eventually get the Forests' most significant cultural resource properties on the National Register. The National Park Service proposed adding several historic emigrant trails to the existing National Historic Trail System, including portions of the Lassen and Applegate trails. The Modoc will cooperate with the NPS in inventorying and nominating portions of the Lassen and Applegate trails on Forest lands. Using special funds, we are preparing National Register nominations for 14 locations (including individual site nominations and district nomination of locations containing concentrations of prehistoric and historic sites).

If we did not specifically mention significant cultural resources within particular management areas, then either they have an insufficient cultural resource inventory or have no major significant sites or concentrations of sites known or currently identified.

**4. COMMENT:** The Preferred Alternative (PRF) places little emphasis on cultural resource management needs, restricting actions to a project basis. It is clear from comments made elsewhere in this [draft] document (pp. 3-25 through 29) that project cultural resource management needs are not currently being met.

While the RPA alternative with departure (RPD) offers a completed forest inventory by 1995, the probable high increase in destruction of or damage to cultural resources associated with this alternative makes its selection undesirable in terms of cultural resource management. The Amenities Alternative (AMN) provides the best overall cultural resource management program by including non-project inventory and an increase to three signed per year which retaining the backlog evaluation goal of 50 sites per year, and developing 8 interpretive sites. Neither the Reduced Budget (RBU) nor the Industry (IND) alternatives addresses the inventory requirements of Section 110 of the National Historic Preservation Act (P.L. 89-665) and are, therefore, unacceptable in terms of cultural resource management. It is difficult to assess the environmental consequences of the various alternatives as so little is known of the cultural resource data base on the forest. It seems logical to suppose that (AMN) would have the lowest potential for conflict with cultural resources; however, it is less clear that PRF and CUR present only moderate conflicts, or

fewer than RPD (given that all project work will provide full compliance with the federal laws and regulations). As a result of failure to conduct non-project inventory/evaluation to evaluate backlog properties, and to adequately monitor cultural properties under PRF and CUR, conflicts cannot be adequately assessed. (1316)

**RESPONSE:** See previous response. Cultural Resource Management is primarily a support function. Archaeologists conduct compliance inventories and clearances for other projects such as timber sales, road construction, land exchanges, etc., generally with little funding available for activities not associated with projects.

The relative ranking of the various proposed alternatives in relation to potential conflict with cultural resources was our best guess based on the information at hand.

**5. COMMENT:** The DEIS does not adequately address the inventory, evaluation, treatment or management of these resources. Consistent procedures are needed and should be based upon a comprehensive cultural resource management document which provides specific guidance for inventory, evaluation, treatment and management of the Forest's known and unrecorded cultural resources. (1316)

**RESPONSE:** Forest-wide Standards and Guidelines (Plan chapter 4) identify the general procedures we follow to inventory, evaluate, treat and manage cultural resources. Various federal laws, regulations and Forest Service Manual directions contain specific procedures with which the Forest must comply. The Forests' Cultural Resource Overview (1983) presents a recommended cultural resource management plan in Chapter VIII.

**6. COMMENT:** There are more features associated with Native American religious ritual in this region than I have seen elsewhere during my entire life in the remote regions of CA, WA, and OR. Some of these places are still used by Indian people for religious practices. Many Native Americans do not trust the FS enough to reveal the locations of these religious shrines. It is therefore the responsibility of the Forest to use what knowledge it has to protect these sites. Until these places have National Register status, they are difficult to defend, especially if economically powerful forces are tied into exploitation of the areas they occupy. This type of site should not be mitigated. Place it on the National Register. (273)

**RESPONSE:** Forest-wide Standards and Guidelines and the American Indian Religious Freedom Act of 1978 direct the Forest to help identify and protect these types of resources. Specific methods of consultation with appropriate Native American groups and individuals is beyond the scope of the Forest Plan and are generally handled on a case-by-case basis. We are currently documenting at least two cultural resource properties of this sensitive



Without an atlas, if the archaeologist cannot remember if there is a site in a particular area, this area must be surveyed. This can lead to duplication of effort. (273)

RESPONSE: The Forest *does* have a Cultural Resource Inventory Atlas which we updated in 1987. Yearly updates are planned at the end of each field season beginning in 1989. All activities which may require a cultural resource inventory must be coordinated through the Forest Archaeologist. The Forest Archaeologist will conduct research prior to any cultural resource inventory; i.e., he/she will check for known cultural resource information for proposed project areas. Areas that have had an acceptable cultural resource inventory completed in the past will not be re-inventoried. The Archaeologist will recommend measures for protecting known cultural resource sites in those areas.

28. COMMENT: Highgrade (MA 31): historic value and safety problems of old mines should be evaluated. (500)

RESPONSE: We are currently completing the High Grade Mining District nomination to the NRHP. We will address safety problems with open mines and shafts in the narrative report accompanying the nomination form.

29. COMMENT: It will be difficult to assess the scientific, historic and ethnic significance of each cultural property before determining further treatment in the absence of a contextual overview document. The absence of a contextual document will make it extremely difficult to evaluate individual properties. As a result, many properties will have to be protected prior to evaluation, utilizing the personnel and dollar resources of the Forest, whether they are ultimately determined eligible for the National Register of Historic Places or not. Such an approach is neither time nor cost effective. The ability of the Forest to interpret the significant cultural properties to the public is adversely affected by the incomplete inventory of cultural properties and the lack of a contextual overview document (a CCRMP) for the Forest. (1316)

RESPONSE: In Chapter VIII of the Forest Cultural Resource Overview (1983), we propose a management plan for cultural resources. The Overview, which also contains contextual background prehistoric, historic and ethnographic information, is available in the Forest Supervisor's Office.

30. COMMENT: We recommend that a CCRMP, to be completed within five years, be included as a specific objective in the Plan. The development of the CCRMP document should be elevated to a high priority as the attainment of the goals of the Plan would be best served as a result. The CCRMP should be closely coordinated with the State Historic Preservation Office (SHPO) comprehensive planning efforts which are currently in prog-

ress. The CCRMP should include, at a minimum: a detailed overview of known resources; and specific plans for inventory, evaluation, treatment and management of cultural resources. Until the appropriate sections of the CCRMP have been completed, the objectives of the Plan should be specifically explicit in terms of attainable performance goals. Known cultural resources should be evaluated on a site-by-site basis, and, if they are found to satisfy the criteria (36 CFR 60.4), nominated to the National Register of Historic Places. (1316)

RESPONSE: See previous response.

31. COMMENT: The proposed field monitoring of cultural resources [draft Plan] (p. 5-6) is too infrequent to assure an adequate, responsible protection program. (1316)

RESPONSE: We disagree. We feel that the proposed cultural resource monitoring plan is realistic and attainable.

32. COMMENT: Cultural sites are overemphasized. (49)

RESPONSE: As proposed in the PRF Alternative, the cultural resource program responds to existing federal laws, regulations and procedures.

33. COMMENT: Is it premature to nominate two sites/year with regards to evaluation and why two sites? (126)

RESPONSE: We do not believe it is premature to nominate two sites per year; on the contrary, we think that goal is reasonable and attainable.

34. COMMENT: Assuming the above sites are of significant historical importance, the problem is the acreage allocated to each one. The proposed acreages are an overkill. (126)

RESPONSE: Actual acreages will be trimmed down to the smallest possible areas. For example, the High Grade Mining District area, when nominated, will probably not exceed 1,000 acres.

35. COMMENT: Acreage allocated for archeological sites, historical sites and wildlife habitat must be kept to a minimum. (231)

RESPONSE: See previous response.

36. COMMENT: Summary pg.26—under Cultural Resources—statement: "As a result of other resource activities, in combination with the cultural resource program provided in each alternative, RPD and IND have the highest potential for resource conflicts." Specifically



- cooperate with local Native Americans, historical, educational, and scientific groups to protect the resource. (500)

RESPONSE: Plan Chapter 2 and Forest-wide Standards and Guidelines (Chapter 4) address your concerns.

18. COMMENT: Cultural resources – future condition is to protect significant resources, the mission is to provide for public awareness and enjoyment, while the goal tries to do both, while providing for an inventory by 2050...too late to really satisfy the above. (708)

RESPONSE: Because cultural resource on the Forest are so diverse and numerous, and because funding is scarce, we cannot realistically propose to complete a Forest inventory much earlier than 2050. The Plan provides for some public interpretation and awareness while also providing project-related compliance inventories.

19. COMMENT: Several sites near Lava Beds were important in the Modoc War. The Dry Lake battle site and the Modoc horse corral nearby could be interpreted within the context of the park's Modoc War program. This is mentioned in the management area section; we need to make sure it happens in a timely fashion. (708)

RESPONSE: Interpretation of Modoc War sites on Forest lands is accommodated in the Forest Plan. To the extent possible, the Forest will work with the Lava Beds National Monument staff and local historical society members in developing interpretive opportunities.

20. COMMENT: In the Preferred Alternative a more aggressive program of interpretation of significant historic and prehistoric sites for public visitation, enjoyment and education. (1034)

RESPONSE: Considering normal funding constraints, we think that the signing and interpretive program recommended in the Preferred Alternative is a realistic and attainable goal.

21. COMMENT: The Forest should prepare an educational brochure and map for each signed site to be available as "hand-outs" at the various Forest offices, the Modoc County Museum and the Chamber of Commerce. (1034)

RESPONSE: The Forest will cooperate with the Modoc County Historical Society to produce brochures; this is an unstated part of the proposed interpretative efforts.

22. COMMENT: A third goal proposes to provide information for public education and enjoyment of the Forest's cultural resources; however, there is no provision in the Plan for these activities. (1316)

RESPONSE: See previous response.

23. COMMENT: Cultural and archeological sites must be protected as natural educational resources to teach people the value of natural biological relationships; also a source of revenue for the Forestry department. (269)

RESPONSE: We are mandated by existing federal laws, regulations and procedures to protect cultural resources. It is unlikely, however, that we would place any interpretive locations on a charged entry fee basis on Forest lands.

24. COMMENT: We are concerned with the protection of all historical sites and trails associated with early day pioneers in the area. The Lassen-Applegate trails are particularly noteworthy and there may be many more deserving protection. There is a California Emigrant Trails bill in Congress that would require the responsible agencies to protect and identify significant historical sites and traces. The Plan does not discuss this subject in any depth. (1235)

RESPONSE: We identified the Lassen-Applegate trail system in specific management areas as locations that should be identified and nominated to the NRHP. If the bill you mention is passed by Congress, the Forest will cooperate with the National Park Service in identifying and protecting portions of the historic trails on Forest lands. We are aware of the bill and the NPS regularly informs us of its status.

25. COMMENT: How can indiscriminate ORV traffic be strictly controlled to avoid cultural sites if inventory of cultural sites [is] not undertaken except for specific projects? (1248)

RESPONSE: That is a difficult task. Perhaps one solution is to incorporate cultural resource concerns into future OHV plans. We could identify areas of known or anticipated high concentrations of cultural resource sites, and prohibit those areas from ORV use.

26. COMMENT: There are problems associated with protecting cultural resources from vandalism and degradation from recreationist, natural degradation and impacts associated with Forest management practices. (1316)

RESPONSE: Chapter 5 of the Plan addresses monitoring cultural resources on the Forest. Persons caught vandalizing cultural resources will be prosecuted under the appropriate law or regulation.

27. COMMENT: The Forest has no up-to-date atlas of sites. It is impossible to know if there is a site in a particular area without consulting the Forest Archaeologist. An atlas should be established immediately and each new site should be entered on the atlas as it is recorded.

RESPONSE: EIS Chapter 3—*Affected Environment* discusses energy in more detail.

## 150 - Lands

1. COMMENT: Under category a, add: consolidate NF lands through acquisitions and exchanges that will acquire timber age classes needed for long-term Forest management opportunities. Under category 6: drop # (1) as it provides any easy out for not accommodating needed uses. (126)

RESPONSE: The Forest FEIS and Plan provide general direction for implementing Forest projects. We will develop a land acquisition plan that will identify specific lands that we should acquire or which are available for disposal. Resource specialists from all disciplines will review the merits of any acquisition proposals. Although timber specialists may propose or advocate specific proposals based on timber attributes (e.g., a certain age class of trees), the Forest will make a determination on a site-specific basis.

Regarding your second concern, our Washington Office directs that when considering the use of National Forest System lands for a commercial use, the Authorizing Official should consider if private lands are available for use. However, this does not mean that a proposal will be disallowed on national forest lands. The responsible official will evaluate the merits of the proposal regarding environmental resource impacts, feasibility and availability of private lands.

2. COMMENT: We support the exchange or purchase of lands for protection of critical habitat and wilderness, while not exchanging lands with special values. Land transfers with other federal lands should make and provide true consolidation, i.e., land units surrounded or isolated adjacent to large units of land managed by another agency.

Special use permits and rights-of-way should not be issued in lands designated for Wilderness, SPNM, Raptor Mgt, or where T&E species would be impacted. Utility corridors should also avoid raptor and high habitat designated areas. Values important to maintain the quality of Lava Beds NM should be protected in these decisions. (1260)

RESPONSE: Thank you for your comment regarding the emphasis on acquisition through land exchanges. See previous response, first paragraph.

Concerning rights-of-way and permits, the Forest Service uses the permit system to ensure that commercial users of national forest lands abide by rules and regulations governing those lands. During the environmental analysis

associated with a permit issuance, the Forest ensures that the proposed use does not conflict with current management direction for the area. Regarding utility corridors, Forest Standard and Guidelines (Plan Chapter 4) direct the Forest to avoid placing utility corridors in wilderness, SPNM, or raptor habitat areas. Whenever a proposed project is near or adjacent to the Lava Beds National Monument's jurisdictional boundary, we request concerns and comments from that agency. We analyze their concerns during the project's NEPA phase.

3. COMMENT: Land exchange or purchase will be used to acquire high habitat capability lands or key wildlife areas needed to maintain viable populations. High-value lands will not be exchanged. (500)

RESPONSE: We will evaluate any proposed land exchange on its merits, in terms of Forest Standards and Guidelines, and resource needs and values.

4. COMMENT: Would like to see more emphasis placed on land exchanges. Mgt of land would be enhanced for the FS and pvt individuals if land is consolidated into blocks. (913)

RESPONSE: Consolidating National Forest System lands is a primary consideration in identifying any proposed land exchange.

5. COMMENT: Draft Forest Plan, page 3-14, land ownership, last sentence: Where is the direction in the Plan for "future land adjustments?" Is the direction in some other plan? (1021)

RESPONSE: We will develop a specific land acquisition plan after the Forest Plan is approved. See Plan Appendix A.

6. COMMENT: What does your land adjustment plan say for T.48N., R.15E., Sections 31 to 34? (1021)

RESPONSE: We will develop a specific land acquisition plan after the Forest Plan is approved.

7. COMMENT: DEIS 3-56: District acreages do not total to the same figures for mgt. areas. The differences are small but clarification is needed. (1263)

RESPONSE: You are correct. The difference is not in the coding of various polygons, but rather in the technical aspects of computer modeling and map scanning. We are attempting to reduce the difference through reviewing the data entered. However, some differences will always exist.

8. COMMENT: DEIS 3-113: Unable to reconcile 639,942 ac. on first line of page with items 2-6 of Table 2-13. Subsequent discussion of pp 3-116, 117 does not help. (1263)

RESPONSE: We corrected Table 2-13 in the FEIS.

9. COMMENT: On pages 3-14 of the Plan, under 9. Lands, the following statement is made: "The Lava Beds National Monument, administered by the National Park Service (NPS) but on National Forest Land, totals an additional 46,000 acres." We believe that this statement by itself with no further explanation may tend to confuse readers as to the management authority and uses permitted on these lands. We recommend that the statement either be eliminated or [replaced by] "With respect to management of the 46,000 acres occupied by the monument, Presidential Proclamation No. 1775 of November 21, 1925 (44 stat. 2591), which established the monument, states the following: 'The reservation made by this proclamation is not intended to prevent the use of lands for national forest purposes under the proclamation establishing the Modoc NF, and the two reservations shall both be effective on land withdrawn but the national monument hereby established shall be the dominant reservation and any use of land which interferes with its preservation of protection as a national monument is hereby forbidden.'" (1316)

RESPONSE: Discussions continue between the Park Service and Forest Service concerning jurisdiction and management of these 46,000 acres. We believe that the statement in the proposed Plan adequately reflects the jurisdictional status of these lands; we have retained it in the final Plan.

10. COMMENT: Draft Forest Plan, page 2-3, Lands. Could you send me a copy of the Forest Standards and Guidelines for landowner coordination? (1021)

RESPONSE: Forest Plan Chapter 4 contains Forest-wide Standards and Guidelines for all resources. Regarding coordination, we will notify adjacent landowners of proposed projects to solicit opinions and to coordinate activities.

## 151 - Power Transmission Corridors

1. COMMENT: Sierra Pacific urges the management to include a more complete discussion of the purpose and need, function, and impacts of utility corridors. We recommend that the identified corridors be formally designated as corridors in the management prescription section of the draft Plan. (4)

RESPONSE: Existing corridors are identified in the EIS. We modified the discussion of utility corridors and im-

pacts on other resources in EIS Chapter 4—*Environmental Consequences*.

2. COMMENT: California-Oregon Transmission Project has progressed sufficiently through the planning process to identify location, right-of-way widths, and time of completion. The Modoc NF mission statement should be amended to include the provision of adequate utility corridors necessary for a responsible energy policy in the West. Under Forest program goals, energy transportation should be included as an energy goal. We recommend substituting the goal of achieving reliable, safe, effective, and environmentally sensitive rights-of-way for the current proposed land goal of avoiding separate utility rights-of-way.

Section D—Forest Standards and Guidelines—subsection 3—Energy, should include the provision of easements or for energy transportation needed to assure sound energy policy in the West.

Sub-section 4—Facilities, item e. (1) Limits allocation of single-purpose transmission corridors, places new corridors contiguous to existing corridors, and encourages the use of private lands. These guidelines should be eliminated and in their place a guideline that provides for responsible siting of future rights-of-way in a manner that considers environmental sensitivity, engineering feasibility, economics, reliable and safe service, and public input. Transmission lines should be placed in the most useful location regardless of ownership considerations.

Item f. (2) Limits new electronic communication uses to existing, approved sites, where possible. The guidelines should reflect the limitations imposed by topography and connectivity points. Subsection 8 (b) (2), special use and rights-of-way permits, which states that new or reconstructed power lines less than 33 kv will be buried, should indicate that this will be done only where appropriate and economically reasonable. (See December 30, 1976 MOU between PG&E and Forest Service.) Subsection 8 (c), utility corridors, should be rewritten to provide a more sympathetic treatment of utility corridors.

If corridors are precluded by the Forest, the EIR should address this impact on energy policy in the West.

Section 3—Management Prescriptions—A new management prescription should be created for utility corridors. The prescription should focus on Forest management practices that provide responsible protection of energy facilities from fire and other hazards that effect the reliability of utility facilities.

Section F—Management Area Direction—The standards and guidelines developed for individual management areas should provide for protection of utility facilities. Standards and guidelines should be developed

to assure that these facilities can be built on the Forest when they are needed. (707)

RESPONSE: We expanded EIS Chapter 3—*Affected Environment* to address the COTP project and associated construction and permit for the 500kv transmission line. In addition, the EIS discusses the Forest's geographic importance as an energy transmission corridor between the power generating Pacific Northwest and the power consumers of central and southern California.

In response to the location of future utility corridors and associated uses, the Federal Land Policy and Management Act of 1976, directs the Forest Service "...to avoid the proliferation of rights-of-way [utility] corridors...unless national and State land policies, environmental quality economic efficiency, national security, safety, and good engineering and technology" decide that an additional corridor is necessary. The Forest has incorporated the intent of the Act in the Standard and Guidelines. However, the burden of proof in establishing a need for additional utility corridors is the applicant's responsibility.

The Forest identifies electronic sites available for commercial use. An applicant must identify a need for additional sites. Burying power lines below the 33 kv threshold is Regional policy and direction.

3. COMMENT: *Affected Environment*, page 3-59, Special Uses — While traditional sawtimber production may be limited within a right-of-way, timber management activity is not totally excluded. There are timber management opportunities for cordwood, fence posts, and Christmas tree production. Other activities such as hunting, grazing, wildlife habitat management, and winter recreation are traditional activities that can take place within these rights-of-way. To imply these are single-purpose rights-of-way is incorrect. (1264)

RESPONSE: Timber activities beneath high voltage power lines are limited. While power lines do provide some benefits, the overall impact to local resources is adverse.

4. COMMENT: Because the Plan does not specifically recognize existing facilities, it does not recognize that some forms of recreation or other management may be incompatible with utility operations. (707)

RESPONSE: The FEIS identifies all existing utility facilities. Few resource activities are truly compatible with utility corridor activities in areas dedicated to the latter.

5. COMMENT: The right of access by utilities must be recognized in the Forest Plan. The Plan should state that it does not supersede existing permits. PG&E must retain existing ingress and egress rights. (707)

RESPONSE: We incorporated your suggestion in EIS Chapter 3—*Affected Environment*. A utility company has the right, like any other fee land owner with a special use permit, to access its interests within the national forest.

6. COMMENT: The final paragraph under special uses indicates that approximately 1,500 to 2,000 acres of forest land may be required to accommodate the three projects. While it is true the land would no longer support commercial timber operations, many other forest uses would remain. The draft EIS, therefore, incorrectly states that the Forest land base would be reduced by 2,000 acres. (707)

RESPONSE: Based on our observations of existing utility lines, we think that few management activities are compatible with utility corridors. Overall, utility corridors adversely impact most other resources.

7. COMMENT: Section 9—*Lands*. The impact of the Forest Plan on energy policy in the West is not evaluated. On page 4-46, the draft EIS indicates that a corridor must be consistent with management direction outlined in all Plan alternatives. This unfairly singles out gas and electric transmission projects. Like other legitimate forest uses, transmission lines routes should only be required to meet the management direction of the selected alternative. (707)

RESPONSE: We expanded the utility section discussion in EIS Chapter 3—*Affected Environment* regarding the role of the Forest and utility corridors. However, the Federal Land Policy and Management Act of 1976, directs the Forest Service "...to avoid the proliferation of rights-of-way [utility] corridors...unless national and State land policies, environmental quality economic efficiency, national security, safety, and good engineering and technology" decide that an additional corridor is necessary. We incorporated the intent of the Act in Forest Standard and Guidelines. However, the burden of proof in establishing a need for additional utility corridors is the applicant's responsibility. In reviewing applications for additional utility corridors, the Forest will consider impacts to and from other resources and compatibility with the present management direction for the area. The Forest may require that the applicant perform mitigation measures for project approval; however, the requirements will be no more restrictive than measures we would require for other proposals.

8. COMMENT: The management direction discussed in the Forest Plan for energy is to encourage development of resources such as small hydroelectric and geothermal generation. In contrast, the management direction for utility corridors is to limit allocations of single-purpose corridors, consolidate corridors, and encourage the use of private land for new corridors. These two directions

appear to be contradictory since extensive development of small hydroelectric and geothermal resources in the Forest will result in a proliferation of needs for utility corridors.

In contrast to the management direction for resource development, the strategic importance of the location of the Forest to regional transmission planning is ignored in the Plan. (997)

RESPONSE: We disagree with your conclusion in your first paragraph. Hydroelectric generation is a resource development; whereas as utility corridors are land encumbrances. Furthermore, the Federal Land Policy and Management Act of 1976, directs the Forest Service "...to avoid the proliferation of rights-of-way [utility] corridors...unless national and State land policies, environmental quality economic efficiency, national security, safety, and good engineering and technology" decide that an additional corridor is necessary. We incorporated the intent of the Act in Forest Standard and Guidelines. However, the burden of proof in establishing a need for additional utility corridors is the applicant's responsibility.

EIS Chapter 3—*Affected Environment* discusses the Forest's geographic importance as a site for transmission lines.

9. COMMENT: We disagree with the statement that the use of private lands, rather than Forest Service lands, should be encouraged for corridor siting. Siting decisions should be made based on environmental, technical feasibility, and economic considerations. Land ownership should be a secondary consideration. (997)

RESPONSE: Before dedicating new utility corridors on federal lands, the Forest must first analyze the need for additional corridors, and then determine if the use is available on private lands. Generally, the first consideration is given more detail than the second.

10. COMMENT: Pages 3-59 and 3-60. We disagree with the statement that utility rights-of-way require large acreages and the maintenance of cleared rights-of-way. (997)

RESPONSE: The word *large* is somewhat ambiguous. However, a 250-foot wide right-of-way is generally required for overhead utility lines and a 40-foot wide right-of-way is needed for underground utility lines. We have omitted that sentence from the Lands section in EIS Chapter 3.

11. COMMENT: Forest Standards and Guidelines, page 4-23, e.(1) — TANC is disappointed in your statement that the use of private lands should be encouraged for new corridors. There is no qualification or justification given for this statement, and it is directly counter to the clear

sentiment expressed by the public that the COTP should be placed on public lands. (1264)

RESPONSE: National direction guides the Forest Service to consider the availability of private lands for any proposed private use of forest lands. However, this direction does not preclude the use of National Forest System Lands for private use.

12. COMMENT: DEIS Chapter 3, Section 3, Subsection 9, pages 3-59 to 3-60: no mention is made of the transmission that might be required to serve the Air Force proposed backscatter defense radar system. (1352)

RESPONSE: The utility line for the OTH-B project had not been approved when the DEIS was issued. Since then, the line was approved as a result of site-specific environment assessment.

13. COMMENT: Page 3-10. The COTP should be mentioned in the section on utility transmission lines. (997)

RESPONSE: We have included your suggestion in EIS Chapter 3—*Affected Environment*.

14. COMMENT: *Affected Environment*, page 3-61, paragraph 1 — There appears to be a discrepancy between the 3,864 acres indicated in paragraph 1 on page 3-61 and on table 3-4 on page 3-59, a total of 1,440.9 acres are shown as permitted in utility corridors. (1264)

RESPONSE: Thank you for bringing the error to our attention. In the draft we inadvertently omitted counting acres covered by the Bureau of Reclamation's transmission. We have corrected both the text and Table 3-4.

15. COMMENT: The Plan needs to accommodate BPA and other utility facilities. (1352)

RESPONSE: We have updated the FEIS and Plan to include projects that are currently permitted for use on the Modoc National Forest.

## 153 - Other Special Uses

1. COMMENT: We request that MNF Mgt Plan address present and future communication site requirements. (1353)

RESPONSE: Plan Chapter 4, Forest Standard and Guidelines for communication sites, states that sites will designated and developed to minimize impacts to other resources and to other electronic users. Plan Appendix U lists the sites currently withdrawn as electronic sites; it also lists sites that will be designated or withdrawn as a result of the FEIS. We will develop a site plan after an electronic site is officially designated. The site plan will describe

## 154 - OTH-B Radar Site

approved uses of the electronic site and how the site will be managed.

**2. COMMENT: Discourage all profiteering from public lands and by ventures such as guides, private campgrounds, helicopter and plane tours, river boat tours, ski corporations, pack animal enterprises etc. (1223)**

**RESPONSE:** National forests are managed under a multiple-use concept. This process provides for an integrated approach to the use of many resources found on National Forest System lands. In many cases, public use of these resources can be facilitated and enhanced through private enterprise operating on public lands under special use permits.

## 154 - OTH-B Radar Site

**1. COMMENT: The Air Force is considering siting of three receiving sectors of the over-the-horizon backscatter (OTH-B) west coast radar system (WCRS) in the Rimrock Lake area of Modoc NF. We recommend that this activity also be considered in your discussion and decision-making process. (003)**

**RESPONSE:** When the draft EIS was issued, the special use permit for the radar site had not been officially approved. Since then, the electronic site special use permit has been issued to the Air Force; we have updated the FEIS to reflect that fact. Regarding the decision-making process, the Forest is working with the Air Force to establish protective measures for the radar site.

**2. COMMENT: Draft EIS - page 3-44: military defense installation – first line: “...an over-the-horizon-backscatter (OTH-B) defense....” The EIS for this project has been completed and the AF is just waiting for funding from Congress to proceed. (100)**

**RESPONSE:** See previous response, first sentence.

**3. COMMENT: DEIS Chapter 3, section E, subsection 5, page 3-42 – Utility transmission lines should include a discussion of the California-Oregon Transmission Project, as well as other future transmission needs such as that needed to service the proposed Over-The-Horizon-Backscatter defense radar site. Reference should be made the facilities map for their location. The facilities map should also be updated to include all existing and planned PP&L, PGE and Surprise Valley Electric Coop. Transmission corridors. (1352)**

**RESPONSE:** When the draft EIS was issued, the special use permits for the radar site and COTP had not been officially approved. Since then, the electronic site and

transmission line special use permits have been issued; we have updated the FEIS to reflect that fact.

Final maps will indicate their locations. The facilities map displays the three existing utility transmission lines. We elected not to display the numerous electronic distribution lines located on the Modoc National Forest.

**4. COMMENT: Reject the proposed “Over-The-Horizon-Backscatter” radar site described on p. 3-44. This is a waste of the taxpayers’ money, an expensive boondoggle, and also obsolete now that Reagan and Gorby have wined and dined and God knows what else. (1253)**

**RESPONSE:** We have issued a special use permit to the U.S. Air Force for the Over-The-Horizon-Backscatter radar site. Prior to approval, we analyzed anticipated impacts associated with the project. The Air Force analyzed the economics of the project.

## 155 - Right-of-Way

**1. COMMENT: p. 4-26: Modify section B: Special Use and Rights-of-way permits, subsection (4), Part (3): Under the evaluation of interior subdivisions, review the need for alternate access routes for proposed subdivisions and the cumulative total number of parcels resulting from existing and new land divisions based on the area-wide circulation patterns. For existing and proposed subdivisions which presently use, or will increasingly depend on, USFS roads as part of the overall circulation patterns, allow more than one access route as needed to provide a circulation system to meet the needs of efficient traffic patterns and fire and emergency access. (101)**

**RESPONSE:** Forest Standards and Guidelines (Plan Chapter 4) allow for additional access if needed for fire and other safety reasons. However, if access across private lands is available to a parcel or subdivision, the Forest will consider that fact before allowing increased access for fire and other safety reasons.

**2. COMMENT: What is the potential for resource impacts from “right-of-way acquisitions”? The Modoc County Fish, Game and Recreation Commission is asking for road closures. (364)**

**RESPONSE:** All grants or permits for rights-of-way are subject to Forest rules and regulations which include, but are not limited to, Standard and Guidelines in Plan Chapter 4. S&Gs provide direction to minimize resource im-

pacts as a result of other management activities, such as use of roads.

After the Forest Plan is approved, we will develop a road closure plan. It will address road closures in areas where resource damage is created because of a particular road.

**3. COMMENT:** Under Energy (page 2-2), Forest-wide Standards and Guidelines should provide for the establishment of new utility rights-of-way in the Forest that encourage the efficient use of energy resources and price moderation of gas and electric service in the West. (1017)

**RESPONSE:** The Federal Land Policy and management Act of 1976, directs the Forest Service "...to avoid the proliferation of rights-of-way [utility] corridors...unless national and State land policies, environmental quality economic efficiency, national security, safety, and good engineering and technology" indicate an additional corridor is necessary. We incorporated the intent of the Act in Standards and Guidelines.

**4. COMMENT:** Plan Ch.3, Section D, Subsection 9, pages 3-14 to 3-15—This subsection should mention established corridors and indicate whether or not they have been designated. (1352)

**RESPONSE:** EIS Chapter 3—*Affected Environment* describes existing utility lines and corridors.

## 165 - Law Enforcement

**1. COMMENT:** Extent of livestock trespass on restricted areas. Enforcement needs. (1248)

**RESPONSE:** Livestock may damage some cultural resources; however, we currently have no data to assess the extent of the problem.

**2. COMMENT:** The decision to manage wildlife populations at minimum viable population levels means that poaching laws will have to be strictly enforced. This should be emphasized in the standards and guidelines. Destruction or removal of cultural resources should also be emphasized in standards and guidelines. (1260)

**RESPONSE:** The standards and guidelines for law enforcement specify that the Forest will enforce existing laws. Persons caught vandalizing cultural resources will be prosecuted under appropriate federal laws and regulations.

## 170 - Minerals and Mining

**1. COMMENT:** No input to this Plan about the recreational minerals found in the Forest boundary. Need for

more interaction with the local rockhounding/hobby mining people. Concerns 3-18; pumice linked to lightweight concrete. "Note," the current use of "perlite" is used in post setting sakcrete. (5)

**RESPONSE:** EIS Chapter 3—*Affected Environment* includes a detailed description of mineral collection and rock hounding on the MNF. In addition, the Forest will develop a rock collection policy and information program following release of the Forest Plan.

**2. COMMENT:** Needs to be better signing, posting of areas and the placement of collection data boxes for our members to use. Possible designation of gemstone/mineral areas, as "reserves," withdrawn from mineral location or commercialization. (5)

**RESPONSE:** The Forest will develop a rock collection policy and information program as part of the Forest Plan implementation.

**3. COMMENT:** The geothermal potential of the Glass Mountain KGRA is the highest of any undeveloped area in the United States. The economic impact on the counties could be enormous; far outranking the hunting/recreation, timber, or grazing support to the counties. This is not reflected in the document. (1316)

**RESPONSE:** Since the draft EIS was issued, exploration has revealed that the Glass Mountain KGRA is one of the geothermal resources most likely to be developed in the United States. The final EIS includes recent information and likelihood of development. Prior to full-scale development, the Forest Service and Bureau of Land Management will conduct additional environmental analysis to disclose environmental impacts on geothermal development, as result of other resource concerns, and the impacts to other natural resources in the Medicine Lake area.

**4. COMMENT:** We recommend that comprehensive discussions of mineral resources in the Forest and the categorization of lands based on their potential for containing mineral resources be included in the final EIS. (364)

**RESPONSE:** EIS Chapter 3—*Affected Environment* is a summary discussion of the Analysis of Management (AMS). This AMS is available for review at the Forest Supervisor's Office. Chapter 3 summarizes the mineral potential for leasable and locatable minerals. This potential was developed from criteria established in the Regional Guide for developing Forest Plans. These guidelines were disclosed in the Federal Register.

**5. COMMENT:** Diatomite and peat were not mentioned anywhere in the Plan. It is recommended that a modern inventory of all mineral resources in the Forest be done. (356)



RESPONSE: A literature search indicated no known active mines on MNF lands for the commodities you mention. The Forest is developing a more comprehensive inventory of mineral potential on the Forest which will be used in future planning reviews.

**6. COMMENT:** In addition to the federal regulations cited, the California Surface Mining and Reclamation Act (SMARA) should also be listed among the laws controlling the administration and reclamation of mined land in California.

Within Section F of Chapter 4, Management Direction, we recommend that North Adin, Fitzhugh, South Adin, and Mt. Dome Management Areas contain specific standards and guidelines for mineral resource development. (364)

RESPONSE: The Forest Service has an existing memorandum of understanding with the State of California to ensure that surfaces disturbed as a result of mining operations are adequately reclaimed upon completion of operations. The memorandum of understanding, currently being updated, will be incorporated into the Forest review of mining proposals.

Regarding your second concern, we have not precluded mineral development in these areas. We review all proposals following the NEPA process. At that time we will develop mitigating measures for mining operations.

**7. COMMENT:** DEIS (page 4-50). We recommend that a specific reference to the State Surface Mining and Reclamation act (1975) be made in this section. (364)

RESPONSE: The Forest Service has an existing memorandum of understanding with the State of California to ensure that surfaces disturbed as a result of mining operations are adequately reclaimed upon completion of operations. The memorandum of understanding, currently being updated, will be incorporated into the Forest review of mining proposals.

**8. COMMENT:** Highgrade (MA 31): Mining should be constrained to reduce visual impacts. (500)

RESPONSE: For areas with a visual quality index of *retention*, we will incorporate appropriate mitigation measures in the plan of operation. This does not mean that mining is precluded. Specific mitigation measures will be determined through the NEPA process on a site-specific basis.

**9. COMMENT:** Irreversible effects will occur if oil, gas, geothermal or hydroelectric development is allowed. Development will irreversibly degrade recreation, riparian, wildlife and visual values. These are not discussed in the DEIS. (1260)

RESPONSE: This environmental document does not directly approve or disapprove the leasing of lands for oil and gas, geothermal, or hydroelectric development. It discusses the constraints on and impacts from those developments. When proposals for development are submitted, we will conduct a site-specific environmental analysis. During that process, we determine specific effects and design mitigation measures.

**10. COMMENT:** Geological SIA's: These 3 areas enclose important mining activity currently in progress as well as potential highly mineralized deposits. The Plan does not adequately address the current activity nor does it speak to the potential. (549)

RESPONSE: Glass Mountain Glass Flow is the only Geological SIA in which locatable mineral potential is likely. Existing mining claims are located within its boundaries. If the site is formally withdrawn from mineral entry, it will still be subject to valid existing mining claims. The Forest Service has determined that the site has a higher value for science and education than for mining potential. Thus, we have proposed withdrawing the site from future mining entry.

**11. COMMENT:** We would like to see mining activity in general and our claims specifically included in Plan discussion. We oppose any Plan which hinder development of these claims. (673)

RESPONSE: The Final EIS includes a detailed discussion of mineral activities on the Forest. Regarding your second concern, the Plan does not close areas to mineral development. However, during the site-specific environmental analysis of any plan of operation, we may require that operators perform certain mitigation measures during operation. However, these mitigation measures do not preclude mineral development nor place an unreasonable burden on mining operators.

**12. COMMENT:** The failure to recognize and protect mining claims and commercial mining activities in the Glass Mtn. area constitutes a derogation of federally-protected property rights. I recommend that the Plan be modified to include an entire section on mining activities and that suitable protective provisions for mining be added to the Plan. (687)

RESPONSE: The FEIS includes a detailed discussion of existing mineral activities on the Forest. Regarding protective measures, each management prescription (Plan Chapter 4) contains a general theme for mining activities and more specific guidelines in the prescription. Forest



will evaluate the need for protective measures on a site-specific basis.

**13. COMMENT:** All mineral damage should be restored to as good or better condition, and egress disruption should be minimized ,i.e., noise, dust, visual. (1223)

**RESPONSE:** The Forest-wide Standards and Guidelines (Plan Chapter 4) require reclamation plans for rehabilitation of disturbed surfaces and vegetation as a result of mining activities. Site-specific mitigation measures depend on the location and level of activity.

**14. COMMENT:** Discuss the expected effects of mining exploration and development activities will have on the Forest. (1316)

**RESPONSE:** Because the Forest Service does not control the timing, type, or degree of exploration, we cannot easily determine effects of mining exploration. However, EIS Chapter 4 (section 11) discusses the environmental consequences of mineral exploration under all alternatives.

**15. COMMENT:** The impacts, including the cumulative impacts, of the expected mineral activities are not revealed. (1245)

**RESPONSE:** Because the Forest Service does not control the timing, type, or degree of exploration, we cannot easily determine effects of mining exploration. However, EIS Chapter 4 (section 11) discusses the environmental consequences of mineral exploration under all alternatives. Cumulative effects and other mining-related impacts are addressed in the site-specific NEPA documents.

**16. COMMENT:** Issues concerning minerals should be identified and developed in DEIS Chapters 1, 2, and 3. Besides, the conflicts are not highlighted in chapter 4. (1316)

**RESPONSE:** The major concern regarding minerals surfaced during the scoping process: How will minerals be managed? We analyzed this issue in the EIS. We address the impacts from mineral activities on other resources, and display the impacts of other resources on mineral activities. See EIS Chapter 2 (Section E.), and Chapters 3 and 4 (Section 11).

**17. COMMENT:** I would like to see a damper put on this type of action on public grounds where no patented claims are located and where no mineral deposits are shown. (1387)

**RESPONSE:** The Mining Law of 1872 grants to individuals the right to discover and develop mineral resources.

The Forest Service cannot disallow this activity unless an area has been specifically withdrawn from mineral entry.

**18. COMMENT:** The Modoc has an opportunity here to establish some benchmarks for geothermal resources. Not only was this not done, but minerals is treated throughout Chapter 2 as a fixed influence on Forest values. The number of mining plans always remains the same. This is unrealistic, because if areas are closed to mining, or if no surface occupancy is allowed, then these areas would not be open to mining, so the areas that are available for new exploration would get fewer and fewer. For those alternatives which have specific opportunities for Forest production, the narratives should include the opportunities for mineral development. (1245)

**RESPONSE:** Mining claims are a fixed value in Chapter 2 because (1) plans of operation are a function of economics and not always a function of acres of availability, and (2) the number of acres affected (high to medium potential) vary only slightly by alternative.

We expanded our discussion of geothermal potential in EIS Chapter 3—*Affected Environment*.

**19. COMMENT:** The discussion of the acres which are closed to mineral activities, beginning on page 4-52, does not follow from any previous chapter. The discussion of the effects under each alternative does not show any advantage or disadvantage for minerals. The sections on page 4-53 indicate that certain areas will always be closed to mineral development, no matter what the potential.

The IND and RBU alternatives indicate lower semi-primitive constraints, but no justification is given for why the mineral development is precluded. The mineral restriction by acres, in Table 4-11 on page 4-52, does not show how many acres are open to development. This table also indicates that 22.9 acres are always closed to surface occupancy, but no previous chapter had a map that indicated where these places are. (1245)

**RESPONSE:** Table 4-10 displays impacts on mineral development. Areas closed to mineral development are sites that were previously withdrawn from mineral entry, such as wilderness areas, recreation sites, etc. In SPNM areas, mineral activities are not precluded, although they may be constrained as a result of the management prescriptions which we apply to those areas.

**20. COMMENT:** Riparian areas from certain or all types of mineral entry? Legality, procedures, practicality from policy-political standpoints. (1248)

**RESPONSE:** The Forest has jurisdictional and legal authority to preclude or restrict any *leasable* mineral activities which we have identified through a NEPA process. Regarding *locatable* mineral activities, the Forest has not

withdrawn riparian areas. Rather, the EIS states that we may impose restrictions and constraints on mining activities in those ecosystems.

**21. COMMENT: Minerals – Plan p.4-28 a. – Replace “encourage” with “allow” or “permit”. (73)**

**RESPONSE:** The Forest encourages mining activities in areas that have valuable mineral resource deposits and can be developed in a sound environmental manner.

**22. COMMENT: Draft Plan – page 5-9; Table 5-1; minerals: It appears that the monitoring frequency for “plan of operations” and “withdrawals” have been flip-flopped. P/O’s should be monitored as an ongoing effort, and wd’s annually. The same flip-flop occurs under reporting frequency for the same two activities. (100)**

**RESPONSE:** You are correct. Thank you for bringing the error to our attention. In addition, we also changed frequency of withdrawals as a result of the recent mineral withdrawal review. The majority of sites will be reviewed in twenty years.

**23. COMMENT: Each roadless area located in Appendix E should have a discussion on the mineral potential of that area. In addition, the map of each area should display the locations of the areas of mineral potential and the commodities involved. (1316)**

**RESPONSE:** The mineral potential of roadless areas was analyzed during the legislative process that released these areas from further consideration as wilderness. A map showing mineral potential for the entire Forest is shown in Figures 3-14 and 3-15.

**24. COMMENT: Silver State strongly supports the Forest Service’s Plan to consolidate and upgrade administrative sites, including approximately 1-1/2 miles northwest of Hayden Hill. (42)**

**RESPONSE:** Thank you for your comment.

**25. COMMENT: In the introduction to the minerals section, on Plan page 3-16, we suggest that the words “deep-seated” and “oil and gas” be deleted from the paragraph. (1316)**

**RESPONSE:** We agree and have deleted both.

**26. COMMENT: Draft EIS – page Summ. 21; Minerals: How many of the 465 mining claims filed are still active? (100)**

**RESPONSE:** The term *active claims* means that a mining claim has been filed with the BLM and the local county

courthouse. In the last year, mining claims have increased slightly – a fact reflected in the FEIS.

**27. COMMENT: The DEIS should contain a narrative section on definitions of mining exploration and development terms, what the operations involve. (1316)**

**RESPONSE:** We did not include definitions for these terms because we felt that they were commonly used and understood. The term *exploration* refers to activities, such as geophysical work or drilling, which identify ore bodies. On the other hand, *development* refers to extracting ore for processing.

**28. COMMENT: Monitoring and evaluation: p. 5-9 – The annual cost for monitoring mineral plans of operations [is more realistically] \$1,000. (1245)**

**RESPONSE:** We changed the figure to \$2,000 in the final Plan.

**29. COMMENT: The mineral potential map on DEIS page 3-68 should be at the same scale as the alternative maps, so the reader can see how minerals will be affected by each alternative. (1316)**

**RESPONSE:** Large-scale maps are available at the Forest Supervisor’s Office.

## 171 - Oil and Gas

**1. COMMENT: Each of the current mineral areas given on page H-1 of Appendix H should include statements assessing mineral potential for locatable and leasable minerals. (1316)**

**RESPONSE:** Those acres were withdrawn prior to the Forest Plan. The Forest recently completed a mineral withdrawal review, as directed by FLPMA, which includes a mineral report. This report is available upon request.

**2. COMMENT: In the introduction to the minerals section, on page 3-16, we suggest that the words “deep-seated” and “oil and gas” be deleted from the paragraph. (1245)**

**RESPONSE:** We agree. Those terms are deleted.

**3. COMMENT: Appendix I needs an introductory paragraph, explaining who will make the land description decisions, concerning which lands are covered by the stipulations and how the stipulations will be attached to the leases. The conditions will be determined on a site-specific basis and stipulations attached as relevant, instead of having all the different types of stipulations included on each lease.**

Stipulation No. 2 contains both year-around no surface occupancy (NSO) and seasonal NSO restrictions. We recommend that the protection be separated into the two types of restrictions, so that one stipulation is for total NSO and one stipulation is for seasonal NSO. This would be consistent with the recently completed oil and gas environmental document. (1245)

RESPONSE: Plan Appendix I contains a comprehensive list of special stipulations that may be applied to any lease. We will determine which stipulations to include during the site-specific environmental analysis project for each lease application.

We have revised our stipulations to reflect current policy, as you suggest.

4. COMMENT: Stipulation No. 7 protects scenic values. The first paragraph of this section is an explanation of the stipulation, while the second paragraph contains the language of the stipulation. We would suggest that the specific language of the stipulation be indented, so that everyone can see which part will actually be attached to the lease. (1245)

RESPONSE: We revised our stipulations to reflect current policy. In addition, we changed the format so that the stipulations are much easier to read.

5. COMMENT: Appendix I-2, Special Stipulation #5, should be expanded to note that geothermal, oil, and gas operations may require a waste discharge permit from the appropriate regional water quality control board. (15)

RESPONSE: Before issuing a lease, the Bureau of Land Management requires the applicant to obtain a waste discharge permit. In addition, all mineral activity is subject State requirements for water and air quality.

## 172 - Geothermal

1. COMMENT: DEIS 3-65: I suggest that 500 megawatts will support 500,000 homes or the diversified peak load requirements of 200,000 homes. The geothermal potential of the area is far greater than you suggest. (687)

RESPONSE: As a result of geothermal exploration, industry is updating its evaluation of the potential of the Glass Mt. KGRA. Whatever the exact potential, the Glass Mt. KGRA, will provide sufficient energy to serve as an economical energy source.

2. COMMENT: A mineral potential map of the Forest should be included. The geothermal potential of the Glass Mountain KGRA is the highest of any undeveloped area in the United States. The economic impact on the counties

could be enormous; far outranking the hunting/recreation, timber, or grazing support to the counties. This is not reflected in the document. (1245)

RESPONSE: EIS Chapter 3—*Affected Environment* includes a mineral potential map (Figures 3-14 and 15), as well as an in-depth discussion of the energy potential of the Glass Mt. KGRA.

3. COMMENT: We request that the estimate of potential power generation be revised and/or or be properly justified and that the demand for that power also be addressed. (1315)

RESPONSE: At the time we issued the DEIS, the best information we had was 500 megawatts. Since then, the potential for the geothermal development in the KGRA has been revised downward. See EIS Chapter 3—*Affected Environment*.

4. COMMENT: The current pace of exploration has been quite slow and, to our knowledge, it has not placed a significant demand on the local groundwater system. Therefore, we request that the Plan incorporate info which clearly supports this statement or that the statement be deleted. (1315)

RESPONSE: Regardless of the pace of exploration, the Forest Service is concerned about the impacts of geothermal development on the availability of groundwater. Essentially no surface water is available within the KGRA area; thus, groundwater is the primary source of water. We are limiting the volume of groundwater withdrawn in the Medicine Lake highlands areas. We are permitting use of groundwater withdrawal on a case-by-case basis for exploration.

5. COMMENT: The EIS should discuss any conflicts between energy development and recreation and the cumulative impacts that could result, then develop a management prescription based on the economic, environmental, and public interest values involved. There are no discussions of the possible cumulative impacts from drilling and development in the special area around the lake. (1245)

RESPONSE: The Glass Mountain KGRA lease was issued before we released our DEIS. The 1984 environmental assessment discusses cumulative effects of geothermal leasing in the KGRA. The Forest and BLM will develop an EIS prior to any major plant development. The EIS will discuss cumulative effects associated with development.

6. COMMENT: Where water is insufficient, no geothermal development should be allowed. (1260)

RESPONSE: The Forest Service has included a special stipulation requiring protection of all surface and groundwater sources. Thus geothermal development will not

have a significant effect on surface or groundwater resources.

**7. COMMENT:** We suggest that a Mgt Rx giving top priority to mineral (or geothermal) development be incorporated into the Plan and be applied to leased lands where no overriding concerns exist. (1315)

**RESPONSE:** Management prescriptions which are applied to areas with mineral potential include direction requiring that other management activities will not preclude mineral development.

**8. COMMENT:** Page 3-17: We would suggest that the two KGRAs be discussed separately to say:

*"Geothermal energy is the most actively sought leasable mineral on the Forest. Two known geothermal resources areas (KGRA) occur on the Forest. The Lake City-Surprise Valley KGRA covers about 72,900 acres, but less than 3,000 acres is actually on the Forest. No activity has been done in the KGRA. The potential for electric production from this area is very low. Only 1 lease for 2500 acres (less than 4% of the KGRA) exists on the Forest lands.*

*"The Glass Mountain KGRA contains 133,000 acres of lands classified as valuable for geothermal development. The KGRA was expanded in 1986, based on the increased knowledge obtained from studies in the area. Presently, 33,000 acres have been leased. Temperature gradient holes have been drilled within the KGRA, as well as two development wells. After the remaining available lands in the KGRA are leased, exploration and development activity will increase dramatically. The electrical generation potential of this KGRA is about 500 megawatts of power.*

*"In addition to the geothermal interest, more than 300 oil and gas leases and applications have been filed on forest lands during the past 20 years. Only 2 leases are still in effect, but 68 lease applications for 238,300 acres are being processed by the FS and the BLM." (1215)*

**RESPONSE:** We agree with your comments and have incorporated your intent in the EIS, except for the last sentences regarding oil and gas applications. One oil and gas lease on the Forest exists, and four applications are pending.

Potential for the Glass Mountain KGRA has been scaled down as a result of recent drillings.

**9. COMMENT:** The name of the KGRA, identified on [proposed Plan] page 4-174 and all references to the Lake City KGRA, needs to be changed to the "Lake City-Surprise Valley" KGRA. (1215)

**RESPONSE:** So noted and changed.

**10. COMMENT:** [DEIS] Page 3-61 indicates that 50,600 acres of land have been withdrawn for KGRAs. This is

misleading, because KGRA lands are not withdrawn. (1245)

**RESPONSE:** Generally, we do not withdraw KGRAs. However, we currently have 50,600 acres of KGRAs that have been withdrawn.

## 180 - Range

**1. COMMENT:** The Plan fails to demonstrate any intensive management of range and forage out-puts which would allow continuation of the present livestock AUM allocations. (1382)

**RESPONSE:** The Plan does not show these alternatives; but in the EIS, the IND and RPD alternatives show increases or continuation of current numbers.

**2. COMMENT:** There are other alternatives available rather than further decreasing cattle numbers, i.e., Allan Savory's holistic range mgt. Program practiced quite extensively in other areas. (1244)

**RESPONSE:** Numerous grazing methods are available to permittees. Several will be evaluated for each allotment on a site-specific basis. The grazing system and stocking rate most conducive to meeting management objectives will be implemented at that time.

**3. COMMENT:** One of the best ways to gain more AUMs or at least maintain is to develop more water reservoirs, 4-112, 4-116 (DEIS & Plan). (984)

**RESPONSE:** We agree, and have developed several hundred over the years. We will continue to develop reservoirs on many allotments if determined appropriate by site-specific analyses.

**4. COMMENT:** The PRF alternative does not consider the loss of range for the individual permit holders or their ability to recover new range for their ranching operations. (1057, 530)

**RESPONSE:** We disagree. We *did* consider how reduced grazing on Forest lands would affect ranching operations. See EIS Chapter 2 and 4 in the Range and Socio-Economic sections. Any loss of range will be determined when we develop the Allotment Management Plan (AMP). The effects of that loss will be displayed in the site-specific environmental assessment.

**5. COMMENT:** We are disturbed with the adverse effect that the reduction in Forest receipts would have on the county and local schools' budgets. (585)

**RESPONSE:** Our analysis of economic effects in the EIS Chapter 4, Section B indicates receipts to the county

would increase slightly if the Preferred Alternative were implemented.

**6. COMMENT:** All alternatives except RPD show reductions in AUMs for livestock by 1990. Opportunities exist Forestwide to mitigate this reduction through structural and non-structural improvements. The use of transitory range to alleviate this downfall should be reexamined. (672)

**RESPONSE:** The RPD Alternative maintains current grazing levels. The IND alternative provides an estimated increase 11,600 AUMs (FEIS Ch. 4, Section 13). We will evaluate and implement opportunities for mitigating livestock reductions through use of transitory forage and structural and non-structural improvements on an allotment-by-allotment basis.

**7. COMMENT:** The Plan reduces the AUMs for livestock in all alternatives, and yet the range condition improves under all alternatives. These two facts do not add up. Under current range mgt some benefits are provided to deer. It is my conclusion and recommendation that Modoc Cares take the position that current stocking levels should be maintained and that any improvements be allocated proportionately to livestock and wildlife. (126)

**RESPONSE:** The EIS displays two alternatives (RPD and IND) which estimate continuation of or increases over current levels. The PRF Alternative (Forest Plan) estimates a decrease of 3,700 AUMs in the first decade. However, we will evaluate each allotment on a case-by-case basis. Through the CRMP, we will update stocking rates and grazing systems as appropriate to meet site-specific management objectives.

**8. COMMENT:** Range forage allocation should be at or above current levels. Transitory range use could help meet this goal. (271)

**RESPONSE:** We will determine forage allocation to domestic livestock, from permanent and transitory forage, on an allotment-by-allotment basis using the CRMP.

**9. COMMENT:** As the owner of a cattle ranch and a permittee with the opportunity of using Forest Service lands in the Warner Mountain Ranger District for the past number of years for summer grazing, I view the Modoc Forest Land and Resource Management Plan with deep concern. I use this grazing for about one-third of my herd for four months of the year and I deem this essential to the ranch operation. Any cut or denial of use would be a drastic blow and I am not sure how or if I could continue to operate. (335, 337)

**RESPONSE:** EIS Chapters 2 and 4 estimate effects on current Forest-wide AUM levels. We will make stocking

rate adjustments on an allotment-by-allotment basis to meet site-specific management objectives.

**10. COMMENT:** My ranch has grazed cattle on Nesham Canyon of the Lassen Creek allotment for more than 60 years. There has been no problem in the past and need not be any in the future. I need my "Hanks Ranch" allotment bad. Please don't bother my permit. (337)

**RESPONSE:** See response to the previous comment.

**11. COMMENT:** The livestock industry is a very important business in the area and vitally linked to public land grazing. The Plan should take a more positive view of livestock grazing and recommend increasing AUMs into the future. (11)

**RESPONSE:** We agree that the livestock industry is important to the area. In the RPD and IND Alternatives, we analyzed the effects of maintaining or increasing AUMs (EIS Chapters 2 and 4). The Record of Decision provides our rationale for selecting the Preferred Alternative as the Forest Plan.

**12. COMMENT:** DEIS 3-76: have limited funds resulted in deferrment of "range analysis annual allotment inspection" and other livestock programs?

- basis for conclusion that rangeland Forestwide in "fair or poor conditon has been sustained". Sustained in fair condition? sustained yield? budgeted "analysis, inspection" undertaken to sustain this conclusion.
- since 1980, equate funds lacking. Congressional administrative policies resulting in fund loss. Forest recommendations for new budget allocations. (1248)

**RESPONSE:** Yes, our range analysis and annual inspections have not been as frequent as we would like, due to budget constraints. However, numerous annual allotment inspections and site-specific vegetation studies have aided our district range conservationists in estimating current range conditions.

**13. COMMENT:** The Plan should address abuse of some permittees on public ranges. There should be more teeth in the Forest Service's administration and rules. (1376)

**RESPONSE:** We feel that the Forest Service currently has adequate authority to administer grazing on national forest lands. The intent of the Plan is to provide broad programmatic direction for Forest-wide management. Problems encountered with individual permittees will be dealt with on a site-specific basis.

**14. COMMENT:** Plan AMS: is generally good but does not include a breakdown of the acreage of land that is in satisfactory or unsatisfactory condition. (1260)

**RESPONSE:** Plan Ch. 3, Section 13 (Range), *Current Management* states, "About 120,000 acres of the Forest's permanent rangelands are in good to excellent condition, 492,000 acres in fair condition, and 340,000 acres in poor condition. The trend is generally static to upward." In addition, FEIS Fig. 3-17 graphically breaks down acreage by condition class.

**15. COMMENT:** An alternative analyzing the benefits to wildlife and costs associated with eliminating grazing entirely should have been considered in this Plan. At the least, reductions in grazing must be enforced to bring all riparian and range areas into good condition and protect wetlands to reduce conflicts with nesting waterfowl. (1220)

**RESPONSE:** We are required by the National Environmental Policy Act (NEPA) to analyze any reasonable alternative. In light of the long history of public land grazing in this area and grazing's substantial contribution to the local economy, we feel that eliminating grazing is not a reasonable alternative. However, we do recognize that grazing can have a negative impact on other resources and uses including wildlife. These potential impacts are displayed in Chapter 4 of the FEIS. Further, a variety of standards and guidelines have been incorporated into the Final Land Management Plan to eliminate or minimize the effects of grazing on other resources and uses. To meet our goals and objectives under the Preferred Alternative, we estimate that livestock grazing will decrease by 3,700 AUMs Forestwide during the first decade. Actual reductions, if any, will be determined on an allotment-by-allotment basis.

**16. COMMENT:** Plan 4-29: (7) This is FS policy. But what will MNF do with this info? It's supposed to be used to eliminate livestock grazing from unsuitable areas. Please clarify. (107)

**RESPONSE:** We will use this information to adjust initial capacity estimates for each allotment. The unsuitable areas will not be fenced from grazing but no capacity will be allowed for it.

**17. COMMENT:** What condition are the allotments in? We have a printout (not in the Plan) showing conditions on every allotment. The info can be incorporated into the mgt area description. Then, the public will have the info to evaluate whether a particular allotment should have a b, c, or d strategy. (107)

**RESPONSE:** The Forest Plan and EIS are programmatic documents having detail consistent with program-level direction. We did not intend to display allotment- or site-specific analyses. Rather, we must conduct additional analysis at the allotment level to design or implement the AMP and achieve the objectives of the Forest Plan. The

details you have requested for allotment condition classes are project design details that are beyond the scope of the Forest Plan and will be addressed in subsequent AMPs and associated NEPA documents.

**18. COMMENT:** DEIS 2-61: *Alternatives*. A statement on improving unsatisfactory condition of range should be added here. (107)

**RESPONSE:** The text has been modified in the EIS.

**19. COMMENT:** DEIS 3-75 - Fig. 3-17: What percentage of fair condition rangelands is in unsatisfactory condition because the trend is declining or static? How much good condition rangeland has a declining trend? (107)

**RESPONSE:** As stated under the subheading *Range Condition*, EIS Ch. 3, Section 13, "The trend (for all classes) is generally static to upward."

**20. COMMENT:** DEIS 4-57: Other major impacts not mentioned on range are watershed protection and water quality MMRs. (107)

**RESPONSE:** These items are adequately addressed under riparian area, water and soil sections in the EIS Ch. 4.

**21. COMMENT:** Some areas on the Forest suffer from absolutely horrifying grazing impacts. This situation must alter, or you will inevitably be faced with a stronger movement to eliminate all grazing from public lands. (189, 198)

**RESPONSE:** We agree public lands in poor condition is unacceptable. However, unnecessarily jeopardizing the livelihood of ranchers as well as the local community is also unacceptable. We are committed to preserving community stability even as we improve Forest resources. We feel that our goals, objectives, standards and guidelines, and management area direction in the Plan indicate that we are implementing a progressive grazing management program designed to rapidly improve range condition and resolve use conflicts. Our commitment to meeting these constraints is reflected in an estimated decrease of 3,700 livestock AUMs in the first decade. EIS Chapter 3 displays current range condition on the Modoc. EIS Chapter 4 displays effects of implementing the various alternatives.

**22. COMMENT:** We urge that the final Plan concentrate on incorporating vigorous efforts toward improvement of range conditions. All range trends must be moved toward "good." In case it is not found possible to do so, reductions in grazing levels must be implemented. (198)

**RESPONSE:** See our response to 189 and 198 above.

**23. COMMENT:** Plan 4-152 - *Standards and Guidelines* (g). (Also Plan 4-154. *Standards and Guidelines* (G) - "bet-

ter allotment management and livestock exclusion" should be listed as the first acceptable practice to remedy stream channel degradation. (364)

RESPONSE: These standards and guidelines are physical measures used to counter stream degradation. Allotment management and livestock exclusion are included in *Range Management Direction*.

24. COMMENT: The DFG recommends that livestock should be excluded from the riparian corridor along Lassen and Cold creeks particularly where structures occur. The DEIS (page 3-191) states that fall grazing is "preventing both streambank recovery and establishment of willows." Of equal significance, studies by the Inter-mountain Region Forest and Range Experiment Station have shown that livestock grazing along streams frequently negates any benefits accruing from habitat structures and that fencing should occur concurrently with structure development. (364)

RESPONSE: We agree that riparian areas need special management considerations because they are sensitive to grazing and other land uses. Because of the linear nature of these areas, it would be very expensive to fence each one. We intend to solve grazing-related riparian problems through range management practices and, where that fails, through exclusion of livestock.

25. COMMENT: I believe that the preferred alternative does not do nearly enough given the magnitude of the problem. 340,000 Acres of Modoc Forest rangeland are in "poor" condition because of overgrazing. (Plan at 3-19). The preferred alternative proposes to meet this crisis with a policy of gradual change which, even if funding is available to implement the proposed range management changes, would not bring the Forest into compliance with State water quality standards for 40 years. The "amenities alternative" would bring the Forest into 94% compliance with State water quality standards in twenty years by immediately closing 10 grazing allotments. (16)

RESPONSE: Forest-wide water quality would not be improved solely by closing 10 allotments to grazing. Those 10 allotments are clustered in a small portion of the Forest; closing them would only improve water quality on a limited area. The AMN alternative also prescribes additional acres of watershed treatment and implementation of the Riparian Prescription Forestwide in the first decade. In addition, we feel the PRF alternative represents a better mix of resource outputs and constraints for net public benefit. EIS Chapters 2 and 4 show environmental affects for all alternatives. The Record of Decision provides our rationale for selecting the Preferred Alternative.

26. COMMENT: Management situation/range & other resources: The summary is generally good. There are

some omissions. What are the actual figures on improvement, static condition, and decline in range condition? How is the current forage capacity arrived at? (How can you set such a high number when the range is already in generally bad shape?) In several places in the range analysis, improvements are advocated over grazing management strategies. Given that the riparian section states, "excluding cattle from riparian areas is the most successful strategy for improving these areas," the Forest needs to consider when fencing is truly cost-effective and when discontinuing or resting an allotment might get the same result much more efficiently. Other improvements, such as stock tanks and shoring up streambanks with junipers, should be undertaken only within the context of an appropriate grazing strategy. (708)

RESPONSE: Range condition and trend figures are displayed in FEIS Ch. 3, Section 13. We estimated Forest-wide forage capacity by determining forage capacity for each allotment. For the estimate, we relied on historical range inventories updated with new condition and productivity classes more reflective of current conditions. The Forest Analysis of the Management Situation (AMS) contains a detailed discussion of this process and is available upon request in the Supervisor's Office. We will determine actual stocking rates, as well as grazing strategies and improvements, on an allotment-by-allotment basis through site-specific analyses.

27. COMMENT: If permits cannot be cancelled because of politics, long-term deferments should be brought forth as a mgt tool. (806)

RESPONSE: At this time we have no reason to cancel grazing permits. We already use deferments as a management tool.

28. COMMENT: What would happen to range condition with current AUM level and current level of range improvement funding? (1021)

RESPONSE: As displayed in EIS Chapter 4, the range condition, watershed condition and wildlife habitat would decline at an accelerating rate on those allotments not properly stocked and managed.

29. COMMENT: (DEIS, pg 3-97) the current high percentage of land grazed under continuous season-long grazing systems must be altered if riparian areas are to be restored. One of the grazing systems identified on page 3-97 (spring use only, rest-rotation, double rest-rotation, substituting sheep for cattle, and total exclusion of livestock) should replace continuous season-long grazing and deferred grazing systems on all such allotments. (1068)



RESPONSE: We agree and will continue to work towards this end.

30. COMMENT: The DEIS concludes that of the numerous grazing strategies available, "strategies which sustain grazing are better than exclusion." This conclusion is untenable. Grazing impacts to riparian areas are an unresolvable conflict. Exclusion of livestock from riparian areas is the only long-term solution to recovery of degraded riparian habitats. The MNF must come to grips with fencing off riparian areas over the next decade, or institute major reductions in AUMs and apply improved grazing systems such as using exclusion fences. (1214)

RESPONSE: The Forest will evaluate several grazing strategies, including total exclusion, on a site-specific basis to reduce grazing impacts to acceptable levels in riparian areas (FEIS Ch. 3, Section 16 *Opportunities*, and Plan Chapter 4).

31. COMMENT: More water would be provided in the uplands to encourage livestock distribution over the total allotment before excluding cattle from the riparian areas. (1283)

RESPONSE: We agree. However, if additional improvements and intensified management do not correct the problem, we will consider exclusion as an alternative.

32. COMMENT: "Conditions have not improved beyond [fair ecological condition] because of present grazing practices." In other words, "extensive" exclusion of cattle from riparian areas has not resulted in raising ecological condition of riparian areas. Why not? (1248)

RESPONSE: Although individual riparian areas are fenced on the Forest, most are not. Further, many of these unfenced areas are not well managed. As a result, ecological condition *Forestwide* has not improved substantially, although *specific* riparian areas have improved dramatically.

33. COMMENT: The one reliable method of improving overgrazed riparian areas is to exclude cattle grazing. Given these goals and standards and the degraded condition of so many Forest riparian areas from overgrazing, the preferred alternative should propose the immediate closure of the most degraded allotments and provide for a greater reduction in overall grazing. (16)

RESPONSE: The preferred alternative proposes studying those allotments in a deteriorated condition first. We will adjust stocking rates and grazing systems on those areas first. Whether the allotment should be closed will be determined from a site-specific analysis.

34. COMMENT: Plan p. 4-60 - Rx Wilderness Std. Range: Rx's are good, but confusing. The Plan appears to

be setting a higher standard for grazing mgt in a wilderness area? Or is it setting just a different standard for wilderness areas? The first is not allowed by law; the second is just common sense.

House report no. 96-617 (copy enclosed) is the only legal mandate for what grazing mgt is and is not allowed in wilderness areas. It should be incorporated into the Plan. We suggest that grazing in wilderness be handled in this manner — in the MA Direction sections: "Livestock grazing operations, where established prior to designation of wilderness, shall, pursuant to Sec. 4(D) (4) (2) of the Wilderness Act, be permitted to continue, subject to provisions of 36 CFR 293. Committee guidelines and policies regarding grazing in NF wilderness areas (H.R. Report No. 96-1126, Dated 6/24/80) will be applied in practical, reasonable, and uniform manner in all NF wildernesses. These guidelines and policies are applicable only to livestock grazing operations." (107)

RESPONSE: The purpose of Standards and Guidelines displayed in the prescriptions is to provide specific direction and guidance for implementing the intent of the prescription. The S and G's in the Wilderness Prescription are designed to maintain or enhance wilderness values and character. We feel that the emphasis of the prescription would not be served nearly as well with a reiteration of the broad, programmatic language contained in Forest Service policy direction, Code of Federal Regulations, or House Report #96-617.

35. COMMENT: I oppose any grazing in designated wilderness. Eliminate grazing in S. Warner Wilderness to eliminate conflict with recreation and bighorn sheep. (35)

RESPONSE: We have no justification for excluding all livestock from wilderness areas. The Wilderness Act authorizes livestock grazing at levels compatible with wilderness values.

36. COMMENT: 3,000 AUMs are not a significant portion of total Forest AUMs. Cost benefit and other considerations in phasing livestock from wilderness. Need for 8 wilderness allotments by adjacent private leaseholders. (1248)

RESPONSE: Three thousand AUMs may not be significant *Forestwide*. But for a permittee, they are essential for rounding out the total ranching operation. The Wilderness Act authorizes livestock grazing at levels compatible with wilderness values.

37. COMMENT: In DEIS Ch. 4, Pg. 110, under range management it is stated that domestic livestock offend some users of the wilderness. It should also be stated that some users offend livestock and livestock operators through harassment destruction, and vandalism of livestock, camps, fences, and signs. (1296)



RESPONSE: Under the Wilderness Act, grazing is permitted if it is compatible with wilderness quality. The fact that some users are offended indicates that a conflict between grazing management and wilderness management may exist. As such, we have displayed that potential for conflict in the EIS.

38. COMMENT: We strongly disagree that grazing of any livestock should be allowed in wilderness areas and request that future permits not include these areas, and that current permits be transferred to other parts of the Forest. (64)

RESPONSE: We have no justification to exclude all livestock from wilderness areas. The Wilderness Act authorizes livestock grazing within levels compatible with wilderness values.

39. COMMENT: (DEIS, pg 2-170) The Preferred Alternative specifies improving ecological condition by managing livestock distribution through structural improvements. What amount of improvements will be constructed and at what cost? Is the amount of this type of structural improvements equal in all alternatives? (1068)

RESPONSE: The estimated number and cost of structural improvements varies among alternatives, based on management intensity for each alternative. We will determine actual improvements and costs on an allotment-by-allotment basis.

40. COMMENT: The California Native Plant Society (CNPS) is concerned that if budget cuts continue, current levels of grazing and impacts will continue without the needed structural improvements. What adjective will be used to describe areas currently in poor ecological condition exposed to 20 more years of grazing impacts? CNPS requests that the MNF develop a much stronger policy in the final Plan which insures that existing allotments will receive the needed structural and non-structural improvements in a timely manner, or face further reductions in AUMs. (1214)

RESPONSE: If no attempt is made to improve range management on the Forest over the next 20 years the areas currently in poor condition would probably be reduced to very poor or non-productive status. If we are unable to install needed improvements or implement intensive grazing systems, our only recourse is to further reduce AUMs. This will be evaluated on an allotment-by-allotment basis.

41. COMMENT: Watering tanks often claimed to be for wildlife are cattle water holes. Water from large areas is channelled into stock ponds. Areas formerly free of livestock are now subject to intensive grazing to the detriment of wildlife.

- how costly are these cattle dispersion, water hole, water tank projects?
- how many livestock are served by various types of water dispersion projects?
- impacts of dispersion projects on wildlife. (1248)

RESPONSE: While it is true that livestock and wildlife do not differentiate between waterholes, they each drink from water constructed primarily for the other. The idea is to disperse both wildlife and livestock grazing use over a larger area. Cost of water development varies with the type and size of development. Numbers of livestock served by each development also vary depending on the allotment stocking rate and amount of available forage. We will conduct site-specific analyses on an allotment-by-allotment basis to determine costs and impacts associated with water development.

42. COMMENT: Impact of fences (existing necessary, unnecessary and future fencing) on vegetation (grazing patterns, and other factors), wildlife (especially large mammals—deer, bighorn, pronghorn) (also from grazing patterns), migration routes, water accessibility, and other considerations. Worst-case appraisal of fencing impacts. (1248)

RESPONSE: The impact of fencing will vary on a site-by-site basis. The Forest Plan and EIS are programmatic documents having detail consistent with program-level direction. We did not design or analyze projects on a site-specific basis in the documents. We will conduct additional project-level analysis to design or implement projects to achieve the objectives of the Plan. The details you have requested for fencing are project design details that are beyond the scope of the Forest Plan, and will be addressed in subsequent project-level analysis.

43. COMMENT: DEIS 3-80 [see text]: these paragraphs read like a textbook on range mgt. FMP-DEIS are required to step beyond enunciation of generalities to specific on-the-ground planning application of broad principles.

- how do each of the non-structural improvements in quoted paragraph [see text] meet each of the 4 factors of the previous paragraph? (1248)

RESPONSE: The Forest Plan and EIS are programmatic documents having detail consistent with program-level direction. We did not design or analyze projects on a site-specific basis in the documents. We will conduct additional project-level analysis to design or implement projects to achieve the objectives of the Plan.

44. COMMENT: Non-structural improvements will include burning, juniper woodcutting, and seeding with native species. Methods of seeding not involving disking and herbicides will be attempted. Pronghorn-passable

fencing will be preferred in all pronghorn high and medium capability habitat, and all migration routes. Non-structural improvements will be restricted to those range sites which can produce at least an average of 300 pounds per acre. Low sagebrush sites will not be manipulated. (500)

RESPONSE: Your comments are in the Plan and EIS, and are commonly incorporated into site-specific projects.

45. COMMENT: The objectives give the level of non-structural range improvements as 6,800, when the issues just stated it would only be 150 acres per year. Have the 22,000 acres of seedlings been evaluated on the cost-effectiveness of maintaining them? There are also no range improvement or riparian goals in the objectives charts. (708)

RESPONSE: The 6,800 acres referenced here are cumulative over the 50-year planning horizon. We will evaluate the 22,000 acres of seedlings for cost efficiency as they are developed and analyzed on a site-specific basis. Range and riparian objectives are displayed in the Plan (Table 4-4). These objectives are further refined and displayed in the Forest-wide Standards and Guidelines for Range and Riparian Areas (Plan Ch. 4, Section D).

46. COMMENT: Plan 3-21 - *Opportunities*: "adding stock tanks" is not a good idea without a good grazing mgt plan. Such actions draw livestock into areas previously used only by wildlife — in effect, spreading overgrazing around. Please clarify. (107)

RESPONSE: We agree that randomly constructing improvements without a management plan is not conducive to good management. However, strategic use of water developments disperses livestock over an allotment and encourages balanced forage utilization.

47. COMMENT: Plan 4-109 - *Rangeland Mgt Rx*: There appears to be an excessive amount of Forest acres in this Rx. More acreage in a general wildlife Rx would be more appropriate. Same for forage utilization. (107)

RESPONSE: The AMN alternative explored this objective; but we dismissed it because of its adverse impacts on the local economy (EIS Table 2-18).

48. COMMENT: Plan 4-115 - *Range-Forage Rx*; 4-133 - *Timber-Forage Rx*; and 4-117 - *Vegetation Rejuvenation*: sounds like something a quack would sell in a bottle!! Doesn't sound ecologically sound or financially feasible. We question this concept. (107)

RESPONSE: Based on available research and local experience, we feel the concept of improving forage availability, composition and vigor by the various methods listed is ecologically sound. Economic efficiency varies greatly by vegetation type, soil productivity and management objec-

tives. We will evaluate and implement vegetation manipulation projects on a site-specific basis.

49. COMMENT: Plan 4-115 - *Range-Forage Rx*: Standard 2.a.1.; 4-133 - *Timber-Forage Rx*:

- We suggest an additional standard here of "allow no livestock grazing for two grazing seasons after prescribed or natural fires and plantings or seedlings."
- No routine "rejuvenation of mountain mahogany stands" should be permitted. Current work is experimental only. We suggest this section be eliminated here and added to Forest research needs. (107)

RESPONSE: The Range-Forage Prescription states, "All cultivated acres will be rested for at least one growing season after seeding." Two or more grazing seasons of rest may be used in cases where additional seedling establishment or vigor is needed. We agree that rejuvenation of mountain mahogany stands is experimental; we will not practice it on a large scale. This will be added to our request for research needs.

50. COMMENT: Plan 4-115 - *Range-Forage Rx*: Standard 2.a.1.; 4-133 - *Timber-Forage Rx*: 4-121: The Sierra Club doesn't think "farming" is appropriate as a standard for public land mgt. We don't think the public really wants our Forests turned into farms. We object to this whole section. (107)

RESPONSE: "Farming" refers to intensive management measures employed under the Range-Forage Prescription. We have changed all instances of "farming" and "farmed" to "cultivation" and "cultivated". The intent of this Rx is to optimize forage production. It is not applied to the entire Forest as a standard, but rather to selected areas most suitable for intensive management.

51. COMMENT: App. J-1: We object to the statements on "farming". (107)

RESPONSE: See above response.

52. COMMENT: "Rangeland improvements are low on the funding priority list." (DEIS 3-143). The preceding quotation seems to indicate that the Modoc NF does not want to be "successful" and is not able or willing to fund a successful rangeland improvement program. "Implement cost-effective range improvements" (Plan 4-29).

What are "cost-effective" improvements? Since it appears that costs to exclude cattle from the riparian zone exceed grazing revenues, how much improvement will actually be accomplished? (364)

RESPONSE: The statement about rangeland improvements being low on the funding priority list is not correct, and has been removed from the final EIS. Cost-effective improvements produce a benefit/cost ratio of 1:1 or

greater. This does not mean we will not fund projects that are not cost effective. Many times social or environmental concerns outweigh strict economic analysis.

**53. COMMENT:** What are the 6,800 acres of non-structural range improvements to be? Burning may be detrimental to deer habitats. How will the 22,000 acres of seedlings be maintained? By reseeding or by livestock adjustments? (364)

**RESPONSE:** The non-structural improvements will range from seedings of nonproductive lands to type conversions, depending on the specific site and allotment. We will maintain 22,000 acres of seedlings through rotation grazing systems and some minor grubbing. All projects will be accomplished through a site-specific environmental analysis.

**54. COMMENT:** 4-29. 12. *Range a.* What does "(1) Implement cost-effective range improvements" mean? (364)

**RESPONSE:** Cost-effective range improvements provide a benefit/cost ratio of 1:1 or greater. We analyze these improvements on an allotment-by-allotment basis.

**55. COMMENT:** Instead of proposing to permit livestock grazing to exceed grazing capacity until the year 2000, a far shorter time period should be established. The Forest Service unquestionably has the authority to adjust use now as well as the responsibility to do so. See, e.g., 36 CFR 222.4; *Perkins v. Bergland*, 608 f.2d 803 (9th Cir. 1979). We also submit that, whatever deadline is selected, the Plan should specify the rationale for its selection. (1257)

**RESPONSE:** The Forest Plan gives direction to balance livestock grazing use with capacity of the land to support it. We predict this will happen by the year 2000. Since the first priority will be given to those allotments in unsatisfactory condition, we see no justification for the additional cost and impacts of achieving this balance sooner by simply reducing livestock numbers.

**56. COMMENT:** Goals for improved range condition and for development, revision and implementation of Allotment Management Plans (AMP's) should definitely be adopted as part of the Plan. The former should include specific quantified acre totals for each condition class. (1257)

**RESPONSE:** The Forest Plan and EIS are programmatic documents having detail consistent with program-level direction. We did not intend to display allotment- or site-specific analyses. Rather, we must conduct additional analysis at the allotment level to design or implement the AMP and achieve the objectives of the Forest Plan. Forest Plan Chapter 4 displays goals for improved range condi-

tion; Appendix S shows allotment management plan priorities.

**57. COMMENT:** MNF goals for range should include these additions:

- rangelands will be in satisfactory condition by the end of the planning period
- all grazing allotments and wild and free-roaming horse territories will be under approved mgt plans by the end of the planning period. These should be backed up with acres improved to satisfactory condition and Miles of damaged stream rehabilitated entries (Plan Table 4-2).

**Plan 4-17:** Additions to other resource program objectives need to include:

- existing AMPs should be revised to bring them into compliance by a Reasonable time — 1995-2000. Then they can be revised periodically to update the mgt to correct the problems. (1260)

**RESPONSE:** These suggestions are incorporated in the Forest mission and goals (Plan Chapter 4).

**58. COMMENT:** Plan Ch. 2: The statement on range presents a problem in that it implies that S&Gs in the rest of the Plan are presumed to never reduce the total livestock on allotments. Too many allotments are in degraded condition to believe that AUM reductions won't have to be made. (1260)

**RESPONSE:** We estimate a decrease of 3,700 AUMs of forage available for domestic livestock in the first decade (EIS Chapters 2 and 4, and Plan Chapter 4). The estimated decrease is a result of implementing Standards and Guidelines, and meeting the objectives described in Plan Chapter 4.

**59. COMMENT:** Plan 4-3, *Overall Management: Improved Rangeland Condition* — does this mean all rangeland is in poor shape? If so, I think you need to prove it through documentation. (1153)

**RESPONSE:** No, this does not mean all rangeland is in poor shape. Good condition range can be improved to excellent, fair to good etc.

**60. COMMENT:** The range goals are weak and confusing. The balance of grazing and forage capacity is supposed to be achieved by the year 2000. This could postpone efforts, when the goal should be to immediately start improving range condition until all range is in good or better condition, hopefully by 2000. If this is what you mean, clarify it. (708)

**RESPONSE:** By balancing grazing use with capacity, the range will immediately start improving. However, the length of time it takes to reach satisfactory condition varies

## 181 - Juniper Management

with type of vegetation, weather etc. For example, a range with a woody component will require longer to reach good condition than range with a strictly herbaceous component.

**61. COMMENT:** The suitability of Forest lands for livestock grazing. Suitability criteria area: slopes 40% are not suitable for grazing cattle. Slopes 60% are not suitable for grazing sheep. Lands incapable of producing at least 60 pounds of useable forage per acre, including permanent bodies of water, are not suitable. Areas which are inaccessible, physical barriers, may be designated unsuitable. (500)

**RESPONSE:** Thank you for your comments. These items are included in the Plan and EIS; and are commonly incorporated in site-specific actions.

**62. COMMENT:** Plan 4-7 - *Range*: These goals are quite weak. #2 is the only good one. There should be a goal for improved resource conditions, such as, "Rangelands will be in satisfactory condition by the end of the planning period." Please add "All grazing allotments and wild and free-roaming horse and burro territories will be under approved mgt plans by the end of the planning period." Obviously the objectives should be written to implement these goals on 4-17. (107)

**RESPONSE:** To say rangelands will be in satisfactory condition is not possible, because the length of time vegetation responds to improved management varies depending on weather and type of vegetation. Range with woody component will take longer to reach good condition than range with a strictly herbaceous component. The goal concerning Wild Horse and Burro Management Plans is reflected in Forest Standards and Guidelines (Plan Chapter 4).

**63. COMMENT:** Plan 4-17 - *Other Res. Program Objectives*. *Range*: existing AMPs should be revised to bring them into compliance with the Plan (see p. 1-2) by a reasonable time — 1995 or 2000. (107)

**RESPONSE:** We agree and have incorporated this in Plan Chapter 4.

**64. COMMENT:** Plan 4-17 - *Other Res. Program Objectives*. *Range*: Add to ways to improve ecologic condition: adjusting livestock numbers to the carrying capacity, changing seasons of use, using deferred or rest-rotation grazing, enforcing conservative utilization levels, especially for riparian areas, etc. (107)

**RESPONSE:** We feel these methods are adequately discussed in the Forest Standards and Guidelines (Plan Ch. 4, Section D - Range).

## 181 - Juniper Management

**1. COMMENT:** The MNF should increase and encourage juniper wood cutting. This will increase rangelands acreage and fill an important void for private firewood users. (231)

**RESPONSE:** We will continue to encourage juniper wood cutting to improve rangeland production.

**2. COMMENT:** Plan 2-3. Firewood. Juniper and sage lands should be managed with wildlife needs in mind. (364)

**RESPONSE:** We agree and feel our Forest-wide Standards and Guidelines accomplish this.

**3. COMMENT:** DEIS 3-75 refers to a "widespread reduction in forage production." Figures on the reduction by areas. (1248)

**RESPONSE:** Specific figures on forage production are not available for that time period. However, considering the amount of acreage that is in fair and poor range condition, it is reasonable to assume that there was a commensurate loss of palatable forage as range sites deteriorated.

**4. COMMENT:** I support cutting juniper stands to improve forage growth. (677)

**RESPONSE:** We agree and will continue that practice. We will also develop a juniper management plan after the Plan is released.

**5. COMMENT:** DEIS 3-207 [W. Juniper - opportunities]: does "would" mean updated vegetation maps shall be completed — budget, date of completion? (1248)

**RESPONSE:** Updated vegetation maps will be completed. Precise dates and budgets are not known at this time.

## 184 - Grazing Fees

**1. COMMENT:** We should not give away any part of our national forests at less than market value. (45)

**2. COMMENT:** Below-cost AUMs should be eliminated. (1031)

**RESPONSE** (to the two comments above): The grazing fees are set by Congress and, therefore, are outside the scope of this Plan.

**3. COMMENT:** Grazing only benefits the individual permittees and is subsidized by federal taxpayers. Grazing fees don't begin to pay for the damage that grazing does to streams and wildlife habitat, let alone the damage to wildlife itself and to recreation values. (342)

**RESPONSE:** As custodians of public trust lands, the Forest Service operates under authorities granted by Congress. Grazing fees are set by Congress and, therefore, are outside the scope of this Plan. However, beyond the return of revenue to the government provided in fees, livestock grazing provides other benefits, including contributions to local and state economies. Grazing also supplies a product of national demand. These benefits, as well as the adverse impacts associated with grazing on the Modoc NF, are displayed throughout Chapters 3 and 4 of the FEIS.

## 185 - Transitory Range

**1. COMMENT:** Transitory range forage can be provided in harvested forest areas during the early stages of timber regrowth if an aggressive program is undertaken. As in all forest outputs, we feel the Modoc NF staff, in its planning process, should seek the optimum level rather than the convenient and easily attained. (1282)

**RESPONSE:** As shown in EIS Chapter 4, we rely on transitory forage for approximately 49.9M AUMs in the first decade.

**2. COMMENT:** 3-20. The transitory ranges are some of the highest value deer habitats on the Modoc NF. This section fails completely to mention wildlife or the value of transitory range to wildlife, or the impacts of forest management practices to wildlife which use these areas. (364)

**RESPONSE:** Direction outlined in the timber forage prescription covers wildlife needs for transitory forage. Under this prescription livestock and wildlife forage production are given equal emphasis with timber production on 164,200 acres of the Forest.

**3. COMMENT:** Any plan I could support must consider the following: a scientific evaluation of the forage available in timbered areas used as transitory range. Before the final plan is adopted can you answer the following question? Will a review of transitory range capacity be done? (1025)

**RESPONSE:** EIS Chapter 3 discusses transitory forage. An additional site-specific review will be done for each

individual allotment as it is analyzed. We will take measures to optimize and use that forage.

**4. COMMENT:** I'd like to see more seedling of grass in the new tree plantations. (1229)

**RESPONSE:** We've done that in the past and found that tree survival was extremely poor due to the competition for limited moisture. If we lived in an area that received 36-40 inches of precipitation it might work. But our experience indicates that if we plant grass in plantations we cannot grow trees.

## 186 - AUMs

**1. COMMENT:** Livestock grazing in the Modoc NF must be drastically reduced now, and if the past destructive trends continue, stopped entirely in the near future. (356)

**RESPONSE:** We have curtailed trends of the late 1800's and early 1900's, and will continue to improve management on an allotment-by-allotment basis. As allotments are analyzed, new grazing capacities will be adjusted for each. We estimate that in order to meet goals and objectives defined in the Forest Plan, livestock stocking levels will decrease by about 3,700 AUMs. We feel this is strong evidence of our commitment to deal with conflicts resulting from past improper grazing practices.

**2. COMMENT:** I would like to go on record to support an increase in AUMs. AUMs should be kept near the current numbers. (231)

**RESPONSE:** During our public involvement process we gained consensus from the rangelands working group that the final level of grazing on the Forest would be determined on an allotment-by-allotment basis: AUMs on some allotments will increase and some will decrease. However, we estimate a decrease of approximately 3,700 AUMs in order to meet the goals and objectives defined in our Forest Plan. EIS Chapters 2 and 4 analyze the alternatives that maintain or increase AUMs. The Record of Decision provides our rationale for selecting the Preferred Alternative.

**3. COMMENT:** Any more cuts in AUMs will put us back in the red – not to mention the impact it would have on the community. (698)

**RESPONSE:** The Forest Plan and EIS are programmatic documents having detail consistent with program level direction. That is, we cannot design or analyze site-specific projects at this level. To achieve objectives of the Plan, we must complete project-level design and analysis. We estimate a decrease of approximately 3,700 AUMs in order to meet the goals and objectives displayed in the Plan. Re-

gional and local economic impacts are displayed for all alternatives in Chapters 2 and 4 of the EIS.

**4. COMMENT: The most efficient method of improving range is to exclude cattle. (708)**

**RESPONSE:** We disagree. By implementing intense grazing systems and proper stocking, we can meet the resource objectives displayed in the Plan while avoiding major economic impacts to grazing permittees and the local economy.

**5. COMMENT: It is foolish to set out on a livestock AUM reduction program with the intent to provide more forage for a proposed 50 percent increase in the deer population when the limiting factor of the deer herd is unknown. (930)**

**RESPONSE:** We are not implementing an AUM reduction program. Rather, we estimated the effects of increasing deer herd numbers to levels consistent with goals established in the State deer herd management plans. In our site-specific analyses, deer herd needs will be considered on an allotment-by-allotment basis.

**6. COMMENT: We think to maintain the present AUMs is reasonable. (992)**

**RESPONSE:** We evaluated maintaining or increasing AUMs in several alternatives (EIS Chapters 2 and 4). The Record of Decision provides our rationale for selecting the Preferred Alternative.

**7. COMMENT: If the PRF is implemented, will livestock reductions occur on an allotment-by-allotment basis based on forage allocation? If so, what procedures will be used? (1217)**

**RESPONSE:** All allotments are evaluated on a case-by-case basis; stocking rates are adjusted according to the condition of the range within each allotment. A technical review team on the Warner Mountain Ranger District and Coordinated Resource Management Plans on the Big Valley, Devil's Garden, and Doublehead Ranger Districts are the methods we use to develop allotment management Plans and conduct monitoring.

**8. COMMENT: Draft Forest Plan, page 4-164, first sentence: how about changing "final" to "updated?" (1021)**

**RESPONSE:** We have changed the Plan to read, "Use technical review teams to update stocking rates and grazing systems on all allotments."

**9. COMMENT: What is current AUMs (1988)?**

**RESPONSE:** We currently permit 122,500 AUMs.

**10. COMMENT: The permitted numbers of livestock should be hardwired into the computer as were other**

**constraints since the permitting system binds both parties to certain conditions. (1283)**

**RESPONSE:** Grazing permits do not guarantee a constant number of animals on national forest land into perpetuity. Therefore, hardwiring permitted numbers in the model would not be appropriate. For analysis purposes, we hardwired AUMs in the CUR and IND alternatives. However, this constraint resulted in unacceptable impacts on other resources and uses. The Forest Plan and EIS are programmatic documents having detail consistent with program level direction. That is, we cannot design or analyze site-specific projects at this level. To achieve objectives of the Plan, we must complete project-level design and analysis.

**11. COMMENT: Why is there no allowance made for different kinds of animals consuming the forage? How can 100 yearlings (500-600-lb. steers or heifers) be assumed to consume the same amount as 100 cows or pairs (cows with calves at side)? (1322)**

**RESPONSE:** We *do* make allowance for yearlings: the forage requirement of a yearling is 70% that of a cow/calf pair.

**12. COMMENT: We would like to see the range issue question and response written in terms of correcting mgt problems and adjusting livestock use to the carrying capacity rather than how many AUMs will go to which animal. (107)**

**RESPONSE:** We agree. We will analyze each allotment on a case-by-case basis and make appropriate adjustments in stocking level. The forage estimate presented in the Plan was for broad planning purposes only and should not be construed as the final answer.

## 187 - Forage Utilization

**1. COMMENT: See that cattle do not graze the meadows to death so spawning gravels are not wilted by the rain and melting snows. (43)**

**RESPONSE:** Our standards and guidelines for riparian areas are designed to protect and enhance these areas and associated stream channels.

**2. COMMENT: DEIS 3-74: why is MNF allowing continued grazing on the 340,000 acres of range in poor condition rather than allowing the land to recover? (1220)**

**RESPONSE:** We feel that the Forest Standards and Guidelines (Plan Chapter 4) allow for timely improvement of all rangelands, including those considered in poor con-

dition. Exclusion is one management tool among many that will be considered on a site-specific basis.

**3. COMMENT: Is it true most range is in fair to poor condition? This is very bad policy. Substantial reductions or terminations are desirable until the range is in good condition. (49)**

**RESPONSE:** Yes, most rangelands are in fair to poor condition. We feel that we can improve the condition of the range through improved grazing systems without drastic reductions in livestock numbers. Some reductions, however, are likely (EIS Chapters 3 and 4).

**4. COMMENT: Dietary overlap and forage allocation for deer is apparently calculated only on grass, forb and bitterbrush areas. Dietary overlap is more extensive and should include other areas and vegetation types. (364)**

**RESPONSE:** We feel that the forage estimate is sufficient for a broad planning document. We will handle the allocation on an allotment-by-allotment basis as the allotments are analyzed.

**5. COMMENT: Range condition is to be measured here by key forage plants. This does not include sensitive and rare species that need to be inventoried, or put enough weight on general diversity. (708)**

**RESPONSE:** As allotments are analyzed sensitive and rare plants are inventoried. As a part of the allotment planning process if these populations are found, they are protected or the physiological needs of the plant are met to ensure the continued viability of the population.

**6. COMMENT: Why was the impact of the 30% utilization standard not addressed in the DEIS? Figure 3-22 grazing management within riparian areas on page 3-96 of the DEIS shows approximately 55% of the current management is continuous season long. The AMS for riparian states approximately 45% in Table 1 is continuous season long within riparian areas. Ninety percent cuts in allotted numbers may not avoid violating the 30% standard (pers. comm. MNF personnel). The impact of this standard is more than insignificant. (1283)**

**RESPONSE:** The 50% and 30% utilization figures displayed in the Forest Standards and Guidelines are contained in a guideline—not a standard. Guidelines allow much flexibility in determining where and how they will be applied on individual allotments. Because of such flexibility, displaying impacts of this guideline for the entire Forest is difficult and inappropriate. We will analyze and evaluate the applicability of guidelines for each allotment

in site-specific environmental analyses; and we will display impacts at that time.

Figure 3-22 is correct and correlates with the 45% figures shown in the AMS. Approximately 19,000 acres have been identified as riparian areas on the Forest. Figure 3-22 shows that about 8,500 acres (nearly 45%) are currently managed under continuous season-long grazing.

Even large reductions in stocking rates may not substantially lower use in riparian areas or improve the condition of those areas. Therefore, we must treat them on a site-specific basis and consider management alternatives, including intensive grazing strategies, improvement to divert livestock from riparian areas, and, where justified, exclusion fencing.

**7. COMMENT: Will you require that cattle be removed from the range at 30% utilization without first trying to increase forage production? (1411)**

**RESPONSE:** Utilization standards are analyzed and set at the allotment level as one tool used to meet specific management objectives. The utilization guidelines displayed in the Plan provide Forest guidelines for completing this effort while the “in general” qualifier allows flexibility for the ranger districts to customize an allotment management plan to deal with the specific conflicts encountered on that allotment.

**8. COMMENT: Page 4-151 of the small book reads; a. (S) In general, manage livestock to meet the following utilization levels: 1. Under season long grazing use, <30% of the total annual grass/forb production. Who determines the 30% figure and what studies were made to come up with it? How are these standards going to be implemented? How and what time frame will be used in implementing these standards? (810)**

**RESPONSE:** Our range conservationists, in conjunction with permittees will determine utilization levels. Studies to determine appropriate grazing levels have been conducted by the Forest Service and universities for more than 40 years. We refined utilization criteria in the Forest Standards and Guidelines for site-specific application in the Riparian Area Prescription. Appendix T in the Forest Plan discusses these criteria and their application, and provides literature citations for further study. These guidelines will be implemented on an allotment-by-allotment basis. We will start with allotments that are the most critical, and work our way through all the allotments on the Forest.

**9. COMMENT: In the Standards & Guidelines 4-112 #2-b (Plan) the Forest Service should be more liberal in your interpretation of utilization. The 50% used and 50% left that the Forest Service uses to determine if the range**



is overgrazed leaves a lot of forage that could be used. (984)

RESPONSE: The reason for leaving 50% is to maintain or enhance wildlife habitat, plant vigor, watershed condition, etc. Forage production is not always the primary objective for a particular land area.

10. COMMENT: Range forage allocation should be maintained or increased to help the local economy. (1007)

RESPONSE: We analyzed several alternatives that considered maintaining or increasing AUMs in EIS Chapters 2 and 4. The Record of Decision provides our rationale for selecting the Preferred Alternative.

11. COMMENT: At what point does the accuracy of the data fall below a level that is acceptable for even planning purposes? The EIS does little to describe the highly speculative nature of data. The reader is lead to believe that the data is accurate. Use of a disclaimer would be appropriate. (1217)

RESPONSE: We are not sure to which data you refer. We feel all the data we used are acceptable for a broad programmatic document like the Plan. We do not think a disclaimer is necessary.

12. COMMENT: The Forest Service assumes that forage production within a range site is the product of the mid-point of the condition class range times the potential forage production. Under this procedure, it is assumed that current forage production of a range site in fair condition would be 38% of its potential production. Resource Concepts disagrees that this assumption is a reasonable one. This one assumption has the potential for producing substantial error in determining current forage production on the Modoc National Forest. (1217)

RESPONSE: We feel this assumption is reasonable and sufficient for a programmatic document such as the Plan. We will continue to look at each allotment on an individual basis and determine management and carrying capacity.

13. COMMENT: Attachment #2 provides the opinion of the Calif. State range conservationist, Joel Brown, concerning this issue. Brown states in attachment #2:

"Underlying most misconceptions about range condition/forage production is the belief that lower range condition and forage production are linearly related. I don't know of any basis for this assumption. The basic assumption that current forage yield is the product of mean condition class times the site potential to produce bitterbrush, grass, and forbs is inherently wrong. The yield of bitterbrush, grass, and forbs is not linearly related to condition class. Was the assumption that mean percent of condition class multiplied by the potential production of grass, forbs, and bitterbrush equals cur-

rent forage production subjected to any peer review from outside the FS? If so, what entities were consulted?" (1217)

RESPONSE: The linear relationship was not subjected to peer review. We consulted with the Soil Conservation Service on the use of the range sites that we used on a local basis. We recognize that there is not a consistent linear relationship between forage production and range condition. However, we do feel that this assumption is valid for estimates displayed in a programmatic document, such as the Forest Plan. Actual carrying capacity will be determined through site-specific analysis and monitoring.

14. COMMENT: The prescription of timber forage requirement is needed with forage given equal emphasis. The need for winter deer feed is critical. The Forest is short of bitterbrush and other deer feed. Deer winter on private land 4 to 5 months each year. Some form of direct payment should be made to the land owner. (749)

RESPONSE: We apply the Timber-Forage Prescription, which strives to produce livestock and wildlife forage equally with timber, to 110,291 acres distributed within nine management areas (Plan Chapter 4). Because the final number of deer is CDFG's decision, determining direct payments to the landowner is outside the scope of the Plan. This estimate was used only for modeling purposes; actual allocation will be made on a site-specific basis.

15. COMMENT: Before cattle are excluded from riparian areas, the Forest Service should provide similar quality and quantity of water. More water should be provided in the uplands to encourage livestock distribution over the total allotment before excluding cattle from the riparian areas. (810)

RESPONSE: Before cattle are excluded or additional waters developed, we will analyze each allotment for the best use of forage, and to determine what improvements are necessary to reach our objectives.

16. COMMENT: If all riparian areas were used only to 30% then all livestock and many wildlife species would have to be removed from the Forest. The answer to riparian improvements is on a case-by-case plan, not an arbitrary unobtainable percentage rating. (1025)

RESPONSE: We agree. The 30% figure is a guideline in the Forest Plan and may actually vary on a case-by-case basis to accommodate unique situations encountered on each allotment. However, if we cannot meet resource objectives with other approaches, livestock may be removed early to meet the 30% criteria.

17. COMMENT: I would say that implementation of this standard as to the reductions in grazing that it would



cause has not been adequately researched in the economic analysis of the Forest Plan. I would rather see a standard set that would allow more flexibility so that Forest personnel and cattlemen could take care of problem areas and allow unabused areas to be managed as they are currently. (1066)

RESPONSE: These utilization criteria are guidelines. We will analyze each allotment on a case-by-case basis in determining stocking levels. The AUM levels presented are estimates of impacts that may occur as the Forest meets its desired future condition displayed in the Goals and Objectives section (Chapter 4) of the Plan.

18. COMMENT: I feel that there is great error in the amount of forage production on the Forest. It is very conservative. There were large acreages left out with no forage allocation. It was classed as either unsuited or some other analysis. It has no forage base for deer, yet when the forage base is taken into consideration, then deer is subtracted from the number of animal unit months that is received for cattle. The deer comes out first. What's left goes for cattle and all of the base is not in there. (1025)

RESPONSE: We will analyze allotments on a case-by-case basis to determine allocations. The information presented in the Plan is for broad planning purposes; it does not and cannot be interpreted down to a unit of land as small as an allotment. We feel that our estimate of forage production is reasonably accurate and sufficient for planning purposes.

19. COMMENT: I recommend that the Forest Service maintain current livestock numbers and monitor the forage at the end of the grazing season for 3-5 years. There should be sufficient information to fairly adjust livestock numbers or deer numbers either upward or downward. (1053)

RESPONSE: We will analyze allotments on a case-by-case basis and will make adjustments (either up or down) based on that analysis. This process typically takes 3 years to complete and is generally used when a new management scheme and stocking rate are being implemented.

20. COMMENT: Utilization limits should be included as a strategy to allocate forage and to improve range conditions. It is clear that good integrated grazing mgt plans are needed for each allotment and without them quick-fix solutions, such as "adding stock tanks" (Plan 3-21), may do more harm to wildlife and allotment condition than good. (1260)

RESPONSE: Thank you for your comment. We agree.

21. COMMENT: An integral component of MNF's determination of available forage production is the extent and

class of range condition. There is no discussion provided in the DEIS and Range AMS concerning how current vegetation composition was determined for the MNF. Based on discussions with MNF personnel, this data was derived from a range analysis survey performed during the 1960's and verified by ranger district review. At what level of intensity did the ranger districts review the 1960's range analysis data in an attempt to update the results? In approximate terms, what percent of area of MNF was upgraded and downgraded in condition class as a result of the ranger districts' review of the data? What are the percentages of the MNF permanent rangeland currently in an upward and downward trend and how was trend determined? (1217)

RESPONSE: The ranger district review was extremely intense. About 10% was upgraded and about 10% was downgraded. Trend in vegetation was determined by species composition. Trend in soil was determined by amount of bare ground, evidence of erosion, amount of litter, etc. Methodology for determining range condition is contained in the Range AMS which is available in the Forest Supervisor's Office. EIS Chapter 3 displays range condition and trend.

22. COMMENT: 36 CFR 219.12(d) states, "Each Forest Supervisor shall obtain and keep current inventory data appropriate for planning and managing the resources under his or her administrative jurisdiction." Public Range Improvement Act section 4(a) requires the FS to maintain on a continuing basis an inventory of current range conditions and trend on public rangelands. Does the MNF consider they are in compliance with this regulation and law by utilizing data collected + 20 years ago? Does the status of trend on MNF, based on professional judgment, constitute a "record of trends of range condition" as described by PRIA?

NEPA 1502.24 requires agencies to disclose any methodologies used in the analysis and discussions within the DEIS. Why did the MNF elect not to present methods utilized to determine trend nor discuss the use of 1960's range analysis data to determine range condition? (1217)

RESPONSE: We feel that we are within all the regulations that you cite. The methods we used to determine range condition and trend were taken from the *Range Environmental Analysis Handbook—California Region (R5)*. Although it was not referenced in the text of the AMS, it was included in the reference section. Further, the Range AMS, available in the Modoc National Forest Supervisor's Office, discusses methodology for determining range condition and trend.

23. COMMENT: In reference to methodology and scientific accuracy, 40 CFR 1502.24 states, "Agencies shall insure the professional integrity, including scientific in-

tegrity, of the discussions and analyses in the environmental impact statements." Does MNF consider the before mentioned assumption as being scientifically accurate? (1217)

RESPONSE: Yes, see above response.

24. COMMENT: Plan 4-17 states "Adjust permitted livestock grazing to meet Forest S&Gs, including to improve water quality, fisheries, and riparian areas, and meet state deer herd goals." As eluded to in the Plan and DEIS, livestock grazing numbers will be reduced based on a number of criteria. Yet, the MNF in its analysis, only examines the effects of livestock reductions resulting from forage allocation to meet deer herd goals.

Why were all the effects of implementation of the S&Gs not quantified in terms of livestock aum reductions? Wouldn't 40 CFR 1502.22 and 1502.16 require MNF to address all of the reasonable foreseeable impacts to livestock grazing? (1217)

RESPONSE: Effects of implementation are quantified and displayed in Chapters 2 and 4 of the EIS. Estimate of effects is based on implementation of the Forest-Wide Standards and acreage allocation to a variety of management prescriptions. Guidelines, by definition, are not directive, nor points of decision. Rather, they provide informal guidance for future site-specific analysis and decision. Because guidelines may be implemented on a site-specific basis it would have been unreasonable, if not impossible, to model or estimate the resulting impacts. If we incorporate guidelines into a particular site-specific decision in the future, we will analyze and display the impacts at that time.

25. COMMENT: If livestock reductions portrayed in the DEIS and Plan are for analysis purposes only, the documents should clearly state this fact. In addition, the reasons why the info is suitable for analysis purposes only should be included.

The values concerning current forage availability, deer forage demand, and potential forage production should be presented as "estimates" as opposed to fact.

MNF should list the assumptions used in estimated carrying capacity and deer forage demand and the associated potential for inaccurate results. (1217)

RESPONSE: We have modified the Plan to reflect that these are estimates and that actual carrying capacity will be determined on an allotment-by-allotment basis. EIS Appendix B discusses modeling assumptions.

26. COMMENT: I question the data developed by Kerry Gee on the effects of reduction on permitted use. As long as I have seen ranch sales or assessor valuation, the valuation of a ranch has been determined by the number

of livestock that a unit could run so a 20% reduction in numbers could result in 20% decrease in the value of the base property which could easily put some ranchers out of business. (1272)

RESPONSE: We disagree. The 20% reduction may decrease the value of the property, but would not necessarily put people out of business. There are many other factors involved in the profitability of individual ranches. As such, these impacts are considered on an allotment-by-allotment basis and disclosed in site-specific environmental documents.

27. COMMENT: In many management areas it is stated that grazing should be managed for light use because of wildlife. Salwasser states in his doctoral thesis that "moderate summer grazing by livestock is generally beneficial to deer winter range." (Salwasser PhD. thesis 1979). Recommendation - moderate use by domestic livestock should be the goal in the deer winter range areas. (1283)

RESPONSE: Livestock grazing on shrubs, if done properly, is one method for keeping shrubs from becoming decadent. In the Range Management Prescription, utilization standards were developed by the Range Work Group for livestock and deer. These levels of utilization will insure that sufficient forage is provided for deer winter needs and plant recovery.

28. COMMENT: Plan 3-21 - Supply and Demand. The statements on "current forage capacity" are confusing. They seem to imply that there is no livestock overstocking problem, but just a technical problem in that wildlife have not been allocated enough AUMs. (107)

RESPONSE: We agree. The paragraph is confusing and has been reworded in the final documents for clarification.

29. COMMENT: Plan 4-109 - Rangeland Mgt Rx: Range

- Mtce allotments. OK.
- Extensive Allotments. b.— Forage utilization standards should be quantified, same as are in the Forest-wide standards, or not mentioned. (107)

RESPONSE: We agree. These standards have been stated in the Forest-wide Standards and do not need to be repeated here.

30. COMMENT: For S&G 12.a.3, satisfactory condition needs to be defined. (708)

RESPONSE: Satisfactory ecological condition is defined in terms of range condition and trend. An area is considered in satisfactory condition if it has a fair or better range condition designation with static or upward trend. See EIS

Chapter 3, and Plan Chapter 4, Range Standards and Guidelines.

**31. COMMENT:** Somewhere in the new standards and guidelines the Forest Service forgot that its original charter was to protect the local farmers and ranchers from the large migrating herds of Miller and Lux and to improve the range for the local permittees. (940)

**RESPONSE:** Our original charter to improve the range continues today as evidenced by the Forest's strong commitment to balancing stocking levels and grazing capacity, displayed in the Forest Plan. Further, a review of our grazing permit records indicate that the majority of grazing permits on the Modoc National Forest are held by local farmers and ranchers, and constitute an important contribution to local agriculture.

## 188 - Wild Horses

**1. COMMENT:** Maintenance of the approximate present number of wild horses appears inconsistent with the goals and objectives of the Plan. As stated at p. 3-20 of the Plan, "Allotments within horse territories are in the worst ecological condition of any on the Forest." How can ecological conditions be improved in these allotments if horse numbers are not reduced? This Plan should revise the 1985 Wild Horse Mgt Plan to reverse the trend of environmental degradation from wild horses. (15)

**RESPONSE:** The statement about ecological condition referred to damage done by more wild horses than we currently have on the land. The current legislated number of animals (305) is within the carrying capacity of the land. With time and improved livestock management, the condition of the land will improve.

**2. COMMENT:** The removal of horses and burros from the Modoc Forest would result in the improvement of: water quality, less soil erosion, less over grazing, less over all damage to range land and destruction of valuable plant cover, more cost effective by: elimination of expensive round-up and holding pens. Elimination of costly capture. Elimination of yearly mtce cost of captured animals. The removal would release 4400 AUMs now allotted to wild horses and burros for domestic livestock production. Wild horses and burros are not an endangered species. (80)

**RESPONSE:** The Wild Horse and Burro Act requires protection and management of horses on public land. The number of animals is set by the Act: it is beyond our

authority to change and, therefore, outside the scope of this Plan.

**3. COMMENT:** The name wild horses is a misnomer. Wild horses are domestic animals which were released on the ranges during the settlement area of homesteading, mining and later ranching and farming. (80)

**RESPONSE:** We agree. A better name is feral horses.

**4. COMMENT:** Plan 3-20 - Wild Horses: The statement "Allotments within horse territories are in the worst ecological condition of any on the Forest," raises several questions. The statement seems to imply that the FS knows the conditions of each allotment and uses some criteria to judge some worse than others. Yet, this data is not disclosed in the Plan. That statement should be clarified. If there is condition data on all allotments, it should be part of the Plan. If not, the statement on wild horses should be removed. (107)

**RESPONSE:** We disagree. Presenting this data in the Plan is not appropriate because it is a programmatic document having detail consistent with program-level direction. However, we do agree the statement should be removed from the Plan and have done so. EIS Chapter 3 shows range condition figures.

**5. COMMENT:** 4-29 Range a. Are wild horses a benefit? To whom? Are they having an adverse impact on wildlife? At whose expense do we continue to raise horses for future "roundups" and captivity?

**b. Why wait until 2000 to balance permitted grazing and forage capacity? (126)**

**RESPONSE:** Wild horses are a benefit to many people who view them as a living symbol of the old west. As with wildlife, grazing, or recreation management, the horses are managed at taxpayers' expense. The Wild Horse and Burro Act requires the protection and management of wild horses and burros on public lands. The FS does not have the authority to change the Act. We are not "waiting" until 2000 to balance permitted grazing and capacity. We are analyzing allotments which are in less than satisfactory condition. These analyses will point out necessary forage improvement projects and stocking adjustments. The lag between balancing use and capacity is due to the time needed for vegetation to recover.

**6. COMMENT:** I agree with most of the provisions of the Plan. Wild horses should be controlled at levels not to exceed present recommended levels. (1064)

RESPONSE: The level of wild horse numbers was set by Congress. We do not have the authority to increase or decrease them.

7. COMMENT: Wild horses should be managed according to the ecosystem they are affecting, not a particular population. Yet the goals give a set population, and the objectives vaguely mandate "managing wild horses." The current 300 horses is an improvement from 1200 horses in the past, but damage is still being done.(708)

RESPONSE: We agree and will evaluate horse numbers (along with livestock and wildlife numbers) on an allotment-by-allotment basis, depending on the capacity of the land. Our intent is to stock all ecosystems within their carrying capacity. The number of horses we protect and manage was set by Congress, and we have little discretion to change the numbers.

8. COMMENT: Unfortunately, you simply reference your Wild Horses Mgt Plan, so it is hard to tell what your criteria were for setting the population numbers. If conditions are really as bad as you say, wild horses numbers should be evaluated within the context of grazing allotment readjustments, sensitive plants, wetlands, and other affected resources. (708)

RESPONSE: Congress set wild horse populations in the Wild Horse and Burro Act, based on historical numbers. We will evaluate populations on an allotment-by-allotment basis and adjust within the parameters allowed by the Act.

9. COMMENT: I would like to see the Forest address the wild horse problem. If the horses were controlled it would enhance the habitat for the wildlife, our deer and cattle and all. (1376)

RESPONSE: If you desire more specific information, the Devil's Garden Plateau Wild Horse Management Plan is available at the Forest Supervisor's office. Horse numbers are currently controlled at approximately 300 head as directed by Congress in the Wild Horse and Burro Act.

10. COMMENT: The Plan does not properly address the issue of controlling the increasing size of wild horse herds. (1275)

RESPONSE: Controlling the horse herd is outlined in the Wild Horse Management Plan which predates the start of our land management planning process. We have had an aggressive control program on the Forest since 1976. We reached our management goal in 1983, and have maintained it. The number of horses we protect was set by Congress, and we have little authority to change it.

11. COMMENT: I think the Crowder horse (wild) herd should be reduced. (1047)

RESPONSE: The Crowder Horse herd was a small herd outside the defined territory and was totally removed in 1988.

12. COMMENT: Wild horses Plan p.3-20: delete last sentence. (73)

RESPONSE: We agree and have done so.

13. COMMENT: Control wild horses by slaughter during feed shortage times for predators to protect game animals. Discontinue present inhumane and expensive disposal methods. (1174)

RESPONSE: Slaughtering wild horses is prohibited by law. We strongly disagree that present methods of disposal are inhumane. Our methods have been inspected by several animal protection organizations which have given their approval. We do, however, agree that they are expensive.

## 190 - Recreation, General

1. COMMENT: Needs: To recognize the impact economically of recreational rockhounds and their user day accounting. Past methods and the lack of our people's knowledge in the accounting process utilized in the planning leaves a void. There are far more activities going on in the known collecting areas, but there isn't any reporting going on. It is felt that there needs to be better signing, posting of areas, and the placement of collection data boxes for our members to use. (5)

RESPONSE: We recognize that recreational rock collecting is an important use on the Modoc and have tried to reflect that value in the Forest Plan. We agree that we need more signing, posting and data collection relative to recreational use on the Forest; but we feel that this is best dealt with at the ranger district level as those needs are identified.

2. COMMENT: Protect Bullseye and Blanche Lakes from overuse, and develop hiking trails. (46)

RESPONSE: The Modoc National Forest Final Plan identifies some recreation areas of overuse and proposes management schemes to deal with this problem. Also, standards and guidelines throughout the Plan are designed to prevent or halt natural resource degradation.

3. COMMENT: P.4-33: Add under Section H: ...including dissemination of information to public and private organizations to encourage tourism. (101)

RESPONSE: Thank you for your suggestion. The Modoc National Forest currently makes an effort to disseminate

information to various organizations to encourage tourism and will continue to do so in the future.

**4. COMMENT:** The alternative that correlates the best to current and projected recreation use in Modoc County is the RPD alternative. This alternative coordinates recreation, wildlife habitat improvement (improved deer and wetland hunting) and visual resources to an acceptable timber management program. (126)

**RESPONSE:** Thank you for your comment. However, we feel that the Preferred Alternative provides the best overall mixture of resource uses to benefit the needs of the collective public who utilize the Forest. EIS Chapters 2 and 4 analyze all alternatives. The Record of Decision provides our rationale for selecting the Preferred Alternative.

**5. COMMENT:** Lava Beds south boundary:— The Plan includes an SPNM area on the southwest boundary. Our [Conservationist] alternative would decrease the size of this unit to the original roadless area plus an extension to the east along the Tichnor Road to Section 6. Everything else would be recreation. (500)

**RESPONSE:** Thank you for your comment. We feel the Forest Plan provides the most appropriate mix of recreational opportunities in this area to meet the collective needs of the public that use the Modoc NF.

**6. COMMENT:** As part of this recreational zone, Mount Bidwell A (plus all of lower Bidwell Creek) and Mount Vida areas are high enough quality for SPNM. (708)

**RESPONSE:** Thank you for your comment. We feel that the mix of motorized and non-motorized prescriptions in the Forest Plan is most appropriate in meeting the needs of the collective public that use the Modoc NF National Forest. Portions of the Mt. Vida and Bidwell area may qualify for SPNM areas. However, most of this area was heavily roaded and developed during the early 1900's for the old Highgrade mining district.

**7. COMMENT:**— This would allow the railroad grade which runs north of Cinder Butte to continue to be used as a scenic through route to the Davis Road for both motor vehicles and snowmobiles. It would also allow the area near the Tichnor Road/Upper Ice Cave junction to continue to be used as a hunting and motorized dispersed camping area. (500)

**RESPONSE:** Thank you for your comment. We didn't understand the comment adequately to respond.

**8. COMMENT:** The Sno-Park area planned on Medicine Lake Road should have signed cross-country ski areas associated with it. The railroad grade to Cinder Butte will be probably designated for snowmobiles, so an alternate

route should be marked. There is also a good loop to southeast. (500)

**RESPONSE:** We are planning the winter Sno-Park area on the Medicine Lake Road with a variety of winter recreation activities in mind, including both snowmobile and cross-country ski routes.

**9. COMMENT:** The Forest Plan has only the developed recreation prescription. This does not provide adequate protection for recreation areas, as opposed to specific sites. The goals, Standards and Guidelines, etc., provide some protection for recreation uses, but base a lot of it on flat numbers— carrying capacity per acre of ROS classes, rather than site-specific use criteria. (708)

**RESPONSE:** Undeveloped (dispersed) recreation areas are addressed in the Forest Plan under the Standards and Guidelines (Chapter 4) for all prescriptions. The Wilderness, Semi-Primitive Non-Motorized, and Visual Retention Prescriptions emphasize dispersed recreation. Also, we feel that the prescriptions adequately provide protection and opportunities appropriate to those areas.

**10. COMMENT:** You have named Cave and Lily lakes, and Plum Valley as sites needing rehabilitation; you have already performed some at Bullseye and Blanche. This is the type of thing you should be evaluating, with the total use in an area secondary. People tend to concentrate. Riparian areas draw people, and are easily impacted. The number of people using Clear Lake in the Warners will become critical before the total Warner use does, yet from your total use per acre figures, you conclude there is no problem, and doubt one will develop. (708)

**RESPONSE:** The Forest Plan makes an effort to identify impacts to the environment over broad land areas. Before any rehabilitation work can begin, we must complete a site-specific environmental analysis or design narrative at each recreation area.

**11. COMMENT:** I would look at resource damage and visitor experience at Clear Lake first. Developed recreation sites listed in the Plan should be managed according to the Plan's prescription, except that VQO should be retention and only hazard trees should be cut. (708)

**RESPONSE:** The Developed Recreation Prescription in Plan Chapter 4 calls for a visual quality objective of Retention or Partial Retention.

**12. COMMENT:** Dispersed recreation sites should have at least partial retention VQO; the more popular ones should have retention VQO. (708)

**RESPONSE:** The more highly used dispersed recreation sites on the Forest have a visual quality objective of Retention. Forest resource specialists felt that the Retention VQO was an adequate rating to protect these sites from

overdevelopment impacts. See SPNM Management Prescription 4, standards and guidelines under Recreation.

**13. COMMENT:** Trail construction should keep pace with these increased demands. New trails should be located to avoid degradation of riparian areas and water quality. Key wildlife areas such as raptor roosting site and nesting areas or fawning areas should be avoided. (1260)

**RESPONSE:** The recreation (trails program) on the Modoc National Forest varies from year to year because the funding appropriated from Congress fluctuates annually. See Plan Appendix L—*Trail Program*. We also display wildlife concerns and effects in a site-specific environmental analysis whenever we design or plan trail work.

**14. COMMENT:** The Highgrade National Recreation Trail should be maintained and other trails should be constructed. (708)

**RESPONSE:** See previous response.

**15. COMMENT:** Cave and Lily Lakes need protection from current overuse, and should be managed under the development Recreation prescription. (708)

**RESPONSE:** Cave and Lily Lakes are managed under the Developed Recreation Prescription. See Plan Chapter 4: Management Prescription 5, standards and guidelines, under Recreation.

**16. COMMENT:** Highgrade (31): specific sites, particularly Cave and Lily Lakes, are already beyond currently-developed capacity. Historic mines are deteriorating and becoming safety hazards. Highgrade needs to be managed mainly for its recreation and wildlife attributes. (708)

**RESPONSE:** Cave and Lilly Lakes are managed under the Developed Recreation prescription in the Plan. Environmental safeguards are built into the standards and guidelines for the Developed Recreation Site Management Prescription 5. Also, the Forest Service is not responsible for the historic mining claims (safety hazards) on private land on which most of the mining claims are located.

**17. COMMENT:** Recreational use on Modoc National Forest will increase faster than expected because of overcrowding in adjacent forests and the rapid growth in the Reno and Redding standard metro areas. (1260)

**RESPONSE:** We considered the population growth phenomenon during the development and formulation of the Final Plan. EIS Chapter 3 shows current and projected demand; Appendix B discusses methodology for estimating demand.

**18. COMMENT:** The LRMP assumes that visitor use for all categories will only increase slowly. It does not recog-

nize that the availability of all classes of recreational opportunities are decreasing on southern, central and adjacent forests; or that local Reno and Redding standard metro areas, which have quick access to the Forest, are rapidly growing. The Medicine Lake Highlands and N. Warners campground overuse is just beginning. (1260)

**RESPONSE:** See response immediately above.

**19. COMMENT:** Recreation needs will have to be planned for rather than reacted to with remedial action as the LRMP proposes. The concept of recreation zones to provide for recreational needs as proposed in the Conservationists' Alternative should be adopted to provide for future recreation needs. (1260)

**RESPONSE:** We believe that we have adequately accounted for the expected increase in recreation through the planning horizon. We also feel that the Plan provides the goals, objectives, management direction, and prescriptions that provide for a diversity of recreational opportunities on the Forest. Plan Chapter 4 discusses management direction. EIS Chapter 3 and Appendix B display projected demand.

**20. COMMENT:** The visitors seem to be saying they like the primitive experience. They don't realize grazing is part of the multiple use in the wilderness. (1296)

**RESPONSE:** Grazing is permitted in wilderness areas if that use was established prior to enactment of the Wilderness Act of 1964. We try to explain to visitors and the general public the variety of uses that are permitted on national forests and their value.

**21. COMMENT:** It is the nonlocal, first-time users who most need to be made aware that the wilderness experience can be had within the grazing allotments, and is compatible with the Wilderness's multiple uses. The Forest Service should inform the public. (1296)

**RESPONSE:** See previous response.

**22. COMMENT:** Mining should be constrained to reduce visual impacts, and the historic value and safety problems of old mines should be evaluated. (708)

**RESPONSE:** Operators of existing or proposed mining activities on the Modoc National Forest must meet the visual quality objectives and landscape rehabilitation objectives for the areas which they wish to use. Safety problems associated with old mines are subject to state mining laws and regulations.

**23. COMMENT:** Discourage all activities that could just as easily take place in equally acceptable settings. Activities such as bicycle races, marathon runs, strong man events, mountain biking, ORV events, motorcycle races, etc. (1223)

**RESPONSE:** Generally speaking, we discourage organized competitive events. However, we evaluate proposals for competitive events on an individual basis.

**24. COMMENT:** It is important that the multiple use concept be implemented to the fullest extent. Recreational opportunities should be enhanced and developed with as much roaded access as possible. (1057)

**RESPONSE:** Developed recreation opportunities are enhanced and developed in a Roaded-Natural type of setting. However, Primitive and Semi-Primitive recreation experiences are located in roadless settings. We try to provide a wide array of recreation opportunities. While some types of recreation experiences are facilitated by roaded access, others are best carried out in a more primitive setting.

**25. COMMENT:** I support the Preferred Alternative, and its long range goals. Study could be enhanced by the following information:

- Concerns 2-4; developed/dispersed recreation — The recreational rockhound roams the areas not generally used by the tourist. We are more akin to the hunters, etc., and need access. We utilize the merchants in the smaller outlying towns.
- Concerns 2-6; Recreational rockhounds, although not consistently proper in their application, are very much concerned with the visual resource and its values to the planning staff. (5)

**RESPONSE:** We appreciate your support. We feel that the Forest Plan adequately incorporates your concerns.

**26. COMMENT:** Summary page 22 — recreation section — Compare figures. In 1981, total recreation use was 377,400 recreation visitor days (RVDs). The paragraph goes on to state that the Forest provides a practical capacity of 165,000 RVDs but use is currently at 50 percent! This means that RVDs should be at 82,500 RVDs instead of 377,400 which is stated. Also, with growth projections below the 1.8 percent statewide growth projection, why/how are RVDs going to rise to 131,000 RVDs by 2010? Is this increase strictly in the hunting and fishing section? (126)

**RESPONSE:** Thank you for pointing this out. The 165,000 RVD figure was meant as a capacity figure for developed recreation. We corrected the paragraph in the EIS and Plan. EIS Chapter 3 and Appendix B include projections of recreation use and methodologies for determining those projections.

**27. COMMENT:** Alternative — PRF page 2-65 — Third paragraph — Need specific data that supports the general statement that “the general character of the wilderness is the same, but the number of recreationists doubles and

they may use this area more than other parts of the Forest.” This use pattern unsupported by growth trends, is in contrast to current and projected recreation major uses.

**Alternative PRF page 2-68 — Under the section recreation, what data supports the rise in M/RVD between the first and second decade? 1.38 M/RVD per year (between first and second decades) exceeds projected growth rates for this area. (126)**

**RESPONSE:** Predicting the created environment of the Wilderness in the year 2030 is difficult; but the State of California Economic Development Division and the Board of Tourism point toward population increases in all the major cities. This increased populace will undoubtedly look for recreation opportunities on national forests. Also, the Modoc National Forest recreation use data shows steady increases of people recreating in the South Warner Wilderness over the past 10 years. EIS Chapter 3 and Appendix B include projections of recreation use and supporting discussions of methodology.

**28. COMMENT:** Alternatives PRF page 2-68 — Under Recreation, why does the first decade, hunting-related dispersed M/RVD (92.9) fall below the baselines 1982 M/RVD of (98.4)? (126)

**RESPONSE:** As is pointed out in the EIS, the California Department of Fish and Game (CDFG) had an imposed quota on mule deer hunting which covered the Modoc National Forest in 1984. The quota reduced big game hunting participation by 36%, thus causing a decrease from the baseline 1982 figure. EIS Chapter 3 and Appendix B show methodologies and assumptions for determining hunting-related RVDs.

**29. COMMENT:** Draft Forest Plan, page 4-162, last sentence. Add recreational and domestic purposes. (1021)

**RESPONSE:** Your comment has been incorporated in the Final Plan.

**30. COMMENT:** The use figures in RVDs are not very meaningful without additional information and analysis. How many visitors were involved? How many overnight visits were there? Conversely, how many day visits? How far did the average visitor get past the boundary, or entry point? What was the size of the average party? Range of party size? (1263)

**RESPONSE:** We tried to capture the information that you requested in the EIS and Plan. Some information items simply are not available and, therefore, are not included in the Plan.

**31. COMMENT:** The main pressure seems to be coming from recreation. They said there are 12,000 DVS. They say that one DVA is only 12 hours so you can see there are



## 191 - Developed Recreation

6,000 rather than 12,000 visitors; 40 percent of the visitors are local people, so if you knock that down to 6,000, knock off 40 percent of that, you're only talking about 4,000 outside visitors. (1296)

RESPONSE: One RVD or Recreation Visitor Day is equal to twelve hours of recreation use in any combination of persons and hours, i.e., one person for 12 hours, 3 persons for 4 hours, etc. EIS Appendix B provides a discussion on recreational use calculations and projections.

**32. COMMENT: PRF Management Plan. The statement in the Plan which says the Wilderness area will be managed for a primitive recreation experience creates the misconception in the public sector that this is true primitive, pristine, wilderness, which it is not. (1296)**

RESPONSE: Relative to developed recreation sites and motorized areas the recreation experience in the wilderness is of a primitive nature. One of our objectives for the South Warner Wilderness is to manage it for primitive recreation opportunities. See the standards and guidelines of the Wilderness Prescription 2, in Plan Chapter 4.

**33. COMMENT: It's never stated anywhere in the Plan, but the implication seems to be that improvements in recreational opportunities might somehow offset losses to the local economy due to reduced timber harvest and grazing allotments by enhancing tourism revenue. This is simply not possible. (1407)**

RESPONSE: The Timberlands Working Group, composed of concerned local citizens, noted that the recreation potential of the Forest may be a way to help revitalize the local economies. We feel that the tourism generated from the recreation potential of the Forest has the potential of substantially contributing to the economies of the local communities. See EIS Chapters 3 and 4 and Appendix, Socio-Economic sections.

**34. COMMENT: 4-7. Recreation — item 5. This approach could be applied to livestock and timber uses. (364)**

RESPONSE: We agree. See the standards and guidelines under the range and timber prescriptions in Plan Chapter 4.

## 191 - Developed Recreation

**1. COMMENT: I am for more developed recreation areas. (108)**

RESPONSE: The Forest Plan provides for a variety of recreational experiences including developed recreation.

**2. COMMENT: I support the Preferred Alternative and its long range goals. It is felt the study could be enhanced by the following information: concerns 3-22; developed recreation — during good weather, the facilities at Plum Valley should post an almost 100 percent use rate with about 68 percent of that by the recreational rockhounds. (5)**

RESPONSE: We recognize that rockhounds constitute an important component of the total recreation use on the Modoc National Forest, particularly in the North Warners. However, we have no information to substantiate the 68% you mentioned in your comment.

**3. COMMENT: Developed recreation sites listed in the Plan should be managed according to the Plan's prescription, except the VQO should be Retention and only hazard trees should be cut. (500)**

RESPONSE: We will manage all developed recreation sites according to the Plan's prescriptions. However, as noted in the Developed Recreation Prescription, Partial Retention is an acceptable management level because Retention is not always practicable or desired in a developed site setting. Under the timber section of this prescription we state that tree stands will be managed to enhance scenic and recreation values. Timber production is not emphasized in these areas.

**4. COMMENT: Highgrade (MA 31): Cave and Lily Lakes need protection from current over-use and should be managed under the Developed Recreation Prescription. (500)**

RESPONSE: The Forest realizes and displays in the EIS and Plan the current overuse situation occurring at the Cave and Lily Lakes area. We currently manage this area under a Developed Recreation Prescription. We will develop site-specific plans to address the carrying capacity of these sites and future expansion.

**5. COMMENT: Coordinate with Cal-Trans and Modoc County for earth spoil areas to create parking for recreational areas. Initiate and continue regular contacts with local groups such as our committee regarding needs for new campgrounds, rest room facilities, and day trip amenities along scenic driving routes. Implement a feasibility study for construction of an amphitheater to make it possible for event-specific activities to be developed by local performing artists and groups. Some modification is necessary for the Forest to pursue a more aggressive recreation site development program. (973, 1252)**

RESPONSE: We feel that the Forest Plan provides an adequate foundation on which we can build an aggressive



recreation program such as you suggested. We will develop site-specific recreation plans to implement the intent of the Forest Plan, and continue our efforts to coordinate with Cal-Trans and Modoc County.

6. COMMENT: 3-23. dispersed recreation – first paragraph. The average number of pronghorn hunters using the Modoc National Forest should be included in the first paragraph along with the numbers for deer hunters.

3-24. Opportunities. There is no mention made of the opportunity to increase recreational use of wildlife. Due to the remoteness from large population centers, relatively little nonappropriative use occurs. (364)

RESPONSE: EIS Chapter 3—*Affected Environment* displays pronghorn hunter-days in Table 3-21 ("Wildlife and Fish Recreational Use"). See footnote 1. Appendix B displays supporting methodology for hunting and recreation projections.

7. COMMENT: Additional RVDs generated by camping associated with hunting need to be more completely explained. E.g., If a party enters the Forest to hunt, camps for 2 nights, and leaves on the third day, how do you allocate the total time between camping and hunting? (1263)

RESPONSE: If a person comes to the Forest specifically to hunt during the hunting season, then we would record hunting over camping in this case. EIS Appendix B explains hunting and recreation calculations.

8. COMMENT: DEIS 3-202 predicts a 60% increase in wildlife use during the next 50 years. Yet Table 3-23 shows a major decrease from 1981 to 1984. Why does Schweitzer predict a turnaround in this trend? (1263)

RESPONSE: Please remember that in 1984, the California Department of Fish and Game (CDFG) imposed a quota on mule deer hunting covering the Modoc National Forest vicinity. In 1984, the quota reduced big game hunting participation by 36%, thus causing a decrease from the 1981 to the 1984 figures. In addition, mule deer hunting comprises only a portion of the projected increase. Non-consumptive wildlife uses and fishing also increased dramatically during that time period and are projected to do so in the next decade.

## 192 - Dispersed Recreation

1. COMMENT: California ORV Association (CORVA) thinks that having information available at the trailhead is a good idea (DLMP, page L-1). Increased user awareness benefits everyone. The ORV map included with the DLMP is the type of information that should be posted at trailheads, ranger stations, and campgrounds. The pub-

lic should be able to purchase this kind of map at all ranger stations, forest offices, and even at the Regional Offices.

The Forest Service should communicate with local ORV clubs and with the larger statewide organizations like CORVA and the California Association of Four-Wheel Drive Clubs to spread the word about specific management concerns (DLMP, page L-1). CORVA feels it is very important to solicit public feedback and supports Forest Service efforts to involve the public in its management of the Forest (DLMP, pages 4-7).

CORVA supports the Forest Service desire to have organizations assist in the maintenance of road, trails, and supporting recreational facilities (DLMP, pages 1-3). CORVA also recommends that the Forest Service enlist the support of the ORV community to help plan and develop new ORV opportunities and necessary facilities.

Since ORV recreation makes up a major portion of the recreational use the Forest receives (DLMP, pages 3-23, 4-266; DEIS, page Summary-22), CORVA encourages any plan to increase ORV opportunities. CORVA endorses the construction of self-guided interpretive routes for ORVs (DLMP, p. 3-24; DEIS, p. 3-89) and special ORV travel routes (DEIS, p. 2-110). CORVA wants the Forest Service to develop new and expand existing ORV opportunities as the demand for such opportunities will be increasing (DEIS, p. 3-89).

To facilitate such projects, CORVA strongly recommends the Forest Service to participate in the State's "Green Sticker" Program to obtain funds for increasing or improving ORV recreational opportunities. (344)

RESPONSE: Thank you for your comments and suggestions. We agree that open communications and strong partnerships with CORVA and other ORV organizations can be extremely beneficial to all parties as we begin to implement the Forest Plan. We feel that the Plan provides a wide array of recreation opportunities including ORV use and will provide a strong foundation for accomplishing many of the suggestions you've proposed in your comments.

2. COMMENT: The monitoring plan set forth (DLMP, p. 5-11) appears to be adequate. The monitoring plan, however, does not address how potential ORV problems will be dealt with. What specific criteria is used to determine if a problem area should be closed or needs additional restrictions? How does public participation fit in? These matters need to be covered in a comprehensive ORV plan. (344)

RESPONSE: We agree. As noted in the Forest Plan, Appendix A, an OHV plan for the Modoc National Forest

will be developed in the near future. We will use this detailed guide as a tool for Forest Plan implementation.

**3. COMMENT: Highgrade (MA 31): Highgrade needs to be managed mainly for its recreation and wildlife attributes. The remaining Mt. Bidwell B block should have the recreation prescription. (500)**

**RESPONSE:** We agree that recreation and wildlife are important attributes in the Highgrade Management Area. We have allocated over 3,000 acres of the area to the semi-primitive nonmotorized prescription which emphasizes dispersed recreation. We will apply the Developed Recreation Prescription (Plan Chapter 4) to maintain or enhance current recreation facilities in the area.

**4. COMMENT: All of the Crane Mountain, Mount Bidwell A (plus all of lower Bidwell Creek) and Mount Vida areas are high enough quality for SPNM. (500)**

**RESPONSE:** Much of the area you mention is already contained in SPNM areas in the Final Plan. However, the presence of numerous roads and developments in this area make part of this area inappropriate for SPNM designation.

**5. COMMENT: Dispersed camping areas deserve protection. Protection of these scattered camps from road building, logging, or other disturbing activities is sound resource management. (551)**

**RESPONSE:** We agree. The more popular and highly used dispersed camping sites on the Forest are protected from overdevelopment by a Partial Retention VQO rating. See the management prescriptions pertinent to recreation in the Plan, Chapter 4.

**6. COMMENT: 4-32: Recreation—Are semi-primitive non-motorized areas to be provided for, or are the wilderness areas already in place supposed to provide this type of recreation? (126)**

**RESPONSE:** The South Warner Wilderness on the Modoc National Forest does provide for a semi-primitive non-motorized recreation experience. However, because the Wilderness amounts to only about 4% of the entire Forest, we emphasize other semi-primitive non-motorized areas to help respond to this type of recreational demand.

**7. COMMENT: Summary pg. 15—Question accuracy of dispersed recreation graph. If road construction miles (road construction graph same page) are highest under RPD Alternative and IND Alternative, why isn't the difference reflected in RVDs under dispersed recreation graph? (126)**

**RESPONSE:** RVDs for dispersed recreation are based on recreation opportunity spectrum (ROS) classifications. Each ROS class has a unique per acre PAOT (persons at

one time) coefficient. RVDs are derived from PAOT figures. As displayed in EIS Chapter 3—*Affected Environment*, the Forest has excess capacity in each ROS class as compared to existing use. Further, overall projected use, although increasing, will not exceed even 25% of current capacity. Because supply substantially exceeds demand, no value is given excess RVD capacity that may be created through a variety of actions including road construction. EIS Appendix B discusses supporting methodologies for projected dispersed recreation.

**8. COMMENT: Summary pg. 16—Question accuracy of semi-primitive recreation graph. Why the downfall in the second decade with IND Alternative? Why isn't IND Alternative at same levels as RPD Alternative? (126)**

**RESPONSE:** We allocated approximately 23,00 acres to the Semi-Primitive Non-Motorized Prescription under RPD. We allocated no acres to that prescription under IND. As a result, we would expect, even with similar road construction values for both alternatives, a faster conversion of current SPNM to roaded-natural acres under the IND alternative than under the RPD alternative.

**9. COMMENT: During the course of reviewing the DLMP and the DEIS, several conflicts in the amount of Forest open to ORVs was noted. The amount of land open to ORVs varied from 94% (DEIS page 3-86; DLMP, page 3-23) to 90% (DEIS, page 4-70) to 87% (DEIS, page 4-68) to 60% (DEIS, page 2-71; DLMP, pages 2-4, 4-18). It is very confusing. An explanation of how these figures are determined is needed. Table 2 in the DEIS should accurately reflect the amount of Forest open to ORVs. CORVA hopes that the greatest number of acres would be open to ORV recreation. (344)**

**RESPONSE:** We realize that the presentation may seem confusing. However, please be aware that those figures you mention are for different alternatives. For instance, the 94% shown in Chapter 3 of the EIS represents what has occurred in our selected base year (1982) while the 90% figure displayed in Chapter 4 represents the consequences of implementing the Industry Alternative. Under the Preferred Alternative and Forest Plan, at least 60% of the Forest remains open for OHV use.

**10. COMMENT: The Forest Service must show on the ORV map all the areas where ORV use is permitted, restricted, or closed, especially seasonal closures (DLMP, p. 4-132), tree plantations, highly sensitive watersheds, wildlife management closures, etc., in accordance with executive order #11644. The ORV map does not accurately reflect closures due to tree plantations, seasonal closures, etc., and is misleading. The statistic that 94% of the Forest is open to ORVs is also suspect. (344)**

**RESPONSE:** The OHV map shown in the Plan is only a general purpose map. We are developing a detailed map as part of the OHV Plan which we will complete after the Forest Plan is released.

### 193 - OHV/ORV Use

**1. COMMENT:** I strongly support the proposal to reduce the amount of Forest land available to ORVs from 96% to 60%. It would have been helpful to have had more explanation in the Plan whether this reduction would alleviate the resource damage that is now resulting from ORV use and how the Forest will enforce this new standard. (16)

**RESPONSE:** Reducing acreage open to OHV use would not, by itself, alleviate resource damage in those areas where it is now occurring. However, the Forest-wide Standards and Guidelines (Facilities) in Forest Plan Chapter 4 provide for resource protection and rehabilitation as follows: 3.(G) *Manage and maintain the transportation system to protect soil, water, and all other resource values. Close local roads as needed to meet these objectives. Develop road closure and OHV plans.*

Standards and guidelines in the Semi-primitive Non-motorized Dispersed Recreation Prescription (Facilities) provide additional levels of protection: 1.(S) *Roads required for administrative purposes or for access to adjacent areas will be controlled by locked gates. All other roads will be closed or obliterated. Roads may be converted to trails for access to sites or to provide linkage with other trails.* EIS Chapter 4 discusses impacts.

**2. COMMENT:** [proposed Plan] 2-4. Recreation. Dispersed Recreation. The present ORV plan is too permissive of ORV use in critical wildlife areas such as deer winter ranges and antelope kidding areas, etc. (364)

**RESPONSE:** We disagree. We feel that the Standards and Guidelines contained in the Forest Plan (Chapter 4) provide ample protection for critical wildlife areas relative to OHV use. General direction for road construction and maintenance is contained in the Facilities section: 3.(G) *Manage and maintain the transportation system to protect the soil, water, and all other resource values. Close local roads as needed to meet these objectives. Develop road closure and OHV plans.*

In addition, numerous standards and guidelines prohibit or restrict OHV use in or near critical habitat during sensitive periods. For example, under the wildlife and fish standards and guidelines item K. directs: *On mule deer winter ranges where OHV use is demonstrated to adversely affect deer, institute OHV closures from December 1 through March 31.* EIS Chapter 4 discusses impacts.

**3. COMMENT:** We recommend more road closures and restrictions of ORV use, particularly where such use is purely recreational. (701)

**RESPONSE:** We believe the Forest Plan provides for a balanced mixture of recreational opportunities including motorized recreation. However, as you suggest, we have incorporated numerous standards and guidelines which prohibit or restrict OHV use in certain areas for soil water, and other resource protection.

**4. COMMENT:** It is not known if the Department of Fish and Game coordinates their tag increases with your office for monitoring purposes? This is not discussed in your Plan. (1235)

**RESPONSE:** Harvest levels of State species are the responsibility of the Department of Fish and Game; therefore we did not specifically address them in the Forest Plan. However, State harvest strategies—particularly quota limitations, habitat capability information, and expected increases in human population—are all considered in projections of hunting-related dispersed recreation. This process is detailed in Appendix B, *Modelling and Analysis Process*, of the EIS.

**5. COMMENT:** DEIS I-19: What are the advantages/disadvantages of all roadless areas being designated wilderness? (1248)

**RESPONSE:** After the 1978 Roadless Area Review and Evaluation, the Forest Service recommended five areas for incorporation into the South Warner Wilderness: Granger, Jess, Mill, Parker and Pepperdine. On September 28, 1984, the California Wilderness Act (Public Law 98-425) added these areas (1,940) to the South Warner Wilderness. This process is discussed in EIS Chapter 3—*Affected Environment*. All other roadless areas were released from consideration for this round of Forest Planning. For information purposes the released areas are displayed in Appendix E of the EIS. Because the areas were released from further consideration under the California Wilderness Act, we did not conduct an analysis of the advantages or disadvantages of wilderness designation.

**6. COMMENT:** Change the management definition of "ORV" to reflect actual and real use of the Forest. Here is an urgent need for another category or revision of D level definition to accommodate these 4WD roads/travelways which enable needed remote recreational access. Manage the primitive Forest roads open unless signed closed. Explicitly define a road as any travelway greater than 40 inches in width. Use cooperative user programs such as Adopt-A-Trail/Road to assist in management solutions. Strongly request that you add a strategy to consider the successes of user-cooperative

programs such as Adopt-A-Trail/Road. We request that you reverse the increasing closure of public lands to 4WD vehicular use through sharing management responsibilities with involved user groups. (6)

RESPONSE: We agree that we have many opportunities on the MNF to enhance OHV use through cooperative programs and partnerships with OHV organizations. However, we feel the most appropriate place to forge these partnerships and incorporate your suggestions is in a definitive OHV plan. We will prepare an OHV plan following Forest Plan release, and strongly urge you to share in the development of this plan.

7. COMMENT: Always when an area is clearcut, the 4WD travelways/jeep trails are closed. Since no one would like to hike through a wasteland of stumps and brush, and intrusion sensitive game has left, why not consider these timbering intensive areas for ORV recreation? (6)

RESPONSE: We often close clearcut areas to vehicular travel following harvest to meet other management objectives associated with soil, water or wildlife concerns, or to prevent damage to reseedings. In many cases we retain the road system servicing the clearcut to provide motorized recreation opportunities and facilitate future timber harvest.

8. COMMENT: The higher mobility of handicapped and the growing elderly sector of the population requires motorized means to experience the remote beauty of nature. (6)

RESPONSE: We agree and feel that the Forest Plan provides an appropriate mix of recreational opportunities, including motorized recreation.

9. COMMENT: I also oppose the Zone B designation on the ORV legend surrounding the private land I own at McClure Springs, T40N., R.9E., Sections 28 & 29. I need to keep access open for motorized vehicles. (1026)

RESPONSE: By designating the area surrounding your private land as Semi-primitive Non-motorized (SPNM) Dispersed Recreation, we intended to emphasize high-quality, non-motorized dispersed recreation in a natural-appearing environment. Generally, we do not construct permanent roads nor allow public access by vehicle in SPNM areas. However, exceptions may include roads for administrative purposes or access to adjacent areas as stated in the Standards and Guidelines for the SPNM prescription in Chapter 4 of the Forest Plan under Facilities: 1.(S) Roads required for administrative purposes or for access to adjacent areas will be controlled by locked gates. All other roads will be closed or obliterated. Roads may be

converted to trails for access to sites or to provide linkage with other trails.

10. COMMENT: What is the meaning of "restricted" with respect to ORV use? How can ORV use in riparian areas be "restricted" or "prohibited"? (1248)

RESPONSE: Relative to OHV use, restrictions can include seasonal closures of roads or particularly sensitive areas. OHV restrictions could also include constraining use of OHVs to established roads. Additionally, restrictions could apply to the type of vehicle allowed. For instance, an over-the-snow vehicle may be allowed in an area during the winter where a 4WD vehicle would be prohibited at any time. OHV use can be restricted or prohibited in riparian areas in several ways, including physical closure or obliteration of roads and compliance with administrative closure orders.

11. COMMENT: Under what specific circumstances would Forest entertain closure of "large areas of the Forest" to ORV use? Where might these closures occur? Areas listed according to priority of closure. Advisability of reevaluation of ORV closure plan at FMP-DEIS stage.

Definition of "outstanding ORV opportunities." Location of outstanding ORV sites. (1248)

RESPONSE: In the Forest Plan we allocate 23,013 acres to the Semi-primitive Non-motorized Dispersed Recreation Prescription. Under this Prescription permanent roads are not constructed and public access by vehicle is not allowed. This essentially would constitute a closure in terms of OHV use. Because large portions of the Forest are already roaded, outstanding opportunities for motorized recreation already are available on the Modoc.

We will develop a comprehensive OHV plan after release of the Forest Plan. In the OHV plan, we will discuss in detail road obliteration, closure, and management. Addressing those details in a broad programmatic document, such as the Forest Plan, is inappropriate.

12. COMMENT: Closures should also be used to protect environmentally sensitive lands. (128)

RESPONSE: We commonly close roads to meet many management objectives including protection of environmentally sensitive areas, as emphasized in the following excerpt from the Forest-Wide Standards and Guidelines in Chapter 4 of the Forest Plan: (G)Manage and maintain the transportation system to protect soil, water, and all other resource values. Close local roads as needed to meet these objectives. Develop road closure and OHV plans.

13. COMMENT: I do not approve of "keeping 60% of the Forest open to ORVs." I suspect this could be reduced somewhat by closing several old roads no longer needed for logging. (189)

**RESPONSE:** The 60% refers to acreage which does not specifically prohibit OHV use. This does not preclude us from closing individual roads which are no longer being used and have the potential to cause resource damage or interfere with other management objectives. After the Forest Plan is released, we will develop an OHV and road closure plan which more specifically addresses road management and closure on the Forest.

**14. COMMENT:** Label sensitive areas as Zone C, and change the wording to "designated" roads. The Modoc National Forest could simply sign a few roads, rather than signing whole boundaries of off-limits areas. The Park's south boundary plus Highgrade and Medicine Lake recreation areas (exclusive of SPNM, which should be Zone B), should have this designation, as should a buffer around all developed recreational sites. The wetlands portion of the DGRD (the entire thing, not just the wetlands), should be Zone C. All roadless areas not designated as SPNM and all cultural areas should be Zone C. Deer winter range and fawning areas, pronghorn kidding areas, sage grouse use areas, and sensitive plant areas could be protected by seasonal closures, but it would seem much more effective to make them Zone C also, for reasons given above.

Add a ROS for semi-primitive Zone C, and apply this to all areas listed below under the Zone C, ORV prescription. Uses should include hiking, fishing, hunting and camping. Allow vehicle travel on designated roads; prohibit ORV use. Change Zone C ORV Class to "designated roads only, " and add areas listed below. Prohibit ORV use in all wet or dry meadows, sensitive stream crossings, geologic features, sensitive wildlife habitats, and tree plantations as well. (500)

**RESPONSE:** Zone C currently prohibits vehicle travel off of existing roads and trails and has provisions for closure of designated roads.

We feel that Zone C is appropriately defined and applied on the Modoc's land base; we retained the presentation in the Final EIS and Plan. Standards and Guidelines in Chapter 4 of the Forest Plan address sensitive areas and critical habitats: S&Gs provide seasonal restrictions and prohibition of OHV use in these areas.

**15. COMMENT:** The ORV map is supposed to show areas subject to seasonal closure (per Raptor Management Prescription), and does not do so. The map should show these seasonal closure areas for all prescriptions. (500 )

**RESPONSE:** Forest Standards and Guidelines stipulate seasonal closures for numerous critical habitats. Closed roads or sites may vary from year to year and site to site; therefore, displaying seasonal closure areas in a programmatic map such as the one accompanying the Forest Plan

is inappropriate. After the Forest Plan is released, we will develop an OHV and road closure plan which details individual road and site closures.

**16. COMMENT:** Bicycle Trails Council wants the Modoc LMP to contain a specific action plan to deal with off-road bicycle recreation. Recommend developing mountain bike opportunities. (338 )

**RESPONSE:** After the Forest Plan is released we will develop an OHV plan. We invite the Bicycle Trails Council to share in development of that plan and enhance opportunities for mountain bike recreation.

**17. COMMENT:** Allow mountain bikes in all areas except primitive—where horses should not be allowed either. (556 )

**RESPONSE:** Mountain bikes are allowed in all areas except the Wilderness.

**18. COMMENT:** Tionesta (63): The Sno-park area planned on Medicine Lake Road should have signed cross-country ski areas associated with it. (708 )

**RESPONSE:** The Forest Plan is a broad, programmatic planning document that provides overall direction for various resource programs on the Forest. We do not address site-specific developments, such as the Sno-park, in the Forest Plan. For more information, please contact the Doublehead Ranger District headquartered in Tulelake.

**19. COMMENT:** What restrictions on "people creating additional trails to access firewood areas?" What restrictions on people accessing "firewood areas"? Any standards? Enforcement on where and what trees cut? (1248)

**RESPONSE:** Forest-wide Standards and Guidelines and the standards and guidelines contained in management prescriptions (Plan Chapter 4) provide directions for the firewood program on the Forest. Enforcement is accomplished through the Forest's firewood permit system; and Forest personnel in the field check firewood cutters for compliance.

**20. COMMENT:** Does indiscriminate cross-country ORV traffic to firewood sites provide for orderly removal of firewood? (1248)

**RESPONSE:** Site conditions and, therefore, management objectives vary by firewood cutting area. Some areas are designed as small clearcuts with a single point of access to concentrate firewood cutters in a constrained area. In other areas where site conditions and management objectives are better served by a more selective cutting approach, we designate large areas for cutting and encourage woodcutters to disperse within these areas. Generally, we do not restrict motorized travel in these

areas with the exception of sensitive area closures or seasonal closures.

**21. COMMENT:** We support the definition of "unacceptable resource damage" adopted in Region 8 which requires the clear establishment of significant, obvious, and well-defined degradation. (6)

**RESPONSE:** Thank you for your comments. "Unacceptable resource damage" is identified on a site-by-site basis and refers to environmental impacts that exceed thresholds established in the Forest Plan, Regional and national Forest Service direction, and state and federal regulations and laws.

**22. COMMENT:** The proposed ORV plan closes the SPNM areas to all but management access. This is a single strategy and does not include a full range of alternatives as required under NEPA. The ORV map is supposed to show areas subject to seasonal closure (per Raptor Management Prescription), and does not do so. The map should show these seasonal closure areas for all prescriptions. The Park's south boundary, plus High-grade and Medicine Lake recreation areas (exclusive of SPNM, which should be Zone B) should have Zone C designation, as should buffer around all developed recreation sites.

The wetlands portion of the Devil's Garden District (the entire thing, not just the wetlands themselves,) should be Zone C. Other wetlands, dry and wet meadows, distinctive geologic features, sensitive stream crossings, and many wildlife areas should be closed to ORVs all year. All roadless areas not designated as SPNM and all cultural areas should be Zone C. Deer winter range and fawning areas, pronghorn kidding areas, sage grouse use areas, and sensitive plant areas could be protected by seasonal closures, but it would seem much more effective to make them Zone C also. (708)

**RESPONSE:** The intent of the Semi-primitive Non-motorized Recreation Prescription is to emphasize high-quality, non-motorized recreation by restricting motorized vehicle access and providing a natural-appearing environment. Acreage allocated to the SPNM prescription varies by alternative, and ranges from 45,214 acres in the AMN alternative to zero acres in the IND alternative, with the Preferred alternative containing 23,013 acres. We believe this is a reasonable array of alternatives and is in full compliance with NEPA requirements.

Numerous standards and guidelines throughout Chapter 4 provide seasonal and year-long closures to protect critical wildlife habitat and other resource values from disruption or degradation as a result of vehicular travel. Because these restrictions are applied as needed and may

vary by year, displaying them on the OHV map accompanying the Forest Plan is inappropriate.

We feel that Zone B and Zone C are properly applied to the Forest's land base and have retained that distribution in the Final EIS and Plan.

**23. COMMENT:** Summary page 10—under recreation—The IND Alternative shows highest semi-primitive motorized acres (222,900) along with RBU (222,900) to (correlate to recreation use 80% dispersed use) but lower open ORV acres than CUR alternative. Why? IND 1,376,100 acres vs. CUR 1,424,700. (126)

**RESPONSE:** Semi-primitive motorized use can include acres open to OHV use and acres open but restricted. The Industry Alternative has proportionally more open and open-but-restricted acres than does the Current Alternative.

**24. COMMENT:** 4-18. Recreation—dispersed recreation—significant recommendations were provided to the Modoc NF by the DFG at the time of the ORV plan development. These recommendations should be implemented with this LMP. (364)

**RESPONSE:** We *did* consider CA Department of Fish and Game comments and input as we developed the Forest Plan. Comments associated with OHV use and wildlife habitat are embodied in the Forest-Wide Standards and Guidelines and the standards and guidelines contained in the management prescriptions. After the Forest Plan is released, we will develop a definitive OHV and road closure plan. This will provide additional opportunity for CDFG and the Forest Service to coordinate on a site-specific level.

**25. COMMENT:** Definition of "significant use". One thousand miles of primitive roads possibly represents significant impact. How many miles of cross-country tracks, trails, route—whatever the terminology (standardized use of terms might be helpful. The word "trail" might be reserved for hiker-horse trail.)? How many miles of unauthorized ORV routes?

**Definition of "some resource damage". How might damage be prevented? (1248)**

**RESPONSE:** In this context, "significant use" means that the level of use has been moderate to low when compared to the intensity of use in areas accessible to large population centers.

As stated in the EIS in the Facilities section of Chapter 3: *Approximately 700 miles of uninventoried roads have been created as vehicles imprint flat terrain in search of firewood cutting and dispersed camping sites.*

"Some resource damage" means that resource damage is occurring on some sites but is not common to the area. Strategies and direction for preventing such damage are presented in Standards and Guidelines (Plan Chapter 4).

**26. COMMENT:** Of 94% of land open to ORV use, what percentage is "flat to gently sloped"? Is the Forest open almost entirely to ORV use because of topographic conditions? Are other land, soil, vegetation, habitat, wildlife, cultural resource factors considered in addition to topography in determining ORV use? Might impacts to any one or combination of these factors militate against unrestricted cross-country ORV use? What else is "flat to gently sloped" topography good for besides ORV (live-stock)?

**Definition of "unacceptable resource damage" and "conflicts with other users".**

**Definition of "minimal URD (unacceptable resource damage)" and "minimal CWOU (conflicts with other users)".**

**DEIS 3-86, 87:** Why were these primitive roads/trails "not significant" in 1974, and are "significant" now? Standard for "significant". How is use inventoried on these roads/trails?

With what agencies and authorities does road/trail designation lie? Do ORVs have authority to create own road/trail system? Are these wheel tracks approved by Forest Service? Inventory of unauthorized routes. Policy on closure, eradication of unauthorized routes. Road/trail/track obliteration plan. How many additional miles of unauthorized ORV routes since 1974? Does reduction to "less than half" the 27% SPNM on Forest mean that roadless areas in PRF and other alternatives specified as SPNM are to be reduced proportionately?

**How can Modoc National Forest Plan be certified when major ROS allocations are subject to re-analysis or total revision? (1248)**

**RESPONSE:** Because a large portion of the Forest is characterized by topography that is relatively flat to gently sloped, most lands open to OHV use are relatively flat as well. Topography is not a deciding factor in determining OHV use or restrictions on land areas. Factors on which we base our OHV use decisions involve the inherent resource values of the area, including soil, water, wildlife, vegetation, cultural resources and the management objectives associated with those values. Forest Standards and Guidelines (Plan Chapter 4) provide for seasonal or year-long closures on sensitive sites and in critical wildlife habitat.

"Unacceptable resource damage" is identified site-specifically and refers to environmental impacts that exceed thresholds established in the Forest Plan, Regional

and national Forest Service direction, and state and federal regulations and laws. We feel "conflicts with other users" is self-explanatory and requires no further definition.

As stated in EIS Chapter 3—*Affected Environment*, the ROS inventory was based on 1974 aerial photos. Areas with common characteristics and recreational values were identified and classified as appropriate. Areas that exhibited values conducive to semi-primitive non-motorized recreation were classified as SPNM. Many of these SPNM areas had primitive, ill-defined two-track roads or trails that had been used only once or rarely. The Forest concluded that these did not detract from the character of the area enough to move it from an SPNM classification to a semi-primitive motorized or roaded natural class. Since that inventory, many primitive roads have probably evolved to substantial travelways through continuous usage. Consequently, areas that were once considered most appropriate for classification as SPNM may now warrant classification as semi-primitive motorized or roaded natural.

The Forest Service has authority to issue travel restrictions on national forest lands.

The EIS, Forest Plan, and accompanying maps note that some areas do not restrict vehicles in any way, except for sensitive areas, critical wildlife areas or as designated otherwise.

EIS Chapter 3 says we do not have an updated inventory of unauthorized routes. We estimate that approximately 700 miles of uninventoried roads exist. Forest policy road obliteration is embodied in numerous standards and guidelines contained in Chapter 4 of the Forest Plan.

Further, as noted in the EIS and Forest Plan, we will develop a definitive ORV and closure plan following Forest Plan release.

We will manage lands allocated to the Semi-Primitive Non-Motorized Recreation Prescription (23,013 acres) under the terms of that prescription as defined in Chapter 4 of the Forest Plan. Other lands not allocated under that prescription acreage but originally inventoried as SPNM in the ROS will be managed in accordance with the updated ROS classification after we conduct another inventory.

**27. COMMENT:** DEIS 2-43 (Standards and Guidelines common to all alternatives — 4., 6., 13.) Are ORV primitive roads, routes, paths, trails, tracks considered a part of the Forest transportation system? Need they be "planned", "designed", as noted under Standards and Guidelines #4 above, or inventoried and researched? How do these lines and cross-country areas of transport "protect resource values", as required by this extraordi-



nary, vague, general homily, one of a majority that form the sandy foundation of alleged Forest Plan. (1248)

**RESPONSE:** In most cases ORV primitive roads are not considered part of the Forest transportation system. We recognize the need to update our inventory of ORV primitive roads and have so stated in the EIS.

You have misquoted the text referencing "resource values" under Facilities. It actually reads: "Plan, design, construct and maintain a Forest transportation system to achieve resource objectives, *while* protecting resource values." [Emphasis added.] This statement has a different connotation than you suggest. We feel that our direction is valid and requires no further clarification.

**28. COMMENT:** At one place you have 94 percent of the Forest available for Off-Road Vehicle use, and 27 percent closed. I'm glad to see we're getting 121 percent management. (1393)

**RESPONSE:** The 94% figure refers to lands which have not been administratively closed to off-highway vehicles. The 27% figure refers to lands which have been inventoried and classified under the recreation opportunity spectrum as most appropriate for semi-primitive non-motorized recreation. SPNM lands are characterized by a predominantly natural environment and very limited or no roaded access, although some primitive roads or trails may exist. Currently, very few SPNM lands have been administratively closed to vehicular traffic. Therefore, the two figures you reference are not necessarily related, and do not add up to 100%.

## 194 - Medicine Lake Highlands

**1. COMMENT:** Manage Medicine Lake Caldera for recreational use, developing hiking trails and protecting Bullseye and Blanche Lakes from overuse. (75)

**RESPONSE:** The Medicine Lake Caldera area, including Bullseye and Blanche Lakes, is located in a Visual Retention/Bald Eagle management zone in the Preferred Alternative. These two management emphases are designed for protection of the resource from extensive human development.

## 195 - South Warner Wilderness

**1. COMMENT:** The Plan does not give a clear view of future recreation needs—especially wilderness recreation. (189)

**RESPONSE:** Please see EIS Chapter 3—*Affected Environment*, Wilderness and Roadless Areas—specifically,

the California Statewide Recreation Plan projections under the *Demand* subtitle.

**2. COMMENT:** "Recreational Livestock 50 yards from lakes, streams, primary trails." L.M.P. 4-57. This would eliminate recreational stock from a large percentage of the wilderness area. What with the current low use of recreational livestock, and overall low use in general, the South Warner Wilderness isn't ready for this. Livestock can graze these areas. Why not recreational stock? (329)

**RESPONSE:** The intent of the standard you mention is to prevent concentrations of pack animals in particularly fragile and sensitive areas. We do not believe this will eliminate the use of recreational stock in the Wilderness.

**3. COMMENT:** I find it positively outrageous that grazing is allowed at all in the South Warner Wilderness area. (342)

**RESPONSE:** Congress and the Courts have continuously upheld that livestock producers can graze in wilderness areas, but only if that practice was in effect prior to enactment of the Wilderness Act of 1964. Further, we feel that the Forest Plan provides the basis for carrying out grazing in a manner that is compatible with other wilderness values and uses.

**4. COMMENT:** The DEIS claims that under current management, the bighorn sheep range is protected from livestock grazing (3-164). Evidence is prevalent that this has not been the case. Perhaps the cattle allotment on the east side could be managed so a livestock free area would be available for recreationists and wildlife within the area from Eagle Basin on the south to Owl Creek or possibly Linderman Lake on the north. The removal of the sheep for wilderness values far outweighs any economic aspects of the permittee. This is addressed quite well in the LMP wilderness management prescription (standard) 4-61-3 (g). (329)

**RESPONSE:** Thank you for your suggestion. However, during the spring of 1988 (after the DEIS and proposed Forest Plan were released), the bighorn sheep in the South Warner Wilderness contracted a disease and the entire herd died. We have revised the text on bighorn sheep in EIS Chapter 3—*Affected Environment*.

**5. COMMENT:** In developing criteria for the use of natural or prescribed fire in the South Warner Wilderness, I believe that more parameters should be considered for inclusion in the Standards and Guidelines. These would include air quality, watershed and visual quality. Potential for increases or decreases in fuels resulting from fire should also be considered. (1274)

**RESPONSE:** We share your concerns for the Wilderness. Standards and guidelines for all the items you mentioned



are contained in the Forest-wide Standards and Guidelines section as well as the Wilderness prescription (Plan Chapter 4). A Wilderness Management Plan for the South Warner Wilderness will be developed after the Forest Plan is released.

**6. COMMENT:** Mill Creek, in the South Warner Wilderness, has its headwaters just outside the Wilderness boundary. Proposals in the Plan and DEIS to clearcut in the riparian zone of the headwaters would do serious damage to that part in the Wilderness. (1295)

**RESPONSE:** Before we would permit any timber harvest in the area you mention, we would carefully consider downstream impacts to the various resources, including its effect on the Wilderness. We would conduct a site-specific analysis prior to harvest in this area.

**7. COMMENT:** Add the other half of Mill Creek Valley and tear up the road. It is ridiculous to have a Wilderness boundary running down the middle of a stream! One half is slated to be logged, the other not, as the Plan is written. (1253)

**RESPONSE:** The RARE II (A5160 Mill) area was added to the South Warner Wilderness under the 1984 California Wilderness Additions Act. The (B5160 Mill) area, the one you mention, was intentionally omitted from the Wilderness because of a special use permit for Bowman Ditch, which predates the Wilderness designation. The road you mention is needed to access the Ditch.

**8. COMMENT:** In the DEIS, Chapter 2, page 123, which states, "The Wilderness appears more natural without livestock grazing," leads to the assumption that livestock, basically, are detrimental to nature. These and other statements throughout the Plan and the DEIS give the mistaken impression to many that grazing is wrongly allowed in the Wilderness. The Forest Service should make an intense, overt effort to correct this impression, and inform those who seek the wilderness recreational experience that it can be found within these grazing allotments. (1296)

**RESPONSE:** The South Warner Wilderness on the Modoc National Forest is managed to provide a primitive recreational experience for those who venture into it. Some members of the public do not consider herds of domesticated animals as part of a true wilderness or primitive experience. We retained the wording in the Final EIS.

**9. COMMENT:** Summary page 29—statement under wilderness and roadless areas PRF, CUR, RPD, IND maintain the wilderness setting and experience, but the quality of experience declines over time as use increases. What data supports use increasing over the next decade and by how much? (1296)

**RESPONSE:** EIS Chapter 3—*Affected Environment*, "Wilderness and Roadless Areas", explains supply and demand trends for the South Warner Wilderness.

**10. COMMENT:** L-1 backlog of trail. Can't find information concerning this backlog. Where is it? (329)

**RESPONSE:** The "backlog" you mention refers to the backlog of work to be completed on trails within the South Warner Wilderness. In other words, it is difficult to get ahead of the maintenance work on the existing trails in the Wilderness. The Warner Mountain Ranger District in Cedarville, California, has more information about trails in the Wilderness.

**11. COMMENT:** LMP 3-39—Current management claims 81 miles of maintained trails. This isn't the case. (329)

**RESPONSE:** Our information indicates that 81 miles is correct and has been retained in the Final Forest Plan.

**12. COMMENT:** Any reference to Emerson Lake(s) should be by either North Emerson Lake or South Emerson Lake. (For example, DEIS 3-148) Due to the confined area around South Emerson Lake, and the fact that there isn't any trail provided for access, it's best not to mention this lake. Let this lake be searched out by visitors by using maps or word-of-mouth. (329)

**RESPONSE:** We refer to Emerson Lake in the DEIS; this area is a high level day-use area, primarily as a result of the trail access. We are, therefore, implying that North Emerson is the subject of discussion. No mention is made of South Emerson Lake.

**13. COMMENT:** "Prescribed burns" in the wilderness...is a transparent attempt to disregard and/or overturn the Wilderness Act. (1253)

**RESPONSE:** The intent behind prescribed burning in the South Warner Wilderness is to reduce fire fuels to prevent catastrophic wildfire, similar to the catastrophic 1988 Yellowstone National Park fires. Each forest determines its fire policy for prescribed burning in wilderness areas. Also, please remember that fire is a vital and natural part of the forest ecosystem.

**14. COMMENT:** LMP 3-39—User compliance with regulations regarding permits, litter, and recreational stock has declined over the past five years according to the LMP (3-39) and the DEIS (3-150). As this five years practically takes in the entire time frame that wilderness rangers were utilized, one wonders how productive this program was. 4-58 LMP mentions permits and compliance checks. There are no permit system or compliance checks to make in reference to them (could mean user permits; e.g., livestock-outfitter [guide]). (329)

RESPONSE: We have employed wilderness rangers in the South Warner Wilderness during the past 5 years. However, during that time, Wilderness use has increased, making it impossible for wilderness rangers to contact all users. We revised standard and guidelines pertaining to wilderness compliance checks and permit counts (Plan Chapter 4).

15. COMMENT: The Draft LMP states (4-188), "Improve riparian conditions in Pine Creek Basin and in Mill Creek Meadow, which are located on the western slope of the Wilderness." No mention was made to improve riparian areas on the eastern slope of the Wilderness. As the eastside allotments, with the exception of Granger, lie wholly within the Wilderness, it would seem more appropriate to manage these allotments under Strategy B. Most of the west side allotments, which lie partially within the Wilderness, could be managed under Strategy C. (329)

RESPONSE: We disagree. Strategy B provides only minimal management to maintain resources. Under that strategy we cannot manage the land to obtain uniform livestock distribution, improve plant vigor or minimize conflicts with recreational users in high use areas. We feel Strategy C is more appropriate for the Wilderness allotments on the east side and is necessary in order to graze domestic livestock in a manner compatible with the Wilderness resource and users.

16. COMMENT: I support the PRF because this Plan will protect the South Warner Wilderness plants, wildlife, and water. (7)

RESPONSE: Thank you for your comments and support.

17. COMMENT: Management prescriptions—Note: Make changes consistently in all prescriptions. Changes may be noted for a specific page and Standard and Guidelines, but are meant to be applied wherever similar language is used.

Wilderness prescriptions:

- Page 4-57 Standards and Guidelines 1.— Instead of referencing Forest-wide Standards and Guidelines, reference Recreation section of Forest-wide Standards and Guidelines.
- Page 4-57 Standards and Guidelines 4.— "Enforce all laws..." change from Guidelines to Standards.
- Page 4-58 Standards and Guidelines B.2.— Drop "develop" to "revise."
- Page 4-60 Standards and Guidelines 4.— Add experimental stewardship program.
- Page 4-62 7.C.— Should be changed to a Guideline. Concern on how this would be implemented.
- Page 4-64 Fire 1.B.— Use more confine, contain strategies instead of only control strategy.

Wilderness (Low Standard) Prescription: same comments as for Wilderness Prescription. (73)

RESPONSE: As you suggested, we changed the item to read "...Recreation section of the Forest-Wide Standards and Guidelines."

Item 4 has been retained as a guideline. This allows for some flexibility in methods used to enforce the laws mentioned.

Item 2 has been changed from "Develop" to "Revise" as you suggested.

The Forest is currently developing a bighorn sheep management plan in cooperation with the California Dept. of Fish and Game and the Experimental Stewardship committee.

We changed the streambank stability guideline about which you expressed concern to read: *7c.(G) Maintain streambanks in stable condition as specifically defined in allotment management plans.*

The Forest Plan directs us to suppress wildfires in a manner which is compatible with wilderness management objectives. When the Forest Plan is released, we will develop a definitive Wilderness Management Plan.

18. COMMENT: 3-40. Sixth paragraph— Four bighorn sheep from Lava Beds National Monument and 10 big horn sheep from the Mount Baxter herd in the Sierra-Nevada were transferred to the Raider Canyon area. (364)

RESPONSE: We revised the section on bighorn sheep in the Wilderness to include the extirpation of the herd in the spring of 1988, due to a pneumonia-type disease.

19. COMMENT: 4-19. Table 4-4, cont. — Wilderness. The paragraph regarding wilderness contains the wording "manage the South Warner Wilderness at the standard level" and "manage the primitive recreation experience to the extent possible." What is the standard level? "To the extent possible" is a term that really means nothing to the reviewer. Who determines what is possible? (364)

RESPONSE: The wilderness (Standard) level is explained in detail under the Management Prescriptions listed in the Final Plan. The term "to the extent possible" is nebulous but refers to the varying amounts of money Congress allocates to the Forest annually for wilderness management.

20. COMMENT: Prescriptions: In Wilderness, you should have the same forage utilization standards as in the rest of the Forest. (708)

RESPONSE: Utilization guidelines for Wilderness emphasize wilderness management objectives rather than livestock production. Guidelines may vary in site-specific

application to accommodate differences in site conditions.

**21. COMMENT:** In Chapter 4, page 68, of the PRF Plan under Wilderness-Recreation #5 Standards And Guidelines (B), I support continued stocking of fish where that use was previously established. (1296)

**RESPONSE:** Thank you for your comments and support. We retained that item in the Final Plan.

**22. COMMENT:** As a user of the South Warner Wilderness area, I am particularly interested in extending that area and support the development of a North Warner Wilderness. (1233)

**RESPONSE:** All roadless areas on the Modoc National Forest that were not incorporated into the existing wilderness on the Forest were released from further consideration in this round of planning by the 1984 California Wilderness Additions Act.

## 196 - Roadless Areas

**1. COMMENT:** I urge you to retain that acreage so that these areas will be kept intact for wilderness consideration in the future.

— Wilderness—wilderness areas should be recommended in this Plan. Wilderness demand is increasing. (333)

**RESPONSE:** After the 1978 Roadless Area Review and Evaluation, the Forest Service recommended five areas for incorporation into the Wilderness: Granger, Jess, Mill, Parker, and Pepperdine. On September 28, 1984, the California Wilderness Act (Public Law 98-425) added these areas to the South Warner Wilderness. All other areas were released from wilderness consideration for this round of planning. No future planning areas exist on the Forest. Consequently we made no wilderness recommendations in the Forest Plan.

**2. COMMENT:** I recommend that you amend this PRF to protect and preserve 201,600 acres of Bear Camp Flat, Big Canyon, Burnt Lava Flow, Callahan Flow, Crane Mountain, Damon Butte, Dobie Flat, Dry Hat Mountain, Knox Mountain, Lavas, Mount Bidwell, Mount Hoffman, Mount Vida, Parsnip, Powley, Sears Flat, Soldier, and Steele Swamp. I recommend that you keep all these areas roadless and undisturbed to protect their important geologic, wildlife, plant, and visual beauty features. (7)

**RESPONSE:** All studied roadless areas were released in the 1984 California Wilderness Act for this round of planning, as discussed in our response to the previous comment. The Forest Plan allocates approximately 23,000 acres of the SPMN Prescription which contains standards

and guidelines substantially restricting vehicle use and road construction. Further, a variety of restrictions are placed on the remaining lands as appropriate to restrict use of sensitive areas and critical wildlife habitat.

**3. COMMENT:** We urge wilderness designation for the following roadless areas: Mill Creek, Bear Camp Flat, Crane Mountain, Dry Creek, Mount Bidwell, Mount Vida, Parsnip, Soldier, Powley, Steele Swamp, Mount Hoffman, Lavas, Callahan Flow, Big Canyon, and unnamed areas identified in the Preferred Alternative. (9)

**RESPONSE:** Please see our response to the first comment.

**4. COMMENT:** I urge you to select the following alternatives as this National Forest's permanent planning and management alternative: alternative preservation wilderness wildlife-biological scenic resources. To permanently ban all forms of developments on all current, proposed, and potential wilderness, with no release of any roadless areas. To acquire all inholdings on all public lands and with no disposal of any public lands. (14)

**RESPONSE:** Please see our response to the first comment.

**5. COMMENT:** I do not support any further designation of wilderness or roadless areas. (21)

**RESPONSE:** Please see our response to the first comment.

**6. COMMENT:** Recommend we oppose additional roadless areas in general and support multiple use of these areas. Most have existing old roads in them. These areas should be accessible for grazing, timber, firewood, mining, recreation, etc. (126)

**RESPONSE:** Please see our response to the first comment.

**7. COMMENT:** Would like to see roadless areas left alone. (201)

**RESPONSE:** Please see our response to the first comment.

**8. COMMENT:** The best way to preserve the valued roadless areas on Modoc National Forest for future wilderness is to put an immediate end to your Forest road construction program. It is not fair to force us to pay for destruction of our Forest...for timber company gain. (189)

**RESPONSE:** Please see our response to the first comment.

**9. COMMENT:** These additional roadless areas should be protected in the semi-primitive, non-motorized

(SPNM) recreation category: Mount Hoffman, Mill Creek, Bear Camp Flat, Dry Creek, Parsnip, Soldier, Powley, Steele Swamp, Lavas, Callahan Flow, and Big Canyon. (162)

RESPONSE: Please see the Preferred Alternative map to determine where the SPNM Prescription is applied. Many roadless areas you mentioned are managed wholly or in part under the SPNM Prescription.

10. COMMENT: In order to preserve the most important roadless areas, we recommend:

- Protection under SPNM of Mount Hoffman roadless area to be included in a Medicine Lake Highlands special recreation zone.
- Protection as SPNM of the Crane Mount roadless area to be contained in the Cave Lake, Mount Bidwell, Mount Vida special recreation zone.
- Protection from roading-logging also of the Mount Bidwell, Mount Vida areas. (198)

RESPONSE: Please see the Preferred Alternative map to determine where the SPNM Prescription is applied. Many roadless areas you mentioned are managed wholly or in part under the SPNM Prescription.

11. COMMENT: The National Park Service (NPS) strongly supports including lands adjoining the Monuments' boundaries in the semi-primitive non-motorized dispersed recreation prescription as shown in the Preferred Alternative. The majority of these lands is primarily roadless and adjoins wilderness within Lava Beds National Monument. This prescription will not only help protect these wilderness areas from unlawful motorized entry but will protect the wilderness experience of visitors using these areas. (1316)

RESPONSE: We feel that the mix of non-motorized and motorized prescriptions allocated in the Forest Plan is most appropriate to meet the collective needs of the public that use the Modoc National Forest.

12. COMMENT: Of the 201,600 acres proposed for roadless designation, 122,620 contain varying amounts of timber, roads, and other improvements and should be managed for multiple use. (1258)

RESPONSE: In the 1984 California Wilderness Act five areas were incorporated into the South Warner Wilderness. The remaining roadless areas were released from further wilderness consideration for this round of planning.

13. COMMENT: We wish to express our concern on the Sears Flat, page E-22, roadless area. The district has a project in this area that will store water and possibly generate power. This project has been under investigation

for five years and is an important part of the district's development. (24)

RESPONSE: We analyze and approve projects on a site-specific basis. Five areas were incorporated into the South Warner Wilderness in the 1984 California Wilderness Act. At this time all other roadless areas were released from further consideration in this round of planning.

14. COMMENT: I would hate to see a roadless area in the Sears Flat allotment of the Delta Lake area. We need roads to put out salt and check cattle. There is a long-term plan for a reservoir there, and a road would be needed. (1255)

RESPONSE: Please see our response to the first comment.

15. COMMENT: Areas of concern that I have in the Doublehead District: The roadless areas; a) The Callahan Flows, b) The Lavas, and c) The Doby. We would like to know really what that's going to mean to us. We wonder what the impact will be to us. I'm concerned that perhaps our thoughts are more with the recreationalist than they are with the people that live here. (828)

RESPONSE: The 1984 California Wilderness Act incorporated five areas adjacent to the South Warner Wilderness into the Wilderness and released all remaining areas from further wilderness consideration within this round of planning. However, we will continue to manage several areas outside the Wilderness primarily for non-motorized semi-primitive recreation. These are shown on the Preferred Alternative map accompanying the Forest Plan.

16. COMMENT: CNPS does not believe it is in the public interest to continue logging and road building in previously untouched, roadless areas. We also question if it is justified when timber revenues and local demand are low. The country is not realizing a net benefit from this continuing destruction of intact forests and subsequent loss of undeveloped wilderness. The timber industry benefits at the expense of the Forest ecosystem and society. (1214)

RESPONSE: See response to previous comments in this section concerning roadless areas.

17. COMMENT: Detailed site-specific analyses of the consequences to the environment of non-wilderness management (Calif. V. Block (765)).

- to achieve this objective, specification of wilderness values, including wildlife species inventories, especially threatened and endangered species.
- environmental consequences of non-wilderness management.

- effect of non-wilderness management on future options for wilderness designation .
- effect of non-wilderness management on future options for wilderness designation.
- economic benefits of non-wilderness management weighed against the adverse environmental consequences.
- in each alternative, evaluation of possibility of developing resources in non-wilderness areas, preferably lands already developed, before considering development in roadless areas.
- NFMA requirements (36CFR 219.17(b)(2)(i)-(iv)); wilderness value of areas.
- effect of roadless management on adjacent land.
- feasibility of management.
- “proximity to other wilderness areas and relative contribution to National Wilderness Preservation System”. (1248)

RESPONSE: The 1984 California Wilderness Act incorporated five areas into the South Warner Wilderness and released the remaining areas from further wilderness consideration during this round of planning. We analyze and address impacts such as you discuss in your comment on a site-specific basis carried out at the project level.

18. COMMENT: DEIS 2-22, 3-148: Although the Modoc National Forest may feel that (in) regrading its *de facto* wilderness areas “none were rated high enough for wilderness designation,” the disposition of roadless areas was not resolved by the passage of the California Wilderness Act of 1984. Those areas still roadless during the second round of forest planning are required to be considered for wilderness designation. Congress did not prohibit the Forest Service from considering any areas for wilderness. Ignoring the roadless area issue will lead to the rejection of this Forest Plan as inadequate. (1220)

RESPONSE: Please see previous response.

19. COMMENT: DEIS 3-153: We object to the determination of wilderness carrying capacity based on “camp-site solitude.” Different people have different feelings about solitude. Solitude is not a requirement of the Wilderness Act. Trailhead quotas and other management methods are appropriate to protect the physical capacity of the Wilderness. (1220)

RESPONSE: Trailhead quotas and other more intensive management requirements may be necessary if wilderness use levels increase dramatically in the future. Although solitude is not a requirement of the Wilderness Act, for most wilderness users it is a major factor in determining the quality of a wilderness recreational experience. Therefore, we assume that the number of usable campsites

separating users is a good gauge of a high-quality wilderness recreational experience.

20. COMMENT: DEIS Appendix E fails to provide specific information required by Forest Handbook and NFMA regulations. Where are roadless areas located? (1248)

RESPONSE: Appendix E of the EIS describes roadless areas studied and released from further consideration for this round of planning in the 1984 California Wilderness Act. All the alternative maps, including the Preferred Alternative, display roadless areas.

21. COMMENT: DEIS Table E-1: We wanted to find the Bear Camp roadless area and relate to management areas and prescriptions in the LRMP. There are no Township or Range references on the map on E-6. By comparing the map on Plan 4-189 with that on DEIS E-6, we determined that Bear Camp Flat roadless area is entirely within the Patterson management area. This has been a logical procedure but one which a reviewer should not have to go through.

Bear Camp Flat includes prescriptions 15 and 16, but Patterson Management Area does not, yet Bear Camp Flat is totally enclosed within the Patterson Management Area.

The prescriptions for the Dry roadless area include prescription 15 (DEIS E-3) but the prescriptions for Fitzhugh Management Area do not. Neither does the PRF map. Plan and DEIS are not consistent, and the assignment of prescriptions is confused. (1263)

RESPONSE: The Preferred Alternative map which accompanies the EIS and Plan delineates allocation of all prescriptions and all roadless areas. See also EIS Appendix E for more details about roadless areas.

22. COMMENT: Mount Hoffman roadless area: Under the PRF these areas would be separated by a zone subject to relatively intensive management activity that would effectively split and thus destroy the contiguity of the roadless area. (1351)

RESPONSE: The 1984 California Wilderness Act incorporated five areas into the South Warner Wilderness and released the remainder from further wilderness consideration in this round of planning. We analyze and address impacts such as you mention on a site-specific basis.

23. COMMENT: The Steele Swamp roadless area: The description that this area had 30 percent wet meadows appears to be in error. (1403)

area, and extending along the Tichnor Road to the fruit growers property, might work better. (708)

RESPONSE: Thank you for your comments. As required by various laws and regulations, we give equal consideration to all forms of multiple-use management and economic stability of the local area for the lands it administers. All roadless areas on the Modoc National Forest, except additions to the South Warner Wilderness, were released from further consideration as wilderness for this round of planning in the 1984 California Wilderness Additions Act. We feel that the mix of recreation prescriptions applied in the Forest Plan is the most appropriate in meeting the collective needs of the public.

7. COMMENT: Medicine Lake (61): The Plan proposes an SPNM area for about half of the Mt. Hoffman Roadless Area, protecting Modoc Lake, but not the hot spot. Although the Forest goals propose interpretation, trails, and a variety of recreational opportunities, this will require money which will be the first to be cut out of the budget. Thus, a tentative proposal (subject to review) to build a Crater Rim Trail is unlikely to be realized. An alternative for the Highlands could include a larger SPNM area including the entire Mt. Hoffman Roadless Area, thus protecting old growth, special scenic, geologic, and botanic features. It would also provide a large natural area close to the heavily-used Medicine Lake. Because SPNM allows road access for management reasons, the roads into the two stratigraphic sites should not require exclusion. The Recreation Prescription described in that section should be applied to the rest of the Medicine Lake Crater area, No-Name Lake/Alcohol Crater, and the Bullseye/Blanche/Paynes Creek Area. Management of the Highlands in this manner would protect old-growth-dependent wildlife species better than as proposed in the Plan. This would remove the questionable range blocks. (708)

RESPONSE: Thank you for your comments. However, we feel that our allocation of the SPNM Prescription is the most appropriate application to serve the collective public who use the Modoc National Forest.

8. COMMENT: Once lost, our beautiful wilderness and semi-wilderness areas are lost forever, as wilderness. We are short-sighted to permit timber and grazing interests to despoil and overuse these areas. In the long run, they are more valuable (as recreational areas and tourist attractors, as well as sources of emotional renewal for all of us now living, and especially for our future generations) than they would be if private, purely profit-motivated groups are permitted to misuse them. (45)

RESPONSE: All roadless areas on the Modoc National Forest, except additions to the South Warner Wilderness, were released from further consideration for this round of

planning in the 1984 California Wilderness Additions Act. We feel that the mix of recreation prescriptions applied in the Forest Plan is the most appropriate in meeting the collective needs of the public.

9. COMMENT: One concern is about the Forest's persistent emphasis on semi-primitive recreation. As stated in the PRF theme (DEIS 2-60) "managing desired areas for semiprivate recreation". (Emphasis added). "Desired" by whom? Certainly there is a minority of recreation clientele who seek such environments in wilderness and unroaded areas but the vast majority of national forest visitors prefer access and developed site oriented facilities. We suggest that this SP priority in PRF is an artifact of a long-standing Forest Service policy emphasis on "dispersed" recreation. As is noted in the Plan documents, most dispersed recreation is experienced in activities such as driving for pleasure, and accessible camping, hunting, and fishing. Hopefully, Forest Service policy is now in the process of changing to become more responsive to changing visitor use preferences. In mid-March of this year, the Chief will announce new recreation policy direction to the Forest Service in the field. One of the internal commission papers on recreation policy that is part of this package says: "policy—existing policy holds that the national forests should complement the national parks, state parks, the private sector, and other entities by offering a more primitive range of recreation experience." We interpret these statements and others made during the course of this policy reexamination to mean that the Forest Service now realizes that the primitive range of recreation opportunities does not always equate with the highest quality of experiences and amenities. (1252)

RESPONSE: The Final Plan emphasizes a wide range of commodity and amenity outputs of which semi-primitive type recreation is but one. Recreation demand and how that was projected is discussed in Chapter 3 and Appendix B of the EIS. We feel that the mix of motorized and non-motorized prescriptions in the Forest Plan is most appropriate to meet the needs of the collective public who use the Modoc National Forest. Therefore, we have retained the allocation of these prescriptions in the Final Plan.

10. COMMENT: There is a pressing need for a realistic definition of "roadless" when it comes to definition of land and designation for wilderness and "roadless." We request that "roadless" areas be evaluated solely on whether any roads primitive or otherwise exist. If there are any roads inside these areas, they should be considered for use in adequately dispersing the use of the Forest and evaluated on bases such as those advanced in the Region 8 ORV policy. (6)

**RESPONSE:** Please see the definition of *roadless area* in the Glossary to the EIS.

**11. COMMENT:** We recommend the Highgrade Trail be provided with a 1/2-mile buffer zone so as not to be in conflict with existing hunting, pleasure driving, and mining activities in the same area. (1235)

**RESPONSE:** Part of the Highgrade Trail is managed under a Visual Quality Objective of Retention which extends approximately 1/4-mile on either side of the trail. The Retention objective provides for minimal disturbance and assures a quality recreational experience on the Highgrade Trail.

**12. COMMENT:** The Semi-Primitive Non-Motorized Prescription, as in all other California forest plans I have read, does not exclude the possibility of numerous management activities. Together, these activities have the potential of severely degrading the semi-primitive character of the areas. The salvage permitted following a fire, for example, would cause severe degradation of naturalness. The prescription should be rewritten to be much more restrictive. (1236)

**RESPONSE:** Please see Plan Appendix K—*Recreation Opportunity Spectrum* for a definition of SPNM areas. See also the standards and guidelines in the SPNM Prescription in Chapter 4 of the Forest Plan.

**13. COMMENT:** Recreation Prescriptions emphasize developed and dispersed recreation and wildlife. It allows only uneven-age timber management in a visual retention class, and restricts tree cutting to hazard trees within 500 feet of a recreation site. ORV use would be restricted to Zone C Class.

- Interpretation and signing are necessary preventatives to vandalism and ignorant destruction. A trails system and signed interpretive roads would be given higher priority. Mining and geothermal should be constrained to protect visual quality.
- Areas which should have this designation (not cancelling any SPNMs) include Medicine Lake Caldera and adjacent areas, the south boundary of Lava Beds, the Highgrade area, Mill Creek-Soup Springs, Blue Lake, Patterson Meadow, and Rush Creek.
- Dispersed recreation sites can have a Partial Retention VQO in general, but the more popular ones and all developed recreation sites should have a Retention VQO. (500)

**RESPONSE:** Under the Preferred Alternative, most of the recreationally sensitive areas you mention fall under management schemes that emphasize protection of sensitive values. Some of these protective management prescriptions include: Raptor Management, Visual Retention, Semi-Primitive Non-Motorized, or Timber-Vi-

suals. All highly developed recreation sites fall under a Visual Retention objective.

**14. COMMENT:** SPNM: The Plan prescription is passable with the following exceptions: There should be no timber cutting in SPNM areas. Also, management activities allowing vehicular access should be defined, and should not include routine patrols or surveys. (500)

**RESPONSE:** Plan Chapter 4 contains standards and guidelines for the SPNM Prescription. Motorized travel is prohibited except for administrative purposes. Routine patrols or surveys are not encouraged in this management prescription.

**15. COMMENT:** Black Mountain (62): Glass Mountain should be included in the SPNM. All areas visible from Lava Beds (basically the entire north Highlands) should have at least Partial Retention VQO. I would prefer no clearcutting. (708)

**RESPONSE:** Under the PRF Alternative in the Final Plan, most of the area you mentioned south of the Lava Beds National Monument is protected for its visual quality—by Visual Retention, Raptor Management, or Timber-Visuals management prescriptions.

**16. COMMENT:** Draft Plan—page 3-23; second paragraph. Including areas that contain primitive roads, whether constructed or not, in SPNM is in direct conflict with the definition of SPNM contained in App. K. Motorized access of any kind is not permitted in this ROS category, period. (100)

**RESPONSE:** Primitive roads or vehicular trails traverse many SPNM areas on the Forest. However, when the inventory was conducted, we believed that these primitive roads did not so detract from area's character that we should reclassify it.

**17. COMMENT:** Draft Plan—page 3-24; first paragraph on page; last sentence; delete the word "possibly." There has been ample time during the planning process to correct this situation. (100)

**RESPONSE:** We have rewritten this section. However, we will probably inventory areas originally inventoried as ROS class SPNM to determine if the character of those areas has changed since the original inventory.

**18. COMMENT:** Draft Forest Plan, page 3-36, Visual Quality Index. Can the hand of man do only bad things for the VQI? What do you think the VQI was in the 1940's and 1950's? Do you think it has gone downhill since then? If so, then I would suggest that there are some really important visual esthetic aspects that are not measured by the VQI. The SOC people will ask these same questions. Time heals fast. (1021)

RESPONSE: The Visual Quality Index (VQI) was designed to measure or index changes to the visual landscape. It compares human-caused developments on the visual landscape to a completely natural setting, staged through various periods in time.

**19. COMMENT: DEIS 3-87: Does the change in acreage in SPNM areas reflect constructed or authorized routes since 1974 or roads and trails made by visitors? If the latter is true, then the Forest Service should retain these areas as SPNM and enforce the mandated controls on ORVs. (1220)**

RESPONSE: We display SPNM acres as they were originally inventoried, based on 1974 aerial photos. The EIS points out that we may need to inventory many acres again because continuous vehicle use in the interim may have so changed the character of the land that they are no longer appropriately classified as SPNM.

**20. COMMENT: The chart on page 4-11 indicates that 23,000 acres are allocated to the semi-primitive non-motorized land planning category, but the narrative section, on page 4-18, indicates that the Forest plans to manage "78,000 additional acres for semi-primitive non-motorized qualities." Since the chart reflects the Forest's future planned allocation, this chart should reflect the additional 78,000 acres. The chart also indicates that no lands are planned for developed recreation (low standard), but the narrative has dedicated pp. 4-88 through 4-93 to outlining the management direction for this land category. (1316, 1245)**

RESPONSE: The 78,000 additional acres for SPNM qualities represent an opportunity as identified by an earlier ROS inventory. We removed this line from the final Plan because it was confusing and misrepresented the Forest's intent. The 23,013-acre figure represents an actual acreage allocation in the Forest Plan. Currently, we manage some developed sites at a standard level and some at a low standard level. However, we do not plan to manage new developed recreation sites at the low standard level.

**21. COMMENT: Where are the SPM areas located? These should be located in Final Plan maps. (1260)**

RESPONSE: The SPM areas are displayed on the ROS or Recreation Opportunity Spectrum map which is included with the other Final Plan maps.

**22. COMMENT: Draft EIS—page 3-86; ROS: second paragraph: Including areas that contain primitive roads, whether constructed or not, in SPNM is in direct conflict with the definition of SPNM contained in Appendix K. Motorized access of any kind is not permitted in this ROS category, period. (100)**

RESPONSE: At the time we conducted the ROS inventory, we believed many of these areas exhibited a character appropriate for SPNM classification despite the presence of primitive two-track roads. The EIS suggests that we should inventory these areas again. The SPNM Management Prescription directs vehicular restrictions on those acres allocated to that prescription.



## 201 - Interpretive Services

**1. COMMENT:** An aggressive interpretive program will benefit local communities through an increased awareness and appreciation of our local history and heritage, and economically as well, by making available day-trips for tourists. (1034)

**RESPONSE:** Forest Plan direction to sign two cultural resource sites per year will help in this area. By working with the Modoc County Historical Society and other interested groups we will produce interpretive brochures for signed locations.

**2. COMMENT:** Clearly post restricted areas around wilderness areas, historical sites, archaeological sites, and wildlife habitat. (1147)

**RESPONSE:** A few historic and archaeological sites have signs advising the public of their protected status. Two problems exist in signing sites: 1) there are simply too many to sign each one; and 2) posting historic and archaeological sites sometimes leads to their destruction by vandals and illegal artifact collectors. We will post interpretive signs at selected locations for public education and enjoyment.

## 210 - Special Interest Areas

**1. COMMENT:** Special management designation for the Willow-Boles Creek area. (104)

**RESPONSE:** We evaluated the entire Forest for potential special interests areas for all resources. Those identified are included in EIS Chapter 3 – *Affected Environment*. We did not identify the Willow-Boles area as a special interest area. However, the Plan includes a Forest Standard and Guideline for evaluating future areas for consideration as SIAs.

**2. COMMENT:** Establish the special interest areas described in Appendix N. (1253)

**RESPONSE:** EIS Appendix N displays *potential* SIAs. EIS Chapters 2 and 4, and Plan Chapter 4 discuss SIAs that are recommended to the Regional Forester for immediate establishment as well as those to be evaluated following Forest Plan release.

**3. COMMENT:** No geothermal development should be allowed especially as water is probably limiting for development. The one perennial stream in the highlands should not be diverted for geothermal as it is a SIA in its own right. (1260)

**RESPONSE:** Plan Appendix I lists Special Stipulations which the Forest established for protecting resources,

including surface water. EIS Chapters 2 and 4 and Appendix N, and Plan Chapter 4 discuss SIAs.

**4. COMMENT:** Burnt Lava Flow: The vegetation on the kapukas (islands) needs to be protected. It needs to be emphasized that the trees are a value and should not be cut.

**Glass Mt.: Special interest area designation does not stop much of development, or even make it hard to mine, as SIA boundaries may be adjusted to accommodate claims. SPNM, as part of the Hoffman Unit, would protect it more, by limiting surface occupancy. The area could have both protections. The unit definitely should include the hot spot. (708)**

**RESPONSE:** The “islands” of vegetation within the Burnt Lava Flow SIA are withdrawn from mineral entry and managed according to the Special Areas Management Prescription in Plan Chapter 4. This prescription prohibits harvesting timber or collecting firewood in SIAs. The Special Areas Prescription should also allay your concerns about mineral exploration in SIAs; NSO stipulations apply. EIS Chapters 2 and 4 and Appendix N, and Plan Chapter 4 discuss SIAs. Plan Appendix I discusses special stipulations.

The SPNM Management Prescription provides stringent restrictions on mineral leasing; conditional NSO stipulations apply.

**5. COMMENT:** Older kapukas surrounded by older lava flows should be identified and protected as SIAs. The Glass Mtn. SIA should include the hot spot. (1260)

**RESPONSE:** The Hot Spot, attached to the Glass Mountain Flow, was not included in the original Special Interest Area. However, the area is protected from ground-disturbing activities caused by mineral development. We apply a no-surface-occupancy stipulation to the area. This stipulation was identified in the Glass Mountain KGRA Geothermal leasing EA, and is explained in Plan Appendix I.

**6. COMMENT:** I would also like to see special interest area designation for the geologic areas of Glass Mt., Burnt Lava Flow, and Medicine Lake Glass Flow. (104)

**RESPONSE:** The Final EIS and Plan identifies these areas as SIAs.

**7. COMMENT:** SIAs and RNAs. All candidates should be designated. (1048)

**RESPONSE:** Officially designating an SIA begins with the Forest Supervisor's recommendation. The Regional Forester actually designates areas as SIAs. See EIS Chapter

3—*Affected Environment*, section 19, and Chapter 4; and Plan Chapter 4.

8. COMMENT: Recommend that the final EIS contain a complete explanation of how such areas are selected and the rationale behind the designation of Burnt Lava Flow, Medicine Lake Glass Flow, and Glass Mountain Glass Flow. (364)

RESPONSE: EIS Chapter 3—*Affected Environment* and EIS Chapter 4—*Environmental Consequences* include an explanation of the merits of each SIA and recommendations. In addition, the Forest Supervisor's Office has documentation on the rationale for the Regional Forester's designation of the Burnt Lava and the Glass Mountain Glass Flow as SIAs in 1982. It is available for review.

9. COMMENT: Draft EIS—Appendix H—withdrawals—page H-2: Special Interest Areas: Why just the northern portion of the Medicine Lake Glass Flow? The whole thing isn't that big and not much good for anything else anyway. (100)

RESPONSE: We designated the northern portion of Medicine Lake for SIA withdrawal because the southern portion is already withdrawn in the Medicine Lake Recreation Area withdrawal. See Appendix H, H-1.

10. COMMENT: 3-30. Geologic Special Interest Areas. This section needs a glossary. What is dacite? (364)

RESPONSE: We added *dacite* to the Glossary in the EIS.

11. COMMENT: In the LMP section titled, Management Prescriptions for Special Areas, it is indicated that "No Surface Occupancy" (NSO) stipulations will be applied. This NSO stipulation needs to be justified. (1316)

RESPONSE: We apply NSO stipulations to areas of significant value when we want to preserve the integrity of the area. Mineral exploration and development could destroy the SIA; therefore, we apply a NSO stipulation.

12. COMMENT: I appreciate retention of the Burnt Lava Flow Virgin Area, and would hope the FS will vigorously oppose infringements on the area such as power lines. (1351)

RESPONSE: We agree. Your concern is reflected in the Management Direction for Burnt Lava Flow (Plan Chapter 4, Management Area 62—Black Mountain).

13. COMMENT: CNPS requests that the following S&Gs for RNAs and SIAs be adopted:

- 1) Protect areas of outstanding scientific, scenic, botanic, or geologic values as RNAs, NNLs, or SIAs. The Forest shall:

- A) establish RNAs for baseline ecological study, protection of gene pools, and as habitat for Forest-listed sensitive plant species,
- B) inventory and recommend NNL status for those sites illustrating the geological and ecological diversity of the U.S.,
- C) inventory and recommend SIA status for areas of outstanding nationally-significant geologic, botanic, zoologic, paleontologic, or other natural values,
- D) protect and preserve the values of SIAs as identified in the establishment report or area mgt plan to conform with MA direction and applicable Rxs. (1214)

RESPONSE: Plan Chapter 4 (Forest-wide Standards and Guidelines, management prescriptions, and management direction) address your concerns.

## 211 - Watershed

1. COMMENT: MNF needs at least one hydrologic-aquatic RNA to provide baseline data to evaluate mgt activities that affect stream quality and riparian vegetation. (500)

RESPONSE: We agree. The Region is in the process of completing a target element gap analysis that identifies potential sites for inclusion in the RNA program. The first step is to refine the target elements themselves, prior to identifying particular sites on National Forest lands that meet the target element criteria. Hydrologic-aquatic areas are among those being evaluated in the gap analysis. Several target elements occur on the Modoc NF, including Montane Meadow, Montane Black Cottonwood Forest, Montane Riparian Scrub, and Transmontane Freshwater Marsh.

2. COMMENT: Prohibit OHV use in established and candidate RNAs. (500)

RESPONSE: OHV use in the Devil's Garden RNA is restricted. See Management Prescription 8. The Raider Basin candidate RNA is mostly in the South Warner Wilderness and is entirely unroaded. OHV use is not a concern there.

3. COMMENT: Exclude grazing if necessary. Allow grazing only where natural systems do not maintain veg. communities for which the RNA was established.

- Prohibit firewood cutting in RNAs. (500)

RESPONSE: Firewood cutting and grazing activities are prohibited in RNAs. See Management Prescription 8.

4. COMMENT: The DEIS (3-90) states that the existing Devil's Garden RNA does not exclude cattie and horses.

**The DFG recommends that there be a schedule in the final Plan outlining Plans to fence and sign this RNA on the Modoc NF. (364, 1030)**

**RESPONSE:** A recent ecological survey (Keeler-Wolf, 1983) discusses current grazing impacts to the Devil's Garden Research Natural Area. According to the report, most of the RNA is ungrazed by cattle or horses except for the extreme northeast corner, which is close to a stock pond. Current standards and guidelines listed in Management Prescription 8 specify that fencing will be done as necessary to prohibit grazing.

**5. COMMENT:** RNA's have a special requirement: they should be in areas which have been relatively undisturbed by man for the last 50 yrs. and which have the prospect of remaining undisturbed. Where this condition cannot be met, areas that have the least disturbance should be used as they will take the shortest time to recover fully. (500)

**RESPONSE:** We agree. Thank you for your comment.

**6. COMMENT:** A ponderosa pine type 245 with significant bitterbrush understory and hydrologic RNA are needed and bitterbrush and mountain mahogany RNAs should be strongly considered because of the increased reliance on these areas for timber, while maintaining bitterbrush for forage. A candidate area for this type should be included in the final Plan. (500)

**RESPONSE:** An interior ponderosa pine type is included in the Region's network of target element RNAs, as is a Jeffrey pine type. Both types have been subject to heavy disturbance from logging and grazing over the last fifty years. If suitable areas exist, the Forest will recommend their evaluation to the Regional Research Natural Areas committee.

**7. COMMENT:** I support the Raider Basin RNA. (708)

**RESPONSE:** Thank you for your comment. This area is currently in the evaluation process for RNA designation.

**8. COMMENT:** Parsnip Creek, a spring creek, would make a good candidate for this RNA. (500)

**RESPONSE:** Thank you for your comment. This site is not currently being considered for nomination. EIS Chapters 3 and 4 include discussions of RNAs.

**9. COMMENT:** Use RNAs for baseline data in the monitoring program.

- Encourage scientific studies.
- Use RNAs for public education. (500)

**RESPONSE:** One objective of designating RNAs is to preserve examples of all significant natural ecosystems for research and ecological study. RNAs are used whenever

appropriate for baseline monitoring data. Unfortunately, not all ecological types are well represented.

**10. COMMENT:** There are no indications in the Plan to establish any SIAs or RNAs for sensitive plants or animals. We recommend that surveys be done in the Devil's Garden region with high concentrations of vernal pools and seasonal lakes and meadows. This area, in addition to having these rare habitats and communities, has a high potential for rare plant species and should be reviewed for SIA/RNA status. (661,1214)

**RESPONSE:** A guideline has been added to the Plan Chapter 4 that states, "*Consider additional areas for RNA/SIA status as needs and opportunities arise*".

**11. COMMENT:** I support the PRF because it protects Devil's Garden's RNA. It recommends Raider Basin to be established as an RNA for its bighorn sheep, white fir forest, and other important features. (007)

**RESPONSE:** Thank you for your comment.

**12. COMMENT:** Adopt Plan S&Gs. (500)

**RESPONSE:** Thank you for your comment.

**13. COMMENT:** The National Audubon Soc. supports the designation of RNAs. An important addition to the Forest Plans would be the providing of criteria outlining RNA needs and goals and how the MNF intends to help R5 meet those goals.

**The establishment of RNAs can work to not only provide examples of important vegetation types but also can provide habitat and protection to sensitive species. (1018)**

**RESPONSE:** Criteria outlining RNA needs and goals are established at the Regional level. The Forest's role is to initiate searches for and nominate prospective areas when target elements are assigned by the Regional Forester. EIS Chapters 3 and 4 include discussions of RNAs.

**14. COMMENT:** MNF has several veg. types and plant communities that do not occur on any other forest. We believe that a commitment to designating candidates and getting them established as RNAs is a major step in maintaining and preserving diversity in the MNF. (1214)

**RESPONSE:** Thank you for your comment. If you know of specific areas that might be suitable as RNAs, the Forest would like to hear from you regarding their location and characteristics. EIS Chapters 3 and 4 include discussions of RNAs.

**15. COMMENT:** The CNDDDB (California Natural Diversity Data Base) currently recognizes 262 terrestrial and 144 aquatic communities for the State. MNF should determine which of these communities are present in the

Forest and develop a list of areas that could potentially fill RNA needs for R5. The establishment of RNAs can work to provide examples of important and restricted vegetation types, and provide habitat and protection to sensitive plant and animal species. (1214)

RESPONSE: Target elements are assigned by the Regional Forester through the RNA Committee. The role of the Forest is to search for suitable areas representing target elements after they are assigned to the Forest. If you know of candidate areas, we urge you to contact us with the location and characteristics.

16. COMMENT: CNPS supports the establishment of SIAs for protection of unique assemblages of sensitive or geographically rare plants and animals, unusual species, and representatives of uncommon natural plant communities. Areas with unique floras, well-preserved meadows, special soils such as serpentine, dolomites and limestone, mtn. peaks with outstanding floras, flower fields with outstanding displays, concentrations of sensitive plant species, unique or uncommon plant communities, are all examples of habitat that could occur on MNF and would deserve protection. (1214)

RESPONSE: We agree. Thank you for your comment. EIS Chapters 3 and 4 and Appendix N include discussions of SIAs.

17. COMMENT: It is unbelievable that the Forest would dispute jurisdiction with the National Park Service over Lava Beds, after 63 years of national monument status (p.3-59). Lava Beds was established for its unique geologic character. Sole jurisdiction should go to the NPS, and the Callahan Flow, Lavas, and Dobie Flat roadless areas should be added. The Devil's Garden RNA as detailed on pp. 3-90,91 portrays a sorry, sorry state of affairs. The National Forest has failed to protect the area and so it should be given National Natural Landmark status. (1253)

RESPONSE: The authority for national landmark and national park designation rests solely with Congress and, therefore, is outside the scope of this Plan.

## 230 - Timber

1. COMMENT: By far the most controversial issue on national forests today is the below cost timbering/road building scandal. (0006, 0500)

RESPONSE: One of the more significant issues surrounding the national forest timber management program is an economic one: whether sale receipts should cover the costs of the program, and the degree to which total public benefits should be included – if at all. The following general policy statements should clarify Forest Service direc-

tion relating to the economics of the national forest timber program:

- The timber management program on a national forest shall be conducted in such a way that total benefits equal or exceed total costs over time.
- The timber management program will be planned and conducted in an economically efficient manner, consistent with the objectives and guidance of the Forest Plan.
- The timber sale program on an individual national forest will reflect present and anticipated future market conditions within the flexibility provided for in the Forest Plan.
- When monitoring systems such as TSPIRS (Timber Sale Program Information Reporting System) indicate that, due to incorrect assumptions or changing conditions, the timber management program may not be consistent with this overall policy, an analysis of the Forest Plan may be initiated to determine if a modification is necessary.

Based on the 1988 TSPIRS analysis, the Modoc NF does not have a below-cost timber sale program. EIS Chapters 2 and 4 and Appendix B display timber harvest economics.

2. COMMENT: Don't timber harvest along streams, lakeshores, and around mountain meadows. (0186)

RESPONSE: The Plan protects streams, meadows, and lakeshores. See Plan Chapter 4 Management Direction, section D. Forest Standards and Guidelines, item 15 Riparian Areas and Water; and Appendices M and N. (0186)

3. COMMENT: The Plan admits that MNF is understocked in mature and old-growth timber. MNF should allot more acreage for uneven-age class timber standards than PRF outlines. (0474, 0536, 1237)

RESPONSE: Most of the 639,942 acres of forested land are under 130 years old. About 92% of the ponderosa pine is less than 120 years, and about 80% of the mixed conifer is less than 130 years. These are averages of the Forest strata and do not reflect what may be available in an individual stand. The implication is that many of the stands existing on the Modoc are relatively young. See Plan, Chapter 3 Analysis of the Management Situation, item 3. Diversity; and Chapter 4, D. Forest Standards and Guidelines, item (5) Vegetative Diversity to review the Modoc's plan to maintain a minimum of 5% of each seral stage including old growth.

The use of uneven-age management does not necessarily guarantee an increase in the number of old-growth trees. Maintaining the largest tree desired still requires a base of smaller trees. Because smaller trees occupy some space, all the area cannot contain old growth. This assumes that the Forest is conducting a timber harvest program. The

final Plan differs from the draft Plan in that one compartment from each district has been set aside for uneven-aged management in order to test its feasibility in the timber types and climatic conditions found on the Modoc.

**4. COMMENT: All timber production zones should be managed for old growth. (0536)**

**RESPONSE:** Because the Forest must manage its available resources to meet a wide range of demands, the exclusive use of any resource for a single demand is not responsive to the publics served by the Modoc.

**5. COMMENT: I was surprised to see that the Modoc plans to commercially harvest timber from lands which don't have the minimum timber productivity to qualify as normal commercial timberland. So far as I know, this is unique among California forest plans. Other plans do not plan harvest in areas with productivity less than 20 cubic feet per year. Why should the Modoc differ? This needs further clarification. (1276)**

**RESPONSE:** In Region 5, the Modoc and Lassen are the two forests required by R-5 direction to include lands capable of growing less than 20 cubic feet of wood per acre per year (lands) in the tentatively suitable land base. The Modoc, in consultation with the Regional timber staff, determined that harvesting of no more than 5% of the standing inventory on these lands would be at such a low level that the site would retain current productivity. Of 184,000 acres, the Preferred Alternative designates about 124,000 acres on which harvesting can occur. See the Plan, Chapter 3; and chapter 4 Management Direction, Timber Management on Low Productivity (Timber) Prescription for more information on the land. EIS Chapter 4 discusses impacts of timber.

**6. COMMENT: We recommend ceasing all logging on the Modoc or at least not logging eastside pine. (1237, 1269)**

**RESPONSE:** The Plan is an allocation of land which combines management activities considered best suited for maximizing long-term net public benefits in an environmentally sound manner. The multiple-use nature of the Plan provides a mix of outputs and ensures that no single resource is emphasized to the exclusion of another. Past timber management activities have shown that trees can be harvested and the area successfully regenerated with local source seedlings.

**7. COMMENT: The black oak forest should be off limits to all harvesting of any type. (1223)**

**RESPONSE:** Although a few black oak grow on the Modoc, the Forest has no extensive acreages of this type. We have no plans to harvest black oak. Maintaining black

oak as part of the Forest's species composition is an integral part of the Plan. See Chapter 4 Management Direction, D. Forest Standards and Guidelines, (3) Oak.

**8. COMMENT: It is imperative that the largest possible acreage be maintained in the intensive timber management component in order to sustain the growing demands for housing. (1057)**

**RESPONSE:** In the Preferred Alternative we sought the most appropriate mix of resource outputs, considering the types and quantity of resources on the Forest, public issues, statutory and management direction, minimum management requirements, and minimum implementation requirements. The Plan is based on land allocation which combines management activities best suited for maximizing long-term net public benefits in an environmentally sound manner. The multiple-use nature of the Plan provides a mix of outputs and ensures that no single resource is emphasized to the exclusion of another.

**9. COMMENT: Marginal lands require the least amount of ecological disturbance if they are to be maintained as productive lands. Yet MNF in the proposed timber Rx's and Forest-wide S&G's introduce to the forest heavy-handed management practices such as creating bare mineral soil, windrowing and yarding culls. (1260)**

**RESPONSE:** If you are referring to "marginal lands" as lands designated as capable of producing less than 20 cubic feet of wood per acre per year, review the Plan Chapter 4, Management Direction, E. Management Prescriptions, and the Timber Management on Low Productivity Lands (Timber) Prescription. These sections indicate that lands will not be managed for maximum timber production or regenerated by clearcutting. A maximum of 5% of the standing inventory will be harvested only when standards for snags and diversity have been met; and when an adequately stocked understory exists, or enough overstory trees are retained to provide a seed source for regeneration by the shelterwood method.

If you are referring to "marginal lands" as the land on the Modoc NF, then our experience in regenerating lands which have been clearcut or devastated by wildfire has had mixed results over the years. Early planting of burned land often has yielded poor results because of poor techniques. To the contrary, the Sugar Hill plantations indicate that many older site preparations and plantings worked very well. More recent planting of burned over and clearcut areas have responded well. The acres clearcut were done so only after completion of Environmental Assessment.

In response to the yarding of cull logs, see the Plan, Section D., Forest Standards and Guidelines, for leaving dead and down material.

**10. COMMENT:** It is important to maintain a sustained yield and not submit to pressure to increase timber harvest. I favor conservation of areas for wildlife and restriction of cattle grazing and timber harvest *per se*, but also view the Conservationist Alternative as an indirect way to protect cultural resources. (273)

**RESPONSE:** All but the Departure Alternative (RPD) have timber policy constraints which ensure that timber harvest meets sustained yield, culmination of mean annual increment (CMAI), and dispersion requirements. Some examples of timber policy constraints are: rotation length and culmination of mean annual increment; and requirements for timber harvesting scheduling, sustained yield, harvest flow, and dispersion.

The FEIS Summary Table 1. *Summary Treatment of Issues and Concern*, indicates that the PRF (Preferred Alternative) produces timber volumes which are not as high as some alternatives nor as low as others. Chapter 2, *Alternatives Including the Preferred Alternative of the FEIS*, provides details of each alternative. EIS Chapter discusses impacts of timber harvest.

**11. COMMENT:** White fir is worth roughly one-fifth to one-tenth the value of pine. If you put that in an economic test without the yield reductions or withdrawals, the dollar loss will break our communities. I support Modoc Cares. (1145)

**RESPONSE:** Appendix C, *Economic Efficiency Analysis*, in the FEIS explains present net value (PNV) and net public benefit (NPB). These concepts take into account the values of priced outputs versus the Forest's management and investment costs. Since publishing the draft Plan timber values have been updated based on the average value per thousand board feet (MBF) from fiscal year 1984 through fiscal year 1988. EIS Appendix B displays timber values.

Because of the current composition of the timber inventory and the emphasis on producing the volumes shown for each alternative within the constraints, species other than ponderosa pine must be included in the allowable sale quantity (ASQ). The short-term solution to harvest only pine will magnify the problem in the future. If all pine were harvested now, only fir would remain after the pine was regenerated and reached merchantable size.

Alternatively, we could lower the ASQ until we harvested available ponderosa pine inventory on a sustained-yield basis. No solution is entirely satisfactory. However, producing a mix of pine and fir seems a reasonable way to maintain an appropriate ASQ resembling that of past years while still producing some eastside pine.

**12. COMMENT:** If the basic site productivity is simply not there for 75 MMBF, how much could sawtimber production be increased by commercial and non-commercial thinning and how much would that cost? (1021)

**RESPONSE:** Based on the current timber inventory, little is available for commercial thinning. Commercial thinning can increase ASQ as a supplement to the regeneration volume, or replace some of the regeneration volume. The costs of commercial thinning are less than regeneration costs. EIS Chapters 2 and 4 and Appendix B include economic analyses.

**13. COMMENT:** Plan 4-161 Highgrade: states that incense-cedar is a rare tree in the Warners. Does it need special management? (107)

**RESPONSE:** Thank you for bringing this to our attention. The word "rare" in this case will be changed to "infrequent". Incense-cedar is not threatened or endangered, and does not require special treatment in the Warner Mountains.

**14. COMMENT:** Plan page 4-38 Timber item h. [Implementing tree measurement sales for low defect timber] has a tendency to be over-used in the wrong instances (high value species). What are the benefits for the F.S.? (126)

**RESPONSE:** The use of tree measurement sales composed of uniform trees with little cull can eliminate the need for scaling a large number of small logs.

**15. COMMENT:** Plan p. 4-8, Timber item 1. What are the trade-offs if an additional 5.9 MMBF per year are offered? Will wildlife goals be met? It does not appear that the Modoc NF has fully identified impacts of the timber program and trade-offs for wildlife. Most of these items if implemented would be detrimental to wildlife. (364)

**RESPONSE:** The 5.9 MMBF to which you refer has been removed from the EIS and final Plan. EIS Chapter 4 displays impacts to wildlife.

**16. COMMENT:** What are tree measurement sales? (364)

**RESPONSE:** A tree measurement sale is comprised of trees which have been measured in advance of sale so that the Forest Service can determine volume and amount of payment prior to advertising. The Regional Forester provides instructions for premeasurement and establishes standards of accuracy for its use.

There are two forms of premeasurement sales:

- **Unit Rate Sale.** Either sale by area or sale by account may apply when procedures permit bidding by unit of measurement by species. Base sale value on the sale-as-a-whole concept. Where useful for payment or administration purposes, the sale may be subdivided into payment units or subdivisions. Contract rates are based on dollars and cents per unit of measure by species or specie groups.
- **Lump Sum Sales.** Lump sum sales invite bidding on the basis of total appraised value rather than on rates per unit of measure. For such sales, a schedule of unit stumpage rates is provided in the sale contract for cutting of trees damaged in logging or for other reasons, such as in road rights-of-way or landings.

Sell quantities are based on total number of trees or total acres of timber. The sold quantity is final; there are no provisions for quantity adjustments due to overrun or underrun of sold volumes. Volume adjustments are provided for salvage trees damaged by logging, blow-down, fire, or other damaging agents.

**17. COMMENT: 4-38. Timber c. Delete “generally” in first sentence. Change “will generally” to “shall” in second sentence. (364)**

**RESPONSE:** The statement referred to is on page 4-38 item c. of the draft Plan: “Generally prohibit tractor logging on slopes exceeding 40%. Cable and helicopter logging will generally be used on slopes over 40%.” The word(s) “generally” and “will generally” were used so that some flexibility is allowed in unit design and layout. In some instances very short pitches of land exceed 40% slope in what is otherwise a tractor unit. Forcing a cable system on this unit may not be practical and provides no additional environmental protection. Conversely, some areas have slopes less than 40% but are better served with cable yarding. To maintain flexibility, our wording is carried forward in the final Plan.

**18. COMMENT: Are there areas where it has become just sort of “unacceptable” to cut timber, and if so, how expensive would it be to do a sensitive logging job to assure minimum environmental impact? If the added expense was not taken, what would the environmental impacts be? (1021)**

**RESPONSE:** The only areas where it is unacceptable to cut timber are those dedicated to a single use, e.g., wilderness areas. Sensitive areas, such as streamside zones, are analyzed for logging; special techniques (e.g., endlining) may be required. This analysis is accomplished through a project level environmental analysis.

**19. COMMENT: DEIS 4-139: The section on “Irreversible and Irretrievable Commitment of Resources” is in-**

**tended to cover impacts resulting from actions taken the FS, such as road building and logging. Proper multiple-use management which reduces or precludes logging of trees in some sites is not an irretrievable commitment of resources because timber volumes still exist; the irretrievable commitment of resources (loss of soil, destruction of fisheries, reduction of water quality, etc.) would become readily apparent if and when the FS logs such areas. (1220)**

**RESPONSE:** In Section F. of the FEIS, *Irretrievable Commitments* is defined as “opportunities for production or use of resources that are foregone because of land use decisions, allocations, or constraints.” Clearly, loss of timber harvest opportunities as a result of environmental constraints meets the definition of an “irretrievable commitment” of a resource. As such, this commitment is displayed in Section F. of the FEIS along with the irretrievable and irreversible losses for soils, fisheries, and water.

**20. COMMENT: 1-11: reports on 3 separate meetings with WTA (Western Timber Association). Will you please send us your minutes or summary of those meetings? (1263)**

**RESPONSE:** After an exhaustive file search, we could only find a list of attendees and some notes to the effect that these meetings were scheduled and held.

**21. COMMENT: Glossary p. 26: An opening remains an opening until regenerated tree growth reaches 4.5 feet in height. Plan 4-134 says, “regeneration openings are considered openings until (a) tree heights average 20 feet...” which is it? Which did you use in your projection of timber growth and harvest schedules? Why the inconsistency? Clarification is needed. (1263)**

**RESPONSE:** Both statements are correct but do require clarification. The Glossary refers to the basic definition given in the *Code of Federal Regulations* September 30, 1982 36 CFR PART 219.27(d)(1): “As a minimum, openings in forest stands are no longer considered openings once a new forest is established. Forest plans may set forth variations to this minimum based on site-specific requirements for achieving multiple-use objectives. Regional guides shall provide guidance for determining variations to this minimum in the forest plan....” Region 5 Land Management Planning Direction of January 15, 1984, (revised) indicates that “an opening created by timber harvesting using even-aged harvesting methods will no longer be considered an opening once the number of trees defined in FSM 2470.03, R-5 Supplement #232 5/80 have reached 4.5 feet in height and are free to grow.”

The Glossary defines minimum requirements. This is used when the Even-aged Timber Management Prescription is applied. The standards shown in the Plan are more



restrictive and are used when the Timber Management with Forage Production (Timber-Forage) Prescription is applied. This ensures that clearcuts will not occur adjacent to each other until the trees are 20 feet high (perhaps 15 to 25 years). These constraints affect the scheduling of timber harvest and are aimed at maintaining various levels of dispersion; but they do not affect volume growth directly. Yield tables remain the same for both prescriptions. Timing and frequency of yield table entries are affected.

To eliminate confusion, the Glossary definition is amended to reflect that this minimum may be more restrictive if necessary.

**22. COMMENT: Element E. Timber: Guidelines a. through d. under Management Direction 1, regarding timber harvest, should be elevated to standards. (1316)**

**RESPONSE:** Forest-wide Standards and Guidelines have been amended to reflect their status as either a standard or guideline.

**23. COMMENT: Glossary: we suggest changing the definition of "thousand board feet" to: "Board foot. A measure of lumber volume equal to 1" x 12" x 12". Commonly expressed in units of one thousand, i.e., thousand board feet, or MBF". We suggest similar change with cubic foot definition. The definition of "poletimber" does not list an upper limit. Reference to the definition of "sawtimber" does not help. These definitions need to be completed. RPA definition should include reference to the regional guide. (1263)**

**RESPONSE:** The definition of one board foot is given as you suggest. Thank you for bringing this to our attention.

Our definition for a cubic foot of wood is: A unit of volume measure, strictly of true volume measure. (A cube 12 inches on a side.)

Your observation that the definition of "poletimber" does not have an upper limit is correct. It is no longer considered poletimber when it becomes saw timber.

The definition of sawtimber was intentional. While a lower dbh (diameter at breast height) limit could be assigned, it also needs a height standard. Because a tree has an 11-inch diameter does not guarantee that a board can be manufactured from it. The definition of sawtimber found in *Terminology of Forest Science, Technology Practice and Products* (English-Language Version) by the Society of American Foresters, Washington D.C. 1971 states: Saw Timber - (1) Trees fit to yield saw logs, and (2) Round timber fit to yield sawn timber. The definition of Saw Log is a log considered suitable in size and quality for producing sawn timber.

We find no justification for including a reference to the Regional guide in the RPA definition. RPA is national in scope.

**24. COMMENT: You need to charge the logging companies more. It is not fair that we the tax payers have to pay for roads the loggers use to clearcut our forests. (071)**

**RESPONSE:** Timber sale appraisal procedures are designed to determine the fair market value of the specified timber. Road construction costs are also determined in this appraisal. Road construction costs are based on Forest Service construction standards and engineers' estimates of the cost to construct or reconstruct a road to meet these standards on site-specific locations. These estimates reflect cost to government if a timber purchaser elects not to construct the road. The wood removed is for public consumption and, in most cases, the road costs are covered by the value of the timber removed so that the costs do not come out of the taxpayers pockets.

**25. COMMENT: I support the timber harvest to be manufactured in the States that it grows in. (412)**

**RESPONSE:** The Forest Service has no legislative authority to restrict location of log manufacture. Any such restriction is beyond the authority and scope of the Forest Plan. A federal law prohibits the exporting of federal logs overseas. In addition, 80% of federal timber harvested in the Big Valley Federal Sustained Yield Unit, located in the Big Valley Ranger District, must be manufactured within the Unit.

## 231 - Silvicultural Methods

**1. COMMENT: Dispersion does not have to significantly impact the cut if harvest systems are logically applied. (108)**

**RESPONSE:** The intent of the dispersion rule is to prevent regeneration units which are still "openings" from occurring adjacent to each other, and to disperse units so that logical harvest units are left for future management. FORPLAN modeling rules are an attempt to account for this desired ground condition within the model. The constraint is to disturb less than 16%, averaged over 2-decade period, in each contiguous area greater than 5,000 acres. Depending on the alternative and the constraints, this rule may effect timber outputs.

**2. COMMENT: The diversity of the Forest should provide for a variety of silvicultural Rx's. (218)**

**RESPONSE:** A stand management prescription is the plan for achieving stand management objectives, which are defined in terms of desired species composition and structure. Silviculture practices will vary by prescription



and are based on direction in the Forest Land Management Plan, site-specific environmental assessments, and the ecology of the particular stand being treated.

**3. COMMENT: Modoc National Forest needs to begin an active management program on low productive timber growing sites. Low productive sites could be productive under intensive management. Modoc National Forest must commit a higher portion of their budget for timber management activities. (231)**

**RESPONSE:** We manage low productivity lands at a level which will not degrade the site. Because of soil composition, the management scheme allows natural processes to regenerate these sites. While it causes little or no impact, this approach requires more time and consequently produces less wood. Details for managing low productivity land are in Chapter 4 of the Plan—Timber Management On Low Productivity Lands (< 20 Timber) Prescription.

Forest budget requests are based on estimates to produce certain outputs by resource. Budgets we receive are seldom identical to the request. The budget authorized by Congress must be spent within the function for which it was designated. In order to meet volume targets assigned with the budget we receive, we do not spend funds on low productivity lands.

**4. COMMENT: 3-31. (draft Plan) Timber Introduction. Based on the information provided it appears that more than 70% of the commercial forests are in a poorly stocked condition. Why has this been allowed to occur? What are the present and future impacts to other resources? What are the trade-offs with other resources to restore the commercial forest lands to proper stocking levels. Present practice is to clear cut and replant to timber plantations at the expense of livestock and wildlife. What is the effect on snag retention and recruitment? The practices which promote even-aged single species management are not conducive to good wildlife management.(364)**

**RESPONSE:** One criteria for classification of forested land is that crown closure must be 10% or greater. Much of the land which is classified as poorly stocked occurs naturally. About 30% of the tentatively suitable forest land (619,258 acres) is capable of producing less than 20 cubic feet of wood per acre per year. This type of land tends to produce stands of open-grown trees, i.e. poorly stocked. Of the more productive land (435,103 acres), about 43%, is poorly stocked. Some, not all, have occurred naturally. Even when stocked, eastside ponderosa pine tends to be open when compared to red fir or mixed conifer stands.

The Plan includes regenerating 10,000 acres of poorly stocked acres per year. It is not our intention to create poorly stocked stands. Future trade-offs to other

resources in regenerating either poor or well-stocked stands are discussed in the EIS Chapters 2 and 4. Some species of wildlife will benefit from openings and early seral stages; others will eventually benefit when the trees grow larger and the canopy closes. To our knowledge, deer and livestock receive a higher benefit from available forage and browse in openings rather than in closed stands.

Recent changes to the Plan for snag management include removing the requirement to meet the snag standard by the third decade. However, we must leave six green trees (of various sizes) per acre as recruitment for future snags on harvest areas. These standards, as in the draft Plan, apply to ponderosa pine only.

**5. COMMENT: The Forest does not have the ability to implement the Plan because some Rx's are technically infeasible for the terrain upon which they are prescribed. (540)**

**RESPONSE:** FORPLAN modeling we have done since the release of the draft Plan has attempted to redress this problem. Lands with greater than 40% slopes were separated into a non-interchangeable component. These lands now have cost and benefit values which better reflect the difficulties associated with their management.

**6. COMMENT: Releasing seedlings through brush reduction should cease since it is not very cost effective. (806)**

**RESPONSE:** The cost of conifer seedling release is accounted for in FORPLAN. This cost and others, plus the value of benefits, make up the present net value (PNV) for each alternative. The number of release treatments proposed in FORPLAN are based on the desire to ensure that future yields used in modeling can be readily achievable. We review each plantation on the ground and judge its merits for appropriateness of a release treatment.

**7. COMMENT: I would encourage the adoption of a timber management component which would allow appropriate modern silvicultural techniques to be practiced. It is a waste of time and resources to attempt to produce economic yields of timber on less productive sites that have a 150-200+ year rotation length. Could meet present and future timber harvest goals by concentrating their efforts on the most productive timber sites. An aggressive timber harvest-reforestation program would open up significant new wildlife (primarily deer) habitat and help to meet a goal of increased deer habitat and numbers. At present, there are far too many acres of decadent white fir and over stocked pine stands in the Warner Mountains for optimum timber production and deer habitat. (980) (231)**

**RESPONSE:** We assume the less productive land you mention here is land described in the Plan as capable of growing less than 20 cubic feet of wood per acre per year. Timber management of these lands is basically opportunistic. These areas are treated as separate non-interchangeable components of the allowable sale quantity; i.e., outputs and allocations are not mixed with outputs from land of greater productivity. The Plan has an allowable sale quantity of 45.5 MMBF per year, of which the less productive land contributes only a small portion.

The Plan provides an aggressive timber management program considering requirements of other resources, standing timber inventory, and timber policy constraints such as sustained yield, dispersion, and rotation length.

**8. COMMENT:** We cannot emphasize too strongly that there is insufficient evidence to justify an immediate drastic reduction in ponderosa pine volume as it is presently being processed. To do so would cause irreparable harm to the dependent industry and tributary communities and we urge you to reconsider and redirect the Plan accordingly. (1252) (905)

**RESPONSE:** FORPLAN analysis runs with a different configuration has allowed us to pursue this question. Historically, ponderosa pine has been harvested in favor of true firs.

With the current composition of timber inventory and emphasis on producing volumes shown for each alternative within the constraints, species other than ponderosa pine must be included in the allowable sale quantity (ASQ). While the short-term solution maybe to harvest only pine or a much higher proportion than proposed, this action will only magnify the problem in the future. If all the pine were harvested now, only fir would be left for future harvest until the pine regenerated and reached merchantable size.

Another solution is to lower the ASQ until harvesting the available ponderosa pine inventory would be on a sustained yield basis. While no solution is completely satisfactory, we think producing 45.5 million board feet per year (in the Plan) composed of both pine and fir is the most reasonable.

**9. COMMENT:** Timber harvesting methods: on genetics, I don't think the offspring of a few nursery trees will be more diverse than the offspring of many trees adapted to a particular microclimate. (708)

**RESPONSE:** The Modoc NF follows direction in the Tree Improvement Master Plan for the California Region for the Base Level Program. This program is a low intensity effort to at least maintain the genetic *status quo* comparable to native populations on all forest land, while striving for gains in volume growth to meet immediate reforestation needs. We collect seed cones to maintain the genetic

base. Seed is collected, stored, and used by seed zones, species, and elevation to maintain the genetic pool and to provide seedlings in an environment for which they are genetically compatible.

**10. COMMENT:** In the soils sections, windrowing is listed as a culprit in poorly-regenerating stands. Yet, it is suggested as an alternative site prep method on grazing lands. The suggestion of testing broadcast burning is a good one. If combined with a woodcutting program, it would provide the added benefit of good public relations with people currently frustrated by watching piles of good firewood burn up! (708)

**RESPONSE:** EIS Chapter 3, item 18 (Soils) describes windrowing with a straight blade which displaced topsoil and reduced soil productivity. This method was discontinued many years ago. The intent was to remove the grass which can be a serious threat to conifer seedling survival. For the most part seedlings survived, but growth suffered. Windrowing with a brush rake greatly reduces soil displacement; and if conducted when soils are dry, it will reduce the potential for compaction by heavy equipment. EIS Chapter 3 describes the way management has been conducted in the past and opportunities for improvement.

The Forest policy is to encourage the public to collect dead and down limb and body wood (logging and thinning slash), by issuing free use permits for up to 10 cords per household. Other firewood for personal use costs \$5.00 per cord. Commercial firewood sales are offered routinely to provide local employment opportunities, meet firewood demand, and accomplish land management objectives such as rangeland improvement.

## 234 - Timberland Suitability

**1. COMMENT:** DEIS 3-113: unable to reconcile 939,942 ac. on first line of page with items 2-6 of Table 2-13. Subsequent discussion of pp 3-116, 117 does not help. (1263)

**RESPONSE:** The derivation of 639,942 acres from the EIS Tables 2-13 and 3-14 is obscure. Information gaps hinder your computations. The 639,942 acres include 28,604 acres of withdrawn land ( $639,942 - 28,604 = 611,338$  acres). In our discussion in EIS Chapter 3 - Section 20 Timber - it is not clear that the non-stocked acres are part of the 619,258 acre total ( $619,258 - 7,862 = 611,396$  acres). The 58-acre discrepancy is a reflection the difference between the Forest data base and the

FORPLAN data base caused by rounding and aggregating various components.

**2. COMMENT:** By emphasizing restrictive Rx's, the unencumbered land base shrinks and concentrates the impacts of the other activities on a smaller area, and quite often results in unacceptable reductions in commodity production. (21) (108) (218) (1230)

**RESPONSE:** The Plan allocates land combining management activities which we believe are best suited for maximizing long-term net public benefits in an environmentally sound manner. The multiple-use nature of the Plan and other alternatives provides a mix of outputs, and ensures that no single resource is emphasized to the exclusion of another.

The alternatives selected for detailed analysis cover a broad range of resource outputs, land uses, and goods and services to the public. Major considerations in developing alternatives are regulatory requirements; issues, concerns, and opportunities; and net public benefits. All the alternatives considered in detail include minimum requirements to ensure compliance with applicable laws and regulations. The Amenity (AMN) alternative responds to amenity demands while providing for commodity outputs at a cost-efficient level. The commodity oriented alternative, (IND) provides high levels of timber and range outputs while preserving other resource values at low levels. The Preferred (PRF) alternative is a moderate approach between the extremes.

**3. COMMENT:** The U.S.F.S. has a greater concern with visuals than does the general public. I would urge that all lands which are suitable and available for management be managed to their fullest capability regardless of location. This would mean clearcuts to a highway edge or a wilderness boundary. (108) (1230)

**RESPONSE:** Comments from proponents of the Conservationist Alternative and the Save Our Communities Alternative indicate that visual quality of the Modoc NF is held in high regard. For this reason, our recent FORPLAN models allocated more acres to the Visual Retention and Timber Management with Partial Retention Prescriptions (Rx 7 and 13, respectively). Visual Retention Prescription applies to the foreground zone of level one travel routes. This prescription does not limit the use of clearcutting; it does limit the intensity of management. Clearcuts are small and infrequent if prescribed. There are no restrictions on timber harvesting around the Wilderness boundary, except through the use of prescriptions such as retention or partial retention if they have been allocated. Future productivity of the land will not be

impaired by these prescriptions; outputs (ASQ) will be reduced because management is less intensive.

**4. COMMENT:** We generally can find no justification for departure from the standard of a 300' visual retention strip along state highways. Esthetics benefits defy precise measurement, but it is our belief that the benefits cannot possibly offset the apparent loss of 3.4 MMBF of annual production to visual constraints and 7.9 MMBF to dispersion requirements (primarily for visual purposes) for a total loss of 11.1 MMBF of production, and about \$2.2 million in annual income. (1258) (153)

**RESPONSE:** The Forest based its conclusions about visual quality on the principles derived from the Visual Resource Management System which provided the inventory methodology and standards for managing visual resources. EIS Chapter 4 and Appendix Q contain specific information on the visual resource.

Protecting visual resources is not the primary intent of the dispersion requirement. The primary intent is to prevent regeneration units (which are still "openings") from occurring adjacent to each other, and to disperse units so that logical harvest units are left between openings for future management.

**5. COMMENT:** Certainly it would be much better if the areas around wilderness areas were utilized for multiple use as to grazing by cattle and wildlife. (366)

**RESPONSE:** We agree. Timber harvesting and recreation are also included.

**6. COMMENT:** The "Full Mgt" acreage in Table 2-15 corresponds precisely with Rx 12 acreage shown on Table 2-12. Rx 12 is "even-aged timber" only. Thus, full mgt does not include uneven-aged timber Rx's. Not only do you need to correct your presentations, you need to explain the reasoning that led you to less-than-full mgt efforts in uneven-age Rx areas.

**DEIS 2-138 (Table 2-16):** presents figures that relate to > 20 lands only. However, those figures equate to the figures shown in table 2-14 (p. 2-136) which are supposed to be for all lands (see 2-134). The conclusion is that there will be no even-aged harvest on the < 20 lands. This needs clarification. The direction appears confused and inconsistent. A great deal of effort still needs to be applied to correct this deficiency. (1263)

**RESPONSE:** Our efforts are not "less than full" for uneven-aged management. The presumption that outputs will be less than what is achievable for even-aged management is incorrect. Even-aged management is also classified as modified management (Table 2-15 EIS), i.e., less than full. This is also based on the fact that prescriptions which apply to this classification (Visual Retention, Timber-Visuals, Timber-Forage, and Uneven-aged Mgt) will

not have the same outputs as the Even-aged Timber Management Prescription because other resource objectives in addition to timber's are achieved. The remaining classification of limited management applies to the < 20 lands.

The discussion in the EIS Timber Management Prescriptions on Suitable Timberlands under Full Management concerning the even and uneven-aged management was confusing and is clarified in the final Plan.

Your assessment that the < 20 lands is not classified as even-aged management is correct. The classification of the < 20 lands in Table 2-14 as Selection is confusing. This section has been rewritten.

**7. COMMENT:** I support SOC. 70% of our mill's production has been in old growth pine. The proposed harvest plan would reduce this volume to 40%. This 30% decrease is being caused mainly by the creation of wilderness buffer zones, more protection around archaeological sites, extending wildlife protection zones for endangered species, and snag recruitment programs. It is estimated that these programs alone will reduce the annual harvest volume of old growth pine 15 to 20 million feet per year. Proposed plan does not truly reflect the allowable pine cut which can be sustained on the Modoc NF. (905) (1252)

**RESPONSE:** Some reduction in the ASQ is the result of constraints that were not implemented in the 1974 Timber Management Plan. Another reason is the existing timber inventory. With existing volumes and the need to meter them out over the conversion period, volume from species other than pine must be used to produce a non-declining yield. If all the pine were harvested now, only fire would remain for harvest until the pine regenerated and reached merchantable size.

Another solution would be to lower the ASQ until harvesting the available ponderosa pine inventory would be on a sustained yield basis. While no solution is completely satisfactory, we believe that producing 45.5 million board feet per year (in the Plan) of pine and fir is the most reasonable.

Protecting endangered species and archaeological sites are not interpreted as discretionary by the Forest. Snag recruitment is deemed necessary to fulfill population viability requirements. Wilderness buffer zones have not been created.

**8. COMMENT:** There are some serious problems with the acreage determinations for the "timberland" category on the Devil's Garden District. There are approximately 50,000 acres not included in your "suitable," "unsuitable" timberland acreage on the above District. Before you come to any conclusions on a final alternative, the forest

needs to make sure of the acreages in each category, by doing a field check of your photo work. (1009)

**RESPONSE:** Without a more detailed discussion of the 50,000 acres to which you allude, we cannot respond to your comment. We field checked the results of the original vegetative typing contract, and determined that they were within the contract standards.

**9. COMMENT:** The retention Rx also limits the size of clearcut blocks to 5 acres. Regeneration Rxs are heavily applied to MA 31. In order to gain access to numerous small blocks on steep terrain, it is necessary to build a very lengthy road system. Since FORPLAN selected many steep acres for treatment, I can only deduce that these areas were more economically attractive than others. If this is the case, I question the economics used in the Plan. If these units were proposed for sale today, using today's rates and indices, I feel there would be no bidders for such a sale offering. (540)

**RESPONSE:** Since the draft Plan was released, we incorporated new economic data into FORPLAN. Land with 40% slope or greater has its own set of economic criteria, which reflects the difficulties associated with managing land. In addition, we developed and are currently using new values for timber in current FORPLAN analysis. We feel these modifications provide a more realistic economic picture of timber harvest on the Forest.

**10. COMMENT:** Harvest rates on lower productivity C.A.S. lands: the draft Plan proposes harvesting only 5% of the existing inventory on these lands over the period of the Plan. Recommendation: since there is no Regional direction that prevents harvest on these lands, a cost-effective, extensive management program should be undertaken to at least harvest a substantial percentage of growth. This can alleviate part of the fall down in A.S.Q. caused by other legitimate constraints. (672) (231)

**RESPONSE:** The decision to harvest 5% of the inventory of < 20 lands was made in consultation with Regional timber staff. Five percent was selected in place of a more substantial proportion of growth to ensure that this type of land would be allowed to perpetuate itself. If we used more of the Forest budget on these lands, we would not meet our volume targets with the money appropriated to us by Congress.

**11. COMMENT:** Plan App. D-11: there is no significant difference between the suitable and unsuitable lands with respect to inherent productivity. They are within less than 1/2 of 1% of each other. Therefore, you need a more detailed statement as to why the unsuitable lands are unsuitable. The question that needs answering is why the Forest has classified 99,052 acres of this land as unsuit-

able for timber management in the Preferred Plan (P. 4-158) (126) (1263)

RESPONSE: Without a specific reference for the apparent discrepancy, we are not sure that the discussion is on the same set of numbers. EIS Table 4-14 under the PRF Alternative and in the final Plan under the Timber section discuss suitable timberlands of 518,930 acres. Throughout the Plan and EIS, references to 619,258 acres are for tentatively suitable land, e.g., EIS Table 3-14 and Appendix O – Identification of Lands Suitable for Timber Management. Every alternative begins with a tentatively suitable land base of 619,258 acres. But because each alternative has different goals and objectives, the land allocated for timber production varies. For the Preferred Alternative, we determined that 518,930 acres are suitable. In addition, we said 100,278 acres are not appropriate for timber management.

Determining suitable versus unsuitable land for timber production is not made on the basis of productivity. The 100,278 acres of land classified as inappropriate for timber production were allocated to prescriptions which emphasize objectives for resources other than timber. The prescriptions are listed by alternative in EIS Table 2-12 and are as follows: Minimum level, Semi-Primitive Non-Motorized, Visual Retention, Raptor Management, and Riparian Areas.

12. COMMENT: Graph at the bottom of DEIS 2-137: acreage shown for full mgt in IND is significantly different from that shown in Table 2-15. (1263)

RESPONSE: The graph has been corrected to reflect the acres shown in Table 2-15.

13. COMMENT: Every time the environmentalists come up with another species that nobody ever heard of, we have got to set aside another 1,000 acres for every pair. (1118)

RESPONSE: Forest planners and land managers do not determine classifications for Threatened and endangered, or Sensitive species. Threatened or endangered species are below viable levels until recovery is achieved. We have identified habitat which is critical for T&E species, and have prescribed measures to prevent the destruction or adverse modification of such habitat. EIS Chapters 3 and 4, and Plan Chapter 4 discuss T&E species.

## 237 - Logging Systems

1. COMMENT: Logging engineering received little or no consideration in modeling. A common problem is the cumulative effect of steep slope, limited volume, low valued tree species and inaccessible terrain. Economic and technical feasibility must be considered. Is the goal of the

timber sale program “timber offered” or “timber sold”? (540)

RESPONSE: The goal of the timber sale program is to create viable timber sales. Since the release of the draft Plan, we have incorporated into FORPLAN analysis increased costs for steep slopes to better reflect, in the final document, added costs of resource management on this type of terrain.

2. COMMENT: I am sure that harvest levels above 75 MBF [sic] can be maintained by using proper thinning process. (366)

RESPONSE: Generally, thinnings can help increase the allowable sale quantity and sustained yield levels. However, considering our current inventory, minimum management, and implementation requirements, our analysis concluded that harvest levels approaching 75MMBF are not possible unless the Forest departs from non-declining yield in the first decade. The results of such a strategy can be found under the RPD (alternative with departure) in the EIS Chapters 2 and 4.

3. COMMENT: Supports active ITM logging by rubber-tired tractors in visual strip. (1158)

RESPONSE: As stated in the Visual Retention Management Prescription (Plan, Section 4 – Management Direction), such logging is permissible if it meets the standards and guidelines of the prescription.

4. COMMENT: The soils section ignores the buffering capacity of the unharvested groups in group selection. And blow-down on the edges of clear cuts is not even mentioned in management experience. (708)

RESPONSE: To date we have not experienced much, if any, blow-down on the edges of our clearcuts in the vegetative types and terrain in which we are working. We have experienced some blow-down in our red fir shelterwood seed tree harvests. Our design and layout of harvest units attempts to minimize blow-down. Uneven-age management by individual tree selection does tend to maintain permanent vertical closure of the stand. This attribute diffuses the force of the wind if it does enter the stand. However, management by the group selection method can increase the number of gaps into which wind can be funneled. If accelerated sufficiently, wind can cause damage. The potential for wind resistance of uneven-age stands decreases when harvests are infrequent and heavy.

5. COMMENT: The document must fairly explore the use of all harvesting methods and their relative impacts upon the environment and economy. (1359)

RESPONSE: EIS Appendix P describes Major Silvicultural Systems and their applications. EIS Chapter 4 (En-

## 238 - Salvage Utilization

Environmental Consequences, timber section) discusses types of harvests for each alternative.

**6. COMMENT: Plan 3-29. Mass movement. The plan is very vague as to what is meant in the 2nd sentence, i.e., basal area refers to what? What is full suspension and lateral yarding? (364)**

**RESPONSE:** Fifty percent of the normal basal area refers to the level of tree stocking desired to be left on the site. Considering age of trees and the site index, 50% refers to half of what is expected of a fully-stocked stand as stated in a published yield table. Basal area is the area of cross-section of a tree stem near its base, generally at breast height and inclusive of bark. Full suspension and lateral yarding are terms which refer to cable yarding systems. Full suspension means that the log being yarded is lifted and suspended completely off the ground until it reaches the landing. Lateral yarding means moving a log from its "bed" to the main (line) cable. This is most effective when the trees are felled in a herring-bone pattern.

## 238 - Salvage Utilization

**1. COMMENT: Biomass production - EIS 3-37, 4-30 - including juniper removal, timber thinning and harvest slash. We would like to see the Forest Plan and encourage the commercial use of the above mentioned biomass. This will be an excellent way to reduce dangerous fuel buildup in the forest. It will also provide an outlet for less desirable or cull timber. (530) (913)**

**RESPONSE:** Forest policy is to encourage use of available biomass not required by other resources.

**2. COMMENT: I support salvage harvest. I firmly believe in harvesting timber and managing our lumber resources vs. letting it go to waste in overmature stands. (1152) (1158)**

**RESPONSE:** To meet the requirements of other resources all available salvage or mature green timber cannot be harvested. Some will be retained to meet snag requirements, thereby helping ensure viable populations of snag-dependent species. We can achieve diversity of plant and animal communities by providing a threshold level of vegetation types and seral stages found within the Forest. We maintain diversity by retaining 5% of each seral stages, including 5% of old growth timber or equivalent.

**3. COMMENT: Biomass harvest standards need to be defined if MNF intends to encourage biomass utilization. Under no circumstances should harvest for biomass be allowed for materials under 4 inches in diameter or green foliage. (1260)**

**RESPONSE:** Although no specific standards have been determined for the harvest of biomass, we implement soil productivity standards which maintain parts of duff and logs.

**4. COMMENT: Plan 4-22 - Energy: why free timber sale slash and charge for firewood? (126)**

**RESPONSE:** The Forest policy is to encourage the public to collect dead and down limb and body wood (logging slash) by issuing free-use permits for up to 10 cords per household. Other personal use firewood costs \$5.00 per cord. Forest standards and guidelines limit firewood removal as needed to assure viability of cavity-, down log-, and snag-dependent wildlife populations. When we offer green trees for firewood, we do so with timber management objectives in mind. Rather than have a timber sale, we open the area to the public for firewood cutting. See EIS Chapter 3 (item 4, Energy).

## 239 - Salvage Snags

**1. COMMENT: Salvage logging should be continued. Adequate snags will remain. A lot of good timber will be lost without salvage logging. (305)**

**RESPONSE:** To meet the requirements of other resources all available salvage or mature green timber cannot be harvested. We leave some to meet snag requirements, thereby helping to ensure viable populations of snag-dependent species. We achieve diversity of plant and animal communities by providing a threshold level of vegetation types and seral stages found within the Forest. We maintain diversity by retaining 5% of each seral stage, including 5% of old growth timber or surrogate.

**2. COMMENT: DEIS 3-195 (snag densities): in release management for timber plantations, how many snags are left standing? (1248)**

**RESPONSE:** See Plan Chapter 4—Management Direction, Section D, the Forest Standards and Guidelines *Wildlife and Fish*. These S&Gs indicate that 1.2 snags per acre of 15-24 inches dbh, and 0.3 snags per acre 24 inches or larger, are required. In addition, 6 green recruitment trees per acre, of various sizes, will be left to provide snags throughout the life of the stand. Snags and recruitment trees will be left from a harvested area. If no snags or

sufficiently large trees exist then none can be left, as would be the case in plantations being released from brush.

## 240 - Reforestation

**1. COMMENT:** On page 3-33 of the draft management plan, it is stated that 435,100 acres are suitable for full or modified timber management. This means the establishment of conifer plantations. I am against the establishment of conifer plantations on national forest lands. (58)

**RESPONSE:** The Plan allocates land which combines management activities which are best suited for maximizing long-term net public benefits in an environmentally sound manner. The multiple-use nature of the Plan and the other alternatives provides a mix of outputs, and ensures that no single resource is emphasized to the exclusion of another. National Forest System Land and Resource Management Planning Regulations 36 CFR Part 219.27(c)(3) requires in part "...When trees are cut to achieve timber production objectives, the cuttings shall be done in such a way as to assure that the technology and knowledge exist to adequately restock the lands within 5 years after final harvest...."

**2. COMMENT:** The Plan and EIS also should explicitly discuss reforestation practices. I suspect that reforestation is a problem for some types of trees on the Forest, especially pines on the east side of the Warner Mountains. (162)

**RESPONSE:** In project level environmental assessments we discuss site-specific analysis of environmental consequences of reforestation practices, harvest methods, road locations, and other resource requirements and concerns. The Low Productivity Land (< 20 Timber) Prescription recognizes the difficulties involved with reforestation on some types of ground. Most of this type of ground is not restricted to the east side of the Warner Mountains. However, any shallow soil will cause some reforestation problems. Ponderosa and Jeffrey pine are examples of tree species with which the Forest has had very good regeneration success.

**3. COMMENT:** Clearcutting destroys habitats. Uniform clearcut farming destroys genetic diversity. (334)

**RESPONSE:** Clearcutting, like any other harvest practice, can destroy habitat. Although habitat for one species (plant or animal) may be adversely affected by clearcutting, it is often replaced with a habitat beneficial to another species. The crux of the problem is to prioritize which species should be positively or adversely affected.

The Modoc NF follows direction in the *Tree Improvement Master Plan for the California Region* for the Base Level

Program. This program is a low intensity effort to at least maintain the genetic *status quo* comparable to native populations on all forest land, while striving for gains in volume growth to meet immediate reforestation needs. We collect seed cones to maintain the genetic base. Seed is collected, stored, and used by species, seed zones, and elevation to help maintain the genetic pool and to provide seedlings for an environment in which they are genetically compatible.

**4. COMMENT:** The real cost of reforestation in some strata is far too high. (540)

**RESPONSE:** The reforestation costs used in the FORPLAN analysis have been amended to reflect higher costs in various forest types.

**5. COMMENT:** In the late 1970's and early 1980's, the RF for R5 performed a reforestation activity review to determine the cause(s) of numerous region-wide plantation failures. Two significant causes of failure were found to be (1) lack of thorough site prep, and (2) the perceived need to meet other resource objectives on every acre.

The PRF expects to implement a regeneration Rx that, by design, provides for other resource benefits during the entire seedling establishment period. While such a plan may be politically attractive in Modoc Co., it has yet to be proven effective in allowing for timely seedling establishment. Several field trials already exist on several districts displaying the results of some past efforts at providing for multiple resource outputs. It would be prudent to document how well the objectives were met on these sites. If more info is needed, perhaps a one-time trial program on a specified acreage in each forest type would provide some answers. However, to plan for significant acreage each year using an unproven reforestation technique places the success of the entire timber program in jeopardy. (540)

**RESPONSE:** We will use the Timber-Forage Prescription more as an experiment than as a fully implementable prescription. The first decade will have about the same number of acres allocated to this prescription as the draft Plan; the allocation tends to be discontinued in subsequent decades. The Forest fully intends to comply with the monitoring plan. The monitoring objective for plantations created through the Timber-Forage Prescription is to evaluate survival and growth of conifers, and pounds of forage produced.

**6. COMMENT:** Reforestation is difficult in thin soil areas. (1278)

**RESPONSE:** The prescription for our low productivity lands (< 20 Timber), which are primarily composed of shallow soils, does not include reforestation using site



preparation and planting. Details of this prescription are in Plan Chapter 4 and EIS Chapter 2.

**7. COMMENT: Increase collections from timber sale receipts for reforestation, stand improvement, and soil loss. (1030)**

**RESPONSE:** Collections for post-timber sale activities are made in a Sale Area Improvement Plan for various projects, such as site preparation, planting, release, and animal damage control. Collections are based on experience with similar activities; unused amounts are subject to return to the U.S. Treasury.

**8. COMMENT: Regeneration of other species: Plan 3-33 states that the main species to be planted are ponderosa and Jeffrey pine, with some incense cedar, sugar pine and white fir. Mountain hemlock and red fir are not mentioned. Neither is lodgepole, but it regenerates well (in E. Oregon) by broadcast burning if there is an adequate seed source. There is little intermixing; the goal should be to provide close to the original species mix. (708)**

**RESPONSE:** Chapter 3 of the Plan is a Summary of the Analysis of the Management Situation through 1985. Through 1985, most species planted were as stated in Chapter 3 of the Plan under item 20, Timber. Since that time, small amounts of lodgepole and red fir have been planted. Chapter 4 directs us to plant tree species that reflect natural forest diversity, where possible, on properly prepared sites.

**9. COMMENT: Stumpage should be set at a fair price that would make it economically feasible to log but high enough to pay for preparation and admin. costs. Revenue created by these sales should be brought back to the respective districts so they would have an incentive to continue these sales and could afford to have good specialized people do the job. (301)**

**RESPONSE:** The appraisal price for timber is determined using approved standard appraisal techniques. Sealed bidding or oral auction by prospective purchasers determines the contractual stumpage values. All receipts not otherwise designated are sent to the U.S. Treasury. The Forest Service has no authority to retain these revenues, other than those authorized by Congress, e.g. KV, and Brush Disposal.

## 244 - Firewood

**1. COMMENT: We have traditionally cut snags rather than saleable lumber for burning for our own use. (1373) (365) (366)**

**RESPONSE:** Forest standards and guidelines limit firewood removal as needed to assure viability of cavity-, down

log-, and snag-dependent wildlife populations. When we offer green trees for firewood, we do so with timber management objectives in mind. Rather than have a timber sale, we open the area to the public for firewood cutting. See EIS Chapter 3 (item 4, Energy).

**2. COMMENT: Reduce firewood cutting in juniper stands: junipers are slow growing and provide shelter and food for many species of wildlife. (706) (1220) (1248) (1263)**

**RESPONSE:** Based on available information, the growth rate of western juniper is more than double current demand. Firewood sources other than juniper include logging and thinning slash; however, forest-wide, woodcutters apparently prefer juniper for firewood. We recognize limitations on the supply because of thermal and hiding cover requirements for deer, cutting patterns, visual quality considerations and cultural resource protection, and accessibility. Forest standards and guidelines limits firewood removal as needed to assure viability of cavity-, down log-, and snag-dependent wildlife populations.

**3. COMMENT: Calif. Native Plant Soc. opposes opening riparian areas to firewood collecting within riparian areas. The Plan reports that a deficiency of snags exists on 60% of the forest lands. Is this snag deficiency due to firewood collection? How can the MNF justify firewood collecting in sensitive riparian areas? (1214)**

**RESPONSE:** The primary emphasis of the Riparian Area Management Prescription is to protect and enhance stream-dependent resources (water, fish, wildlife) while using the habitat for non-dependent resources (timber, range, recreation) when possible. We permit resource uses and activities in riparian areas to the extent that they do not adversely affect the maintenance of riparian area-dependent resources. Forest standards and guidelines in Chapter 4 of the Plan (*Riparian Areas* item 2) states: "Where uses conflict, favor protection of riparian-dependent resources (water, fish, vegetation, wildlife, and aesthetics) over other resources."

We are not attempting to justify firewood collection in riparian areas; rather, we allow for the flexibility to do so when the benefit is for the riparian area. This is also true of any timber harvesting which may occur. Acres of riparian areas which have timber on them are included in the unsuitable category; i.e., these lands are unsuitable for timber production. Some volume is scheduled for harvest, but the reason is primarily to benefit the riparian area.

Past practices of using snags for firewood may have contributed to the decrease in snag numbers; but we do not believe it is the primary reason. The primary reason is probably centered on fire control and prevention efforts.



**4. COMMENT: Firewood use could become a pollution factor in the future, so its use should not be encouraged. (1223)**

**RESPONSE:** The Forest has no authority to determine alternative non-polluting heat or energy sources or to influence public opinion other than what is allowed by Congress.

**5. COMMENT: Item 6 - firewood: close firewood program during periods of high fire danger. (126)**

**RESPONSE:** Virtually every year we *do* close the Forest to firewood gathering during periods of high fire danger.

**6. COMMENT: Would like woods open for woodcutting more hours and times and more locations. (918)**

**RESPONSE:** Policy decisions are regulated by each ranger district on a site-specific basis; therefore, we have not addressed them in the Plan. We commonly solicit and consider public comment in making those district decisions.

**7. COMMENT: How can firewood cutting be controlled if vehicle traffic is not strictly controlled? (1248)**

**RESPONSE:** We monitor personnel firewood cutting and road use to the extent possible.

**8. COMMENT: Why do we as tax payers have to pay for fuelwood in the Forest? (914)**

**RESPONSE:** This is a policy initiated by the Secretary of Agriculture to help defray the costs to administer this program. To the extent possible the Forest for free-use permits. The goal of the free-use permit is to encourage removal of logging and thinning slash (up to 10 cords per household).

**9. COMMENT: Firewood - Plan p.4-25 c. - Add more language to encourage units to be open for personal use when appropriate, even if timber sale is not closed. (73)**

**RESPONSE:** The liability aspects of allowing this would not be beneficial to all parties involved. This guideline remains in the Final Plan.

## 246 - ASQ (Allowable Sale Quantity)

**1. COMMENT: I believe the Modoc NF could support a much higher ASQ; visual areas around wilderness, archaeological sites, historical sites must be considered by timber production. Do not sacrifice high site timber producing lands for other management goals. (231)**

**RESPONSE:** The Forest ASQ for the Preferred alternative is not as high as other alternatives. The RPD and IND alternatives have higher ASQs than the PRF because

resource constraints in the first two alternatives are more relaxed than in PRF. In the Plan we allocate land combining management activities which we believe are best suited for maximizing long-term net public benefits in an environmentally sound manner. The multiple-use nature of the Plan and the other alternatives provides a mix of outputs and ensures that no single resource is emphasized to the exclusion of another. Past timber management activities have shown that trees can be harvested and the area successfully regenerated with local source seedlings.

**2. COMMENT: Anything less than 75 million board feet as an annual harvest would be unacceptable to Lassen County. (268) (401)**

**RESPONSE:** We recognize that timber harvest provided by the MNF is an important component of the economic base of Lassen County and others. The Plan represents the best balance between commodity and non-commodity outputs. Like any other alternative, the PRF alternative outputs can't be higher than benchmarks which define maximum outputs. Some benchmarks achieved long-term sustained-yield approaching 75 MMBF. Benchmarks display physical, biological, and technical capabilities. They are not limited by Forest Service policy or budget, discretionary constraints, spatial feasibility, and are not necessarily operationally implementable.

**3. COMMENT: The Modoc NF must look at the use of uneven-aged management especially along visual corridors and vista areas. (231)**

**RESPONSE:** The Forest will write silvicultural prescriptions which are specific for particular stands. Various options which will best meet requirements on the ground while fulfilling the requirements of the Plan include the use of uneven-aged management in visual corridors.

**4. COMMENT: The Forest Service should develop a no herbicide strategy which specifically addresses the maintenance of the allowable sale quantity (ASQ). (364)**

**RESPONSE:** All alternatives were predicated on the assumption that all methods of vegetation management are available, including limited use of herbicides. In the event that herbicide use is precluded, we will modify the Plan to reflect expected changes in timber yields and costs. EIS Chapter 2, Section E assesses expected effects of management on harvest levels and costs with and without the use of herbicides.

The Plan tiers to the EIS for *Vegetation Management for Reforestation* which was released in 1988. This document rigorously discusses all aspects of vegetation management, including a human health risk assessment.

We will determine whether to use herbicides, as well as other vegetation management activities, during

site-specific project planning. We will document decisions in environmental assessments or environmental impact statements as the project warrants.

**5. COMMENT:** It is obvious that the Forest cannot propose a higher allowable cut than it can support under sustained-yield management; and the SOC proposal is grossly beyond that level. (473) (474) (807) (175) (972)

**RESPONSE:** In the Plan we allocate land combining management activities which we believe are best suited for maximizing long-term net public benefits in an environmentally sound manner. The multiple-use nature of the Plan and the other alternatives provides a mix of outputs and ensures that no single resource is emphasized to the exclusion of another.

**6. COMMENT:** I agree with most of the provisions of the Plan. Timber harvest should be reduced. We must protect this resource. (1064)

**RESPONSE:** Thank you for your comments. The Forest Supervisor will consider your opinions when he makes his recommendations.

**7. COMMENT:** Page 4-13 of the Plan indicates an ASQ for the first decade of 52.1 MMBF and 58.3 MMBF for the second. Doubt the Forest can produce these output levels without causing serious damage to other resource values such as wildlife and visual and water quality. Conduct an intensive timber inventory before the Plan is final. Timber data collected prior to preparation of the draft Plan are too weak and inaccurate to support an ASQ this high. (1243)

**RESPONSE:** The final Plan provides an ASQ of 45.5 MMBF annually. In the Plan we allocate land combining management activities which we believe are best suited for maximizing long-term net public benefits in an environmentally sound manner. The multiple-use nature of the Plan and the other alternatives provides a mix of outputs and ensures that no single resource is emphasized to the exclusion of another. Regarding your concerns for a more intensive timber inventory, please refer to our responses under 250 - Inventory.

**8. COMMENT:** Please note the following in the amended [BVFSYU] policy statement: (a) the annual sawtimber cutting budget is set at 13.70 MMBF from 7/1/75 to 6/30/85. (C) I believe that the intent of the constraint noted on page 2 of the amended policy statement means that it shall be programmed to promote the attainment of the 13.7 MMBF per year average annual rate of sustained-yield harvest within the BVFSYU and within plus or minus five percent per year during the Plan period.

Therefore, I question the proposed draft Forest Plan, and request that Appendix D (Timber Data) and its various

detailed tables, plus Appendix R (BVFSYU) proposed policy be redrafted and corrected to reflect the true intent of the original policy statement and the statement as approved dated 8/24/79, and in addition that Appendix C (Tentative 10-Year Timber Sale Action Plan) be rewritten from 1986 through 1992 in accordance with the above, and extended for the full 10 years and not for only seven as shown.

**(3) The Modoc's proposed annual allowable cut is noted as 52.1 MMBF per year for the 1st decade in the Plan under Appendix D-9 (Table d-10); however, the timber sale action plan varies from 53.3 MM down to 37.0 MM for the whole Forest and from 17.0 MM to 1.8 MM per year for the Big Valley Sustained Yield Unit portion which has a planned annual cut of 11.0 MM/year (Appendix R-2). It is impossible and unrealistic to operate an economically sound long term sawmill industry with this amount of variation in volume of annual timber sales. (1158)**

**RESPONSE:** The timber volumes were reduced because our analysis indicates that the Big Valley Federal Sustained-Yield Unit can't sustain an ASQ of more than 9.0 MMBF. We will revise the Ten-Year Timber Sale Action Plan to reflect an average annual sell from the BVFSYU consistent with the policy statement.

**9. COMMENT:** Need to begin an active intensive forest management program on the Forest's low productive timber growing sites. (231)

**RESPONSE:** The prescription for the low productivity lands (<20 lands) is commensurate with the long-term capability of the land.

**10. COMMENT:** The Plan proposes timber harvest in areas that are economically unsuitable for timber sales. (540)

**RESPONSE:** Since the draft Plan was issued, the FORPLAN analysis has incorporated additional costs which help differentiate between <40% and >40% slopes. Timber values have also been modified, which reflects a better estimate of tree species values. During the analysis of each alternative, we determine the timber production suitability of each acre. Because the objectives of an alternative may render certain solutions economically impractical, it is possible that no acres are declared unsuitable for timber production.

**11. COMMENT:** I am questioning the ability of MNF to achieve the outputs identified in the selected alternative. The outputs are the foundation from which many public comments are based. Any significant discrepancy between real and expected outputs needs to be known. (540)

**RESPONSE:** The National Forest Management Act requires Forests to monitor and evaluate their Plans at established intervals to compare actual versus projected results of implementation. Monitoring and evaluation determine whether the Forest has met its mission and goals. If required, we will modify the Plan to reflect actual results of implementation.

**12. COMMENT:** The Forest Service must take another look at its original mission before it takes us down this road into preservation utopia. Is the Forest Service being true to its mission to serve the needs of our citizens or are wealthy and elitist groups unduly influencing USFS policy? This Plan, with its reductions in timber harvest, will be a disaster for the local economics of Alturas, Big Valley, and Fall River. (129)

**RESPONSE:** In the Plan we allocate land combining management activities which we believe are best suited for maximizing long-term net public benefits in an environmentally sound manner. The multiple-use nature of the Plan and the other alternatives provides a mix of outputs and ensures that no single resource is emphasized to the exclusion of another.

**13. COMMENT:** Maintain the timber harvest at a viable economical level to keep our local community lifestyle. (1070) (1149) (603) (1399)

**RESPONSE:** One goal of the Forest Plan is to optimize contributions to community stability in a manner compatible with other resource uses.

**14. COMMENT:** Over 150,000 acres are rated with low or very low chance of conifer seedling survival (Plan 3-29). Yet timber data breakdown only excludes 17,840 acres as unregenerable (Plan D-3). The former lands should be looked at more closely, and the economics (including resource costs) of regenerating them should be weighed against the yields. You cannot dodge the question of whether <20 lands are regenerable by stating in the prescription that they will be naturally regenerated.

In Plan 3-33, it is stated that "effectiveness of natural seeding has been poor" if the soils are so poor that replacement seedlings do not survive, then the area should not be harvested. On the surface, the prescription for <20 lands, calling for cutting only 5% of inventory per decade looks appropriate. If unregenerable acres are subtracted, this may be wishful thinking. The economics of harvesting all timber lands, but especially <20 lands, need to be looked at more carefully. In Plan App. D, <1% of the Forest is considered unsuitable for economic reasons. I suspect this will result in quite a few deficit sales. I don't believe there should be deficit sales on the Forest. (708)

**RESPONSE:** The 150,000 acres rated as having a low to very low chance of conifer seedling survival, are not necessarily unregenerable. We have opportunities to improve survival by a variety of treatments controlling competing vegetation and protecting seedlings. We are not attempting to dodge the question of whether <20 lands are regenerable by stating in the prescription that they will be naturally regenerated. The prescription reads, "Timber will be harvested only when standards for snags and diversity have been met, and when adequately stocked understory exists or enough overstory trees are retained to provide a seed source for regeneration by the shelterwood method." The implication of only harvesting 5% of the inventory allows these types of lands a long recovery period.

**15. COMMENT:** There should be many more timber sales. There are hundreds of smaller pockets of timber throughout the MNF that have been untouched. Why not open more of these areas and also allow personal-use firewood cutters to follow the loggers and clean up these areas? This would benefit the Forest and public alike if it was well controlled and supervised by the FS. (330)

**RESPONSE:** The smaller pockets of timber have been accounted for in the timber base. Firewood areas are specified by the districts.

**16. COMMENT:** ASQ and AUMs fluctuate substantially between alternatives while other management objectives stay consistent. (1230)

**RESPONSE:** Some objectives (constraints) have been held constant or nearly so across all the alternatives. Other constraints have been changed to meet the goals of the particular alternative. As a result the outputs (ASQ and AUMs) fluctuate.

**17. COMMENT:** The issue is timber supply. Without an adequate timber supply, nearby communities will be adversely impacted, socially and economically. Multiple use has a long and impressive record. Stick to it. (969)

**RESPONSE:** Thank you for your comments. Community stability is one our multiple-use objectives.

**18. COMMENT:** Some studies indicate that FS administration may have overestimated forests' timber capability by as much as 64%. Any indication of overestimation in Forest consequences? (1248)

**RESPONSE:** Not to our knowledge. However, the National Forest Management Act and other regulations require forests to monitor and evaluate their plans at established intervals to compare actual versus projected

results of implementation. Monitoring and evaluation determine whether a forest has met its mission and goals.

**19. COMMENT:** The first sentence under timber on Summary p. 28 is simply untrue. The 1982 base year timber sale level may have been in the range of 50 MMBF, but the 1982 base year ASQ, or equivalent thereof, was 62.3 MMBF. To say that PRF and CUR present higher ASQ levels is a distortion. ASQ for those alternatives is 52.1 and 51.4 respectively. This needs to be corrected. (1263)

**RESPONSE:** Although the term *base year* may be confusing, we use it in the manner prescribed by Regional direction.

**20. COMMENT:** Plan App. C: The planned timber sale volume for the first 7 yrs. averages only 47.8 MMBF per year, or 76% of the existing plan. By adding 3 years at 52.1 MMBF per year, the average rises to 48.8 MMBF. Not only have you significantly dropped the ASQ, you do not even plan to offer at the new proposed level!

The first 2 yrs. of the Plan have already gone by. In those 2 yrs. you actually sold an average of only 47.7 MMBF per year, just 90% of the PRF ASQ. We are looking at a Plan that will produce consistently less than 50 MMBF annually, probably 47 MMBF or less. The last 3-yr. harvest level averaged 62 MMBF. (1263)

**RESPONSE:** The Plan is not in effect until signed by the Regional Forester. The 1975 Timber Management Plan is still in effect. It has an allowable cut of 623 MMBF per decade; a yearly average of 62.3 MMBF. Since 1975, the Forest has averaged 59 MMBF per year in sales; within 95% of the stated allowable cut. Appendix C of the Plan has been revised. We intend to provide the ASQ for the Plan period – not necessarily in every year, but as an average.

**21. COMMENT:** There is a strong interrelationship of activities among the Forest products industry in northern California and southern Oregon. All national and private forests contribute to the raw material supply of all of the mills in this area. Although the Modoc NF offers less timber production than most, any shortfall in the Modoc will force bidders to look further for their timber supply, putting particular economic pressure on the smaller mills. Ultimately, some mills will close for lack of raw material and the affected communities will suffer drastically. (1282)

**RESPONSE:** In the Plan we allocate land combining management activities which we believe are best suited for maximizing long-term net public benefits in an environmentally sound manner. The multiple-use nature of the Plan and the other alternatives provides a mix of outputs and ensures that no single resource is emphasized to the

exclusion of another. Past timber management activities have shown that trees can be harvested and the area successfully regenerated with local source seedlings.

**22. COMMENT:** MCCA would appreciate a specific reply to each question presented and a response to each recommendation provided. Recommendation - the timber harvest should be decided on a sustained-yield basis to allow community stability and a renewable resource for future generations. (1283)

**RESPONSE:** This Appendix contains comments from all respondents, and our responses to them. In some cases, similar comments have been grouped. One of the timber policy constraints used in FORPLAN modelling is a sustained-yield requirement. For each alternative the Forest must ensure that a perpetual timber harvest at the long-term sustained-yield level defined for that alternative will result by the end of the Planning horizon.

**23. COMMENT:** I am also opposed to timber cutting in either wilderness areas or on the *hipukas* of the lava flows. (1293)

**RESPONSE:** Timber harvesting is not allowed within the wilderness. We are unfamiliar with the term *hipukas*, unless you are referring to the “flower-pot” inclusions of relatively good soil within lava flows. These occur within the Burnt Lava Flow Virgin Area; to a lesser extent, in the Medicine Lake Lava Flow; and along the perimeter of Glass Mountain. Timber in these areas is not included in the timber base and is not part of the timber harvest schedule.

**24. COMMENT:** The economic benefits from timber production are understated (in terms of employment) and the economic benefits from recreation are overstated (in comparison with timber). (1328)

**RESPONSE:** The economic and social effects of all alternatives are displayed in Chapter 4 of the EIS. Appendix B displays supporting methodologies. We feel they accurately portray the relative tradeoffs between commodity and non-commodity production on the Forest.

**25. COMMENT:** The Plan would cut timber harvest by 6.6 million board feet annually to create more snags, further reducing the land base. (1359)

**RESPONSE:** The Forest is obligated to provide habitat to ensure viable populations of wildlife. This includes snags. The multiple-use nature of the Plan and the other alternatives provides a mix of outputs and ensures that no single resource is emphasized to the exclusion of another.

**26. COMMENT:** Our area has experienced modest growth over the last 10 years, and this growth had been based both on the lumber and ranching industries. Much

of this modest growth and prosperity has been based on stable timber harvest levels and stable range forage allocations. Any significant reduction in the allowable annual harvest level on the Modoc would most likely translate into fewer jobs in the timber industry in our area. This in turn would mean a drop in average daily attendance at our schools which would force staff reductions and in turn program reduction. Loss of jobs would reduce dollars spent in our area and could result in the loss of some of our businesses. (1399)

RESPONSE: To the extent possible, we contribute to community stability. Economic and social impacts are displayed in Chapter 4 of the EIS.

27. COMMENT: Timber harvesting methods: The mapping of the harvest zones is confusing. The <20 and visual retention zones, on the surface, have single prescriptions. The two darker green zones on the map are combinations of prescriptions. It is difficult to tell which prescription will actually be used. (All three prescriptions allow clearcutting.) There is also a separate visual quality objectives map which generally mimics the Preferred Alternative prescriptions, with the exception of a number of raptor management. I am not sure if this is sloppy mapping, or done on purpose. This is particularly alarming in the Caldwell-Cougar eagle roost. Visual retention, special interest areas, developed recreation, and semi-primitive non-motorized may also be clearcut. This does not conform to the goals for these prescriptions. (708)

RESPONSE: We agree that the mapping of various zones is confusing. We have attempted to simplify it as much as the situation allows. On the PRF map the <20 land is yellow-green, while visual retention is the yellow zone. The Retention and Low Productivity (<20 Land) prescriptions as described in the Plan are different as well. The two darker green zones are combinations of prescriptions; therefore, specificity has been lost. The difference between the two is described on the PRF map legend; they reflect timber areas managed for modification or partial retention visual quality objectives. No one-to-one correlation exists between the visual quality objectives and the raptor management prescription; the raptor management has precedence. It is not true that special interest areas or semi-primitive non-motorized areas will be clearcut; no scheduled harvest is planned. Visual retention can have clearcuts – but on a small scale, and only to meet retention objectives. In developed recreation areas, timber stands are managed to enhance scenic and recreational values.

28. COMMENT: Figures in 1st para. of text on 3-126 do not agree with regional "cut and sold" reports. An explanation is needed. (1263)

RESPONSE: According to the Automated Timber Sales Accounting System, uncut quantities under contract as of 12/85 were 253.6 MMBF of which 82.5 MMBF was buy-back volume. At the close of FY89, uncut quantities under contract had been reduced to 77.4 MMBF.

29. COMMENT: Fig 3-24 needs to be updated through 1987.

RESPONSE: We agree and have updated Figure 3-24 through 1990.

30. COMMENT: As far as timber 3-32 (DEIS Plan) we think a reduced cut is in order. We think it would be good to do away with the Big Valley Sustained-Yield Unit 3-34 (DEIS Plan). Forest Service and the community would benefit from more competition which should bring in more revenue from timber sales. (984)

RESPONSE: The Big Valley Federal Sustained-Yield Unit is covered by the Sustained-Yield Forest Management Act of March 29, 1944 (Ch. 146, 58 Stat. 132; 16 U.S.C. 583, 583a-583i). Based on comments received during the BVFSYU public hearings of May 1982, most people in the involved communities recommended that we retain the Unit. The decision to retain the Unit, at least until the next public hearing, has been made based on that input. The Policy is unchanged except for the harvest level which had to be reduced in order to maintain a sustained yield. We will hold another public hearing to discuss the status of the BVFSYU following Forest Plan release.

## 247 - Yield Tables

1. COMMENT: I feel that the yield projections are inadequate and very conservative. My calculations using Mayers, Dunning and USFS tables with a site index of 80 projects yield at 90 MMBF/year (using type info. on pg. 3-126, Table 3-17). It is my conclusion that the yield tables are based on inadequate data and should be recalculated and reinforced by more field information. (126) (993)

RESPONSE: The timber inventory conducted on the Modoc and the volume projections made in the yield tables are based on standard Regional inventory procedures. While it is generally enviable to have more data, it is not always possible because of budget and personnel constraints – nor is it always necessary. The Forest inventory is calculated to have a 9.8% sampling error with one standard deviation. Volume projections in the yield tables are based in part on growth rates of measure trees randomly selected during the inventory. Table 3-17 of the EIS is based on the tentatively suitable land base. This tentatively suitable land base is further reduced by constraints

within the Plan, e.g., raptor management areas, stream side management zones, and retention areas.

**2. COMMENT:** It is not possible to achieve a sampling error of 10% with such a skimpy sample, as was taken. In our sample of 198 plots, the total acreage sampled was approximately 2,000 acres. The co-efficient of variation of the plot data was 102.96, with a SE% of 6.95. The bottom line is that your field data is not sufficient to construct a reliable yield table. Capture a great deal more field data before attempting to do anything further with the yield projections. (1009)

**RESPONSE:** It is not necessary to take sample plots based on a method of stratification; sample plots can be randomly located within the area to be sampled. However, there are a number of advantages to stratified sampling—e.g., sampling in which the population is grouped and the sample drawn independently from each group (R-5 FSH 2409.21b Timber Management Plan Inventory Handbook).

The primary attribute which most directly affects management decisions, is total tree volume per acre which is used to define the permissible sampling error. One can reduce sampling error by dividing the Forest into strata which are more homogenous with regard to volume per acre than the Forest in total. One can determine that the difference between stratum means does not contribute to the overall sampling error of the estimate for the Forest as a whole: sampling error arises solely from variations within each stratum.

The reduction in sampling error which results can be understood intuitively. If the volume per acre was sampled in medium-sized red fir sawtimber stands of high stocking, one would expect less variability in the sample measurements of volume per acre than would be found on a set of samples located at random in stands which ranged from large-diameter ponderosa pine to clumps of saplings. In summary, by stratifying, one can arrive at a lower sampling error for the same number of sampling units, or conversely, the same sampling error with fewer samples. The inventory conducted by the Forest meets Regional standards.

**3. COMMENT:** To engage in mgt activities without knowing the effects of those activities is legally questionable. (1263)

**RESPONSE:** The impacts of management activities are discussed in Chapter 4 of the EIS. Effects of many activities are understood. Some effects are, by necessity, based on professional judgement. The National Forest Management Act and other regulations require forests to monitor and evaluate their plans at established intervals to compare actual versus projected results of implementation.

Monitoring and evaluation determine whether a forest has met its mission and goals.

## 248 - Even-age Management

**1. COMMENT:** See that no clearcutting of timber is allowed; it serves no one's use except the timber industry. (43) (49) (52) (80) (341) (1295)

**RESPONSE:** Clearcutting has been a very successful and reputable regeneration method of forestry. There are, of course, other regeneration methods which include shelterwood and seed tree methods, and individual and group selection methods. All methods have their advantages and disadvantages. Some people do not favor bare-earth clearcutting but tolerate clearcuts in which the advanced regeneration, when present, is reserved. These reserve trees must be viable, i.e., trees capable of reasonable growth and development. The Forest has been doing these kinds of harvests when the stands become available and can accommodate them. The Forest and the Region are currently analyzing impacts of various alternatives to clearcutting. Results are uncertain at this time. Four compartments, totaling 17,600 acres, have been set aside to test uneven-age management under operational conditions.

**2. COMMENT:** I am for the SOC alternative. I opposed clearcutting except in burns and diseased trees, and where they have wood rot and insects and possibly an over-infestation of mistletoe. I see the reason for pruning and thinning and selective harvest cutting and having uneven-age stands. But with clearcutting, I don't think that we'll have the timber to sustain our yield in order to have a good vital community here in the valley. (1375)

**RESPONSE:** Regardless of whether even- or uneven-age management is chosen, if timber stands do not regenerate, timber harvest levels cannot be sustained. The MNF has many examples of successful regeneration of large burned areas and clearcuts.

**3. COMMENT:** Logging should be prohibited in this and all semi-primitive, non-motorized areas. I recommend selection logging and natural regeneration which will protect visual quality and provide better wildlife habitat and recreational experiences. Clearcutting should be reduced significantly, particularly on the Warner's east flank and similar unstable watersheds. Selection logging methods should be used instead. (333)

**RESPONSE:** The Semi-Primitive Non-Motorized Prescription found in Chapter 4 of the Plan has no scheduled timber harvest associated with it. Timber harvest may occur if it will enhance the recreational values of the area. We think selection logging would cause similar, if not more, damage to the environment as other methods be-

cause of needed road systems. No harvesting by any means is conducted without first providing an environmental assessment for a specific site to determine any environmental, social, economical impacts.

**4. COMMENT: No clearcut/herbicide logging. If single tree and group selection is more costly, then charge more for timber sales. (1031) (1048)**

**RESPONSE:** The national forest appraisal system does not include the cost of sale preparation or administration. Our methods of price determination are based on fair market value of lumber. Except for specific accounts (Knudsen-Vandenberg (or KV) and brush disposal (BD)) the money generated by timber sales is returned to the U.S. Treasury—not to the Forest Service.

**5. COMMENT: Increased uneven-age mgt without herbicides use could reduce impacts to native plant diversity, soil, water, and visual quality. (1214)**

**RESPONSE:** We do not agree that uneven-age management precludes the need for site preparation techniques, which may include limited use of herbicides; or that environmental impacts are automatically reduced.

**6. COMMENT: The Forest should seriously examine uneven-age management in ponderosa pine and mixed conifer forests. It will help maintain biological and structural diversity over the long run. (1243)**

**RESPONSE:** The Forest has designated four timber compartments (one per district) of about 16,700 acres which we will set aside for uneven-age management.

**7. COMMENT: (Mixed conifer) would be best managed by alternating blocks of patch cuts and select cuts. (1293)**

**RESPONSE:** Considering that many prescriptions are intermingled, this situation may actually occur—but probably on a different scale than what you envision.

**8. COMMENT: I support clearcutting and replanting. (939)**

**RESPONSE:** Thank you for your comment.

**9. COMMENT: Calif. Native Plant Soc. is strongly opposed to the commercial harvest of aspen for firewood. Clearcuts of up to 20 acres are allowed. The 13,400 acres of aspen stands should be included as one of the MNF's major vegetation types. Does the MNF understand the importance and ecology of aspen stands sufficiently to allow commercial firewood harvest? Is there sound data to justify exploiting this special resource? What steps will the MNF take to insure regeneration of aspen, and other woodland types? Aspen stands typically occur around fragile seeps and wet meadows. These areas are too sen-**

**sitive to allow a non-dependent consumptive use. (500) (1214)**

**RESPONSE:** Forest standards and guidelines highlight aspen as an area of special habitats (Plan Chapter 4 - Wildlife and Fish) in which aspen stands larger than 1/2-acre are managed as distinct plant communities and special wildlife habitats. Management strives to achieve a mixture of different-age stands. The primary goal of clearcutting aspen, as stated in the Rangeland Management with Forage Improvements (Range-Forage) Prescription, is to rejuvenate aspen—not to provide aspen stands for commercial firewood sales. Commercial firewood sales, if any, are only a means to an end.

**10. COMMENT: Clearcutting of timber is a practice that should be abandoned in sensitive and highly scenic areas that are popular with anglers and other recreationists. These areas include: Cave and Lily Lakes drainage, Fort Bidwell Creek Canyon, Twelve Mile Creek, Pine Creek Canyon, all of the East Creek drainage, Parsnip Creek drainage, Medicine Lake Caldera, and Mill Creek at Mill Creek Meadows. It may very well be that the highest and best use of this resource is to manage it first as a recreational area and secondly for timber and ranching. (1222)**

**RESPONSE:** Although clearcuts are allowed in visual retention areas, they are on a small scale and used only to meet requirements of the retention prescription.

**11. COMMENT: Timber harvest is helpful to increase deer populations. Clearcutting or cleaning up logging creates more feed and more deer. (1382)**

**RESPONSE:** Thank you for your comment.

**12. COMMENT: The Plan ignores all possible use of even-age management. (1359)**

**RESPONSE:** Most of the ASQ, in the draft Plan, is derived from even-age management.

**13. COMMENT: 4-16. Table 4-3 (timber outputs) - Total regeneration harvest. Does this mean that 38,000 acres of timber will be clearcut and reforested every 10 years? How will the Modoc NF meet deer population goals? (364)**

**RESPONSE:** The table to which you refer means that one timber goal is to regenerate 38,000 acres primarily by clearcutting; the rest is regenerated by shelterwood seed tree and overstory removal in the first decade. Chapter 4 of the Plan (Wildlife sections of Goals and Objectives, Outputs and Activities, and Management Direction) addresses deer population goals. Plan Chapter 4 displays impacts of timber harvest.

**14. COMMENT: Is clearcutting a good conservation practice? (1384)**



**RESPONSE:** In itself, clearcutting is not good or bad. Much depends on site-specific objectives and the manner in which clearcuts are designed and implemented. Clearcutting can be a good conservation practice in that it requires fewer acres to be entered to extract timber volume. It can be used to clean up infections of mistletoes. It is also used to replace poorly stocked and poorly growing stands with well stocked stands of better growing trees. If the objective is to retain a continuous forest cover at all times everywhere, then obviously clearcutting would not be the prescription of choice.

**15. COMMENT:** [Reader: see entire letter for analysis.] Whenever clearcutting is prescribed on cable-ground, the subsequent site prep. activities normally involve broadcast burning. However, the Plan shows considerable cable-ground in MA 31 targeted for regeneration but constrained visually within the retention category. The visual constraint suggests a modified approach to the typical clearcut by modifying the shape and softening the edges of the cut blocks to reduce the strong contrast following logging. However, with cable systems and broadcast burning, there is little hope of ever achieving a softer contrast. Clearly, the technical feasibility of this Rx needs to be examined when applied to steep terrain. (540)

**RESPONSE:** Our intent in the Plan is to harvest 5% of the volume available on land allocated to retention so that retention characteristics are perpetuated over a 200-year time period. On acres where the retention classification would be violated by harvesting or site preparation activities, clearly the prescription cannot be implemented. This means that volume accumulated under this prescription is unavailable for harvest on these specified acres, and should be included in the monitoring plan evaluations. The Plan would then be modified to meet the new set of conditions.

## 249 - Uneven-age Management

**1. COMMENT:** Our alternative uses uneven-age silviculture in a system where multiple age/size class cohorts are managed to insure stand health and sustained productivity for all timber types except lodgepole pine. (19) (500) (1280)

**RESPONSE:** The Modoc will dedicate about 16,700 acres (one compartment per district) to developing and testing techniques for uneven-age management. However, we will still rely on proven even-age management systems for the majority of timber harvests.

**2. COMMENT:** We prefer selective cutting in small groups or individual trees, leaving some growing stock. Although we know that this is more time consuming, we

believe it is worth it because it leaves the Forest so much more attractive than clearcutting and replanting. (19)

**3. COMMENT:** Selective cutting should be practiced with every parcel of land left containing snags and old-growth, as well as undergrowth approximately natural conditions. (76)

**RESPONSE:** [to both comments above] We do not agree that selective cutting, if it is to produce volume levels comparable to even-age management, will approximate natural conditions. In theory more old-growth trees could be produced on a specific acre using even-age management regeneration methods than with uneven-age management regeneration methods. One system is not better or worse than the other; rather, the value of one system over another depends on specific management objectives which reflect public desires.

**4. COMMENT:** We support uneven-age timber management, as outlined in the stand prognosis model employed in the Deschutes National Forest. Removing (clearcutting) entire stands and then replanting, as in the Preferred Alternative, has several overwhelming drawbacks: it leads to devastating erosion; it destroys the Forest and creates instead a tree farm, whose unesthetic, sterile even-age stands have no true place in a national forest. (19) (198)

**RESPONSE:** Properly applied, clearcutting will not lead to devastating erosion. All timber harvest activities must meet California State Water Quality Control Board Best Management Practices (BMPs). The Forest has several examples of clearcuts on > 40% slopes which have exhibited no evidence of erosion.

Both silvicultural systems can be effective if factors such as rotation length and desired tree size are adjusted to facilitate other resource needs such as visual quality, wildlife habitat, diversity, etc. For example, using a long rotation with even-age management may provide more large trees on a specific acre (and, therefore, better habitat for some wildlife species) than uneven-age management.

**5. COMMENT:** We believe the well-stocked, mixed conifer stands managed under an uneven-age regime would help in maintaining diversity, provide good growth and yield, and avoid the stark visual contrasts that disrupt the visual quality. (672)

**RESPONSE:** Areas on the Forest with a high visual quality index are allocated prescriptions which help maintain their visual quality. Harvest practices are designed to meet visual quality objectives of these areas, and will not degrade the visual experience.

**6. COMMENT:** Note some time and effort concerning the merits of tree selection harvest or uneven-age man-



agement was addressed in the DEIS. I believe that with the limited knowledge of this prescription the Modoc's write up in some areas was speculative and therefore misleading. In their discussion the Forest stated predictions as to growth, costs, genetic composition, worth, etc. are nothing more than the writers' gut feelings and should not be a part of this document. (126)

RESPONSE: In some areas, we must rely on professional judgement rather than scientific facts. We have included a monitoring plan which will help us determine how predicted outputs and effects are met and where modifications are necessary.

## 250 - Inventory

1. COMMENT: I support the installation of an increased number of cruise plots to bring the level of inventory accuracy within acceptable standards. (126) (231) (1154) (1009)

RESPONSE: It is not necessary to take sample plots based on a method of stratification; sample plots can be randomly located within an area. However, there are several advantages to stratified sampling—i.e., sampling in which the population is grouped and the sample drawn independently from each group (R-5 FSH 2409.21b Timber Management Plan Inventory Handbook). Tree volume per acre is the primary attribute which most directly affects management decisions. This attribute is used to define permissible sampling error.

We can reduce sampling error by dividing the Forest into strata which are more homogenous with regard to volume per acre than the Forest in total. We can determine that the difference between stratum means does not contribute to the overall sampling error of the estimate for the Forest as a whole: sampling error arises solely from variations within each stratum. The resulting reduction in sampling error can be understood intuitively. If the volume per acre was sampled in medium-sized red fir sawtimber stands of high stocking, one would expect less variability in the sample measurements of volume per acre than one would find on a set of samples randomly located in stands which ranged from large-diameter ponderosa pine to clumps of saplings. In summary, by stratifying, we can have a lower sampling error for the same number of sampling units, or conversely, the same sampling error with fewer samples. The inventory conducted by the Forest meets Regional standards.

2. COMMENT: By using age classes from DEIS pp. 3-113 to 3-115, and strata and acreage from DEIS p. 3-126, simple math shows 618,411 acres growing 20,036,297 cu. ft./yr. (91 MMBF) or 32.4 cu. ft. per ac. per yr. Why is the MNF-LRMP not attempting to capture the potential

growth? This is even more puzzling when the potential for growth is noted at 50 cu. ft./ac/yr. and the average growth for land classified as 20 cu. ft. is only 24 cu. ft./ac/yr. By promoting an ASQ of 52.1 MMBF when the Forest appears to be growing 91 MMBF, it appears obvious why the Forest's timber inventory is increasing over time. Only 57% of the growth is being utilized! (21) (990)

RESPONSE: Each alternative begins with acres which represent the tentatively suitable land base (619,300). Not all of these acres can be used for purely timber management purposes. In the the PRF Alternative we determined that 100,278 acres were unsuitable for timber production because of requirements of other resources. If these acres were used to calculate ASQ, then the ASQ would be higher. The fact that growth rate is less than the potential reflects existing conditions.

3. COMMENT: As indicated by Resource Economics International, the initial timberland inventory obtained from a non-verified aerial photography survey bears no relationship to the field data utilized in the current Plan. This discrepancy is not allowable in management of a multiple-use sustained yield forest or any resource with outputs that are estimated for a 16-decade planning horizon. Error in the base data compounds over the planning horizon and deviates from the land resource base for which it was written. (126) (1062)

RESPONSE: The vegetative typing we did on aerial photographs met the contract and Regional standards. We used them in selecting Forest strata in which we randomly located on-the-ground timber inventory cluster plots. The details are specified in the R-5 FSH 2409.21b Timber Management Plan Inventory Handbook which is available for review in the Supervisor's Office in Alturas.

4. COMMENT: I do not support the increasing of timber inventory over time, particularly 240-year-old stands and older. (21)

RESPONSE: The majority of 240-year-old stands reflects modeling of < 20 cubic foot land. This land, while contributing to the ASQ, is never regenerated in FORPLAN. That is, yield tables remain constant; when the stand is entered, there is never a shift to a regenerated yield table and, therefore, to a new starting age. The model continues to count the age decade by decade. Nevertheless, some old growth stands are necessary to meet requirements of other

resources, such as old growth seral stage, eagle nest stands, and visual conditions.

## 262 - BVFSYU

**1. COMMENT:** We also support the Big Valley Federal Sustained-Yield Unit as designated by Congress. (48) (126)

**RESPONSE:** The Unit will continue at least until the next hearing at which time the public will again voice its opinion on the validity of the Unit. In the interim, however, the BVFSYU Policy may be modified. We will hold a public hearing to discuss the status of the Unit immediately following Forest Plan release.<sup>9</sup>

**2. COMMENT:** What happened to 8,000 MBF cut on the BVFSYU? What happened to the selective cut? What happened to the salvage cutting? What happened to the 20-yr growing period between cuts off the sustained yield? The harvesting of dead snags is an essential part of our forest mgt. (1130)

**RESPONSE:** The policy which covered the operation of the Unit between 1962 and 1974 had an allowable cut of 8.8 MMBF (regulated) and 0.8 MMBF (unregulated). The allowable cut from 1975 through 1985 was set at 13.3 MMBF (regulated) and 0.4 MMBF (unregulated). None of cut was designated as selective cut except perhaps 1 MMBF which was estimated to be harvested from the Special, Marginal, and the Unregulated Components. From 1975 to 1985, the volume sold from the Unit averaged about 15 MMBF per year. When one includes volume from 1986 through 1989, the annual average falls to about 12.5 MMBF. We are not sure what you mean by "...20-yr growing period between cuts off the sustained yield?" Harvesting surplus snags is allowed in areas where wildlife habitat needs are met. The Forest is required to provide habitat ensuring viable wildlife population levels.

**3. COMMENT:** Please note that Appendix R (draft Forest Plan) (refer to attachment #6), is quite similar in format to what the Chief-USFS approved 8/24/79, but drastically different in timber content. First it is entitled BVFSY Unit policy as if it were the present active policy which it is not as of to date. It should be changed to "proposed & amended policy statement" to clarify any doubts. The cutting budget for 10/1/85 - 9/30/95 is reduced drastically with the allowable annual cut reduced to 11.00 MMBF (or approximately 20%) from 13.7 MMBF per year. However, when you check Appendix C of the draft Forest Plan entitled "Tentative 10-Year Timber Sale Action Plan" and covered in page 2 of this letter under paragraph d), you will note that in the 7 years noted the average is only 9.00 MMBF per year. This variation in planned allowable cut needs a clarification, since how can

the USFS justify a 20% cut based on R-2 (Forest Plan) and a 35% reduction based on Appendix C as covered under D), on page 2 above? (1158)

**RESPONSE:** The policy statement displayed in the Plan reflects volume reductions resulting from Plan implementation. Timber volumes were reduced because our analysis indicates that the Unit can't sustain an annual harvest (ASQ) of more than 9 MMBF. We will revise the "Ten-Year Timber Sale Action Plan" to reflect an average annual sell from the BVFSYU consistent with the policy statement shown in the Plan.

**4. COMMENT:** I believe that an annual inspection should be made by qualified Forest Service (or consultant experts) to make sure that the requirements of the 8/24/79 amended policy statement are being met by all purchasers of BVFSYU timber. (1158)

**RESPONSE:** Thank you for your comments and your concern. The Forest regularly reviews the requirements of the BVFSYU for compliance as the Unit is entered for harvest..

**5. COMMENT:** The considerations in conjunction with the use of BVFSYU harvest level (DEIS R 1-3) and an assumed budget level as constraints have the net effect of unreasonably reducing PRF timber output during the Plan period. (1252)

**RESPONSE:** In the analysis of the final, we removed the budget constraint presented in the draft. However, this does not mean that Congress will provide the budget as assumed in the Plan, either in amount or distribution.

**6. COMMENT:** Next I propose that the Forest Service clarify precisely what species by size and quality can and cannot be removed under the 20% present allowance to stop all the "talk" as to what is "right" and "wrong" in regards to the economic stability of the BVFSY Unit. I will be willing to help you draft such a set of specifications, etc., if you desire. (1158)

**RESPONSE:** Periodically the Forest conducts public hearings on the BVFSYU. During these hearings the Forest and the public present suggestions for policy modification. We will hold a public hearing to discuss the status of the Unit immediately following release of the Forest Plan.

**7. COMMENT:** I would personally like to meet with you and go over differences in correspondence and procedures requested of certain operators before a timber sale could be awarded. (1158)

**RESPONSE:** Under the Freedom of Information Act most documents are available to the public.

### 263 - Vegetation Management

**1. COMMENT:** The chart of DEIS 2-38 raises the question of how you can completely eliminate a program, in this case veg. mgt., and still have 30% of the costs of the program to bear. That arithmetic needs clarification.

The DEIS should examine alternatives to resource production programs in the event that your currently-used techniques become curtailed. Alternate silvicultural approaches and land allocations are two areas that might need to be reconsidered to maintain current production levels. (1263)

**RESPONSE:** The term *No Vegetative Management* refers to an alternative found in the *Vegetation Management for Reforestation EIS*. Under this alternative (also known as the *No Action Alternative*), any treatment of competing vegetation is precluded except: clearing or burning logging debris to reduce fire hazard; and planting and seeding. Because competing vegetation may not be directly manipulated, the timber yield decreases. Some costs remain to account for planting and hazard reduction.

The Plan also provides for monitoring to check the assumptions we made regarding outputs and results of activities. The objectives are to determine when and if the Plan can be implemented, and to modify it so that outputs can be realized.

### 264 - Less Than 20 (<20) Cu.Ft.Lands

**1. COMMENT:** <20 lands need to be reevaluated. Since there is no regional direction preventing harvest on these lands, why does the Forest limit harvesting to only 5% of the existing inventory per decade? These types of stands are excellent opportunities to practice true uneven-age selection, yet are often rated on their "regenerability" as is required for even-age systems. These stands should be contributing to the total harvest more closely parallel to their growth rather than simply being allowed to grow. (21)

**RESPONSE:** We limit the harvest on <20 lands to 5% of the standing inventory because soil productivity is poor. Uneven-age and even-age management alike require regeneration to be successful. The point of the 5% harvest is managing these lands to perpetuate their existence over time while still realizing some volume production.

**2. COMMENT:** DEIS 2-136 (Table 2-14): Projects selection harvest of 14,300 ac. per yr.: All of this is in <20

lands, if one can be confident of the other figures in Table 2-14 and those in Table 2-16. Therefore, you will be harvesting in 14,300 ac. of <20 lands annually. Table 2-13 allocates 140,000 ac. to CAS lands in the <20 category.

- Is it fair to assume that you will have an entry schedule for the <20 CAS Lands of approximately 10 years?
- to complete the question, note that the RBU shows no selection cutting in Table 2-14, but allocates 8,400 ac. CAS from the <20 lands. (1263)

**RESPONSE:** The Preferred Alternative allocates 14,200 acres annually. The <20 lands are less productive, and it is difficult to accurately predict yields from them. These lands are included as part of a non-interchangeable component. Harvests from <20 lands will generally be opportunistic. That is, we will schedule harvests from <20 lands with timber sales on more productive land. We harvest when sufficient understory trees are present, or sufficient overstory can remain to insure regeneration; and standards and guidelines for snags and diversity can be met.

The observation that Table 2-14 of the DEIS did not reflect the <20 lands shown in Table 2-13 is correct. We corrected it in the final Plan.

### 270 - Visual Resources

**1. COMMENT:** The visual retention/restrictions proposed are far too excessive. A narrow buffer strip along paved State and County highways is adequate to meet visual objectives. (218)

**RESPONSE:** We disagree. The VQO guidelines used on the Modoc National Forest are nationwide visual guidelines taken from several U.S.D.A. handbooks and the Forest Service Manual system. Further, we feel that the Forest Plan provides the best mix of visual quality objectives to meet the overall needs of the public.

**2. COMMENT:** Visual impacts were not varied by alternatives, so it is hard to judge the impact on visual resources. This should be done in the Final Plan. (271)

**RESPONSE:** EIS Chapter 2—*Comparison of Alternatives* under Visual Resources presents a detailed comparison of alternatives. Also, the existing Inventoried Visual Quality Objectives (Appendix Q of the Forest Plan) can be used as a standard for comparing alternatives.

**3. COMMENT:** Reductions in volume/outputs resulting from visuals are not contained in the DEIS or Plan. Visual landscape is a resource in the management of the National Forests. We need to be presented with the outputs and alternatives associated with it. (1062)

RESPONSE: EIS Chapter 4 discusses impacts from alternative implementation. EIS Appendix B displays modeling methodologies for output and constraint determination.

**4. COMMENT: I believe that visual quality, as affected by timber harvesting, should not be a concern. If we are going to clearcut, we should do it where everyone can see it. I would prefer to get more volume from the "visual" areas and to leave the roadless areas alone. (1048)**

RESPONSE: We design timber sales to have the least conflict with other resources, including the visual resource.

**5. COMMENT: Retain visuals Standards and Guidelines with the addition of:**

- Maintain or improve VQO through uneven-age timber management, non-harvested areas, grazing reductions or changes, mining and energy development constraints, and structure location.
- Manage for larger-diameter oldest cohort, near recreation areas and Sensitivity 1 travel routes.
- Manage for preservation VQO in wilderness, SIA, and RNA. Manage for Retention in recreation, developed recreation, SPNM, and riparian prescriptions. Manage for the best VQO compatible with high habitat capability in wildlife. Manage for retention or partial retention in timber and range, with only temporary drops to modification.

Manage the following areas for retention: all retention areas on the Plan map, Benton Meadows, and the following creeks: Buck, Lassen, Pine, Parsnip, East, and Ash. Any modification units in the N. Highlands should be partial retention. Any modification units elsewhere may be temporarily in modification status, but should be in partial retention the majority of the time. (500)

RESPONSE: We feel that the current mix of VQO applications in the Forest Plan is most appropriate to meet the demands of the collective public who use the Modoc National Forest.

**6. COMMENT: The Modoc National Forest uses visual constraints to build in a "comfort factor" (buffers) to reduce commodity production. The only faction that supports extensive visual management is the Forest Service. Even the environmental community has observed that if the land base is constricted with non-objective visual quality prescriptions, other activities are further concentrated on a smaller land base. I do not support the proposed Timber-Visual Prescription (Prescription 13). Has there been a detailed analysis of the opportunity costs of this prescription weighted against actual real benefits? (21)**

RESPONSE: EIS Chapter 4 discusses impacts from alternative implementation. EIS Appendix B displays modeling methodologies for output and constraint determination. We feel the Final Plan provides an optimum mix of VQO applications to best meet the needs of the collective public who utilize the Modoc National Forest.

**7. COMMENT: The Modoc National Forest must manage high productive site lands for timber production, not for non-timber production uses. Visual areas along roads and around the Wilderness must be managed for uneven-aged management. (231)**

RESPONSE: We agree and feel this intent is reflected in the mix of prescriptions applied in the Final Forest Plan.

**8. COMMENT: P. 4-39: Add Section E: Coordinate with the County general plan scenic highways goals and actions in support of (D) above and other routes which may be designated. (101)**

RESPONSE: Coordination with state, county, and other interested parties is a primary goal of the Forest Plan. We will coordinate at the project level within the context of environmental analysis.

**9. COMMENT: We need to recognize that undisturbed natural scenic areas are also a natural resource and a source of revenue for the Forestry Department. (269)**

RESPONSE: We agree that tracts of land maintained in a natural or near-natural condition are a valuable economic and natural resource. We believe we have adequately provided for these undisturbed natural scenic areas in the Final Plan.

**10. COMMENT: Visual resources. We could find no "medium" in Appendix Q. (364)**

RESPONSE: The "medium" term used in visual resources is defined in Appendix Q in the EIS, and not the Appendix Q in the Plan.

**11. COMMENT: Plan page A-2—Corridor viewshed plans were left out. No target dates were set for any of the plans. This is needed if this is to be a Plan. (1)**

RESPONSE: Thank you for your comment. We added viewshed corridor plans have been added to Plan Appendix A—Implementation Plans.

**12. COMMENT: The VQO map is incorrect in that it does not properly classify the prescription 10 lands. They are misclassified as modification. Several of the Raptor Prescription lands are incorrectly classified for modification, also. (1)**

**RESPONSE:** The VQO and Range Allotment maps are each separate resource maps. The PRF map is a compilation of all the resources. For mapping purposes only, the highest priority prescription dominates on the PRF map. Therefore, the standards and guidelines for Raptor Management (Prescription 9) will override any visual "modification" prescription in the same area.

**13. COMMENT:** Why wasn't the visual quality prescription deleted from some of the alternatives? We were given no choice on visual prescriptions as if it were a required constraint. The timber-visual land should be put into the appropriate timber management prescription, and prescription 13 should be deleted. Prescription 7, Visual Retention, should apply to 300 feet each side of state highways. (21)

**RESPONSE:** EIS Chapter 2 displays and discusses a wide array of alternatives that incorporates a variety of visual retention acreages.

**14. COMMENT:** Timber will be managed for larger-diameter trees in the vicinity of sensitivity level 1 roads. (500)

**RESPONSE:** True. We will manage Sensitivity Level 1 roads and their foreground viewsheds for visual retention, which includes the evidence of larger diameter trees.

**15. COMMENT:** Harvest visual strips by light I.T.M. type marking. (1159)

**RESPONSE:** This is only one of many silvicultural techniques in visually sensitive zones. We will use it where appropriate to meet visual condition objectives.

**16. COMMENT:** The engineering of "visual resources" (views) from roads is ludicrous, especially leaving swaths of old growth on the roadsides so people can't see the damage done by clear-cutting (page 4-96). It is cynical to suggest that livestock grazing has a visual effect "usually negative only in the immediate foreground" (p.4-94). There is no "overgrazed foreground" or "background." It's all overgrazed. (1253)

**RESPONSE:** We design timber sales and other projects on the Forest so that they will have the least conflict with other uses and resources, including the visual resource. Substantial grazing impacts are generally not noticeable from a distance. This does not mean they are acceptable. Rather, the statement notes that grazing impacts may subtract from the visual quality if they occur near a major travelway.

**17. COMMENT:** Summary page 23, last paragraph: 9% of Modoc National Forest has a distinctive landscape, 38% is common and 58% is minimal. Those figures total 105%. Some adjustment or clarification is needed. (1263)

**RESPONSE:** The 58% is actually 53%. Thank you for bringing the inconsistency to our attention. We have corrected the text in the Final EIS.

**18. COMMENT:** The discussion of visual resources in the Summary, page 29, equates Forest management activities to "disturbance." Disturbance has a definitely negative connotation. Your use of the word disturbance interchangeably with variations of management indicates a strong bias against Forest management activities. That should be explained. (1263)

**RESPONSE:** We revised this section of the Summary to the EIS to address your concerns.

**19. COMMENT:** DEIS 3-137: Would like to see a complete listing, with cites, of the laws referenced in the last paragraph. (1263)

**RESPONSE:** We corrected the last paragraph on the page you mention. It refers to major USDA-FS legislation pertaining to the visual resource from 1960 to 1980, which is primarily RPA, NEPA, and NFMA regulations which govern Forest Service land management activities.

**20. COMMENT:** Recommendation – Visual restrictions should not be applied over great acreages without thorough study and justification, i.e., 52,000 plus acres for the bald eagle. (1283)

**RESPONSE:** The 52,000 visual/bald eagle acres of which you speak are actually broken down into several smaller areas which, as an aggregate, total 52,000 acres. Bald eagle management areas receive extensive research and study before and after their establishment on the Modoc National Forest.

## 271 - Visual Quality Objectives

**1. COMMENT:** DEIS page 4-100. The visual condition display in Figure 4-16 is misleading. Since only 9% of the Forest was inventoried as variety class A, the prominent display of this ordinarily highly protected type of land tends to mislead the reader. (1)

**RESPONSE:** We do not intend to mislead. Figure 4-16 displays potential impacts of management activities on variety class lands.

**2. COMMENT:** The SPNM recreation areas are totally out of line and unwarranted in the Modoc National Forest LRMP. How can the Forest take valuable land out of the multiple-use land base as "non-motorized" when existing roads traverse the area, numerous human improvements dot the landscape, and the dominant uses of the area revolve around motorized transport for hunting and range management? These areas were all released from

wilderness consideration after the 1978 RARE, and now the Forest Service has caved in to the demands of the vocal minority to set up *de facto* wildernesses that clearly have been released and do not meet the criteria for wilderness. This prescription should be deleted in its entirety from the Modoc National Forest LRMP. (21)

RESPONSE: SPNM opportunities provides recreation experiences in a relatively undeveloped environment. We feel the mix of recreational opportunities offered in the Forest Plan is the most appropriate to meet the collective needs of the public who use the Modoc National Forest.

3. COMMENT: With only two state highways subject to the Regional MMR of a 300-foot visual zone, we believe the restraints to be excessive, unwarranted, and too expensive. (1282)

RESPONSE: This Regional MMR in visual zones is managed under a Retention VQO. The 300-foot zone along the two highways actually comprises a very small percentage of the total Forest land base.

4. COMMENT: The Visual Quality Objectives for the PRF Alternative, as described in the DEIS and FLRMP are unacceptable. Visual constraints have been placed on too many acres, without regard to what the public may really think and want. (1009)

RESPONSE: We used Visual Quality Objectives prescribed in the USDA-FS Visual Management System handbooks. These handbooks represent the outcome of research on people's perception of aesthetics in the landscape. The handbooks are available at the Forest Supervisor's Office in Alturas. Further, the Forest feels that the mix of VQO objectives applied to the Forest landscape is most appropriate to meet the demands of the collective public.

5. COMMENT: Woven through the Plan are various factors apparently intended to meet some arbitrary visual quality standards. We could find no documentation as to how these standards were developed, specifically how they were applied in the Plan, nor a clear explanation of the impact of these factors. The "effective alteration acres," dispersion, modified visual requirements, and similar factors are not presented so that a reader can evaluate their merits or their costs in other opportunities foregone, although it appears those costs are extremely high. (1258)

RESPONSE: We used Visual Quality Objectives prescribed in the USDA-FS Visual Management System handbooks. These handbooks represent the outcome of research on people's perception of aesthetics in the land-

scape. The handbooks are available at the Forest Supervisor's Office in Alturas.

6. COMMENT: Visual constraints are equally difficult to evaluate. Objectives are not well-defined or measurable. (1282)

RESPONSE: See previous response.

7. COMMENT: Plan p. 4-54. Minimum Management Level Prescription appears to be faulty as it allows for Modification and Maximum Modification VQOs. Lands of this nature have very little activity going on and they can normally meet Partial Retention and Retention with little or no effort. There is no sense to screwing up such lands as there is little doubt that future needs for scenic quality would require that such impacts be rehabilitated. We need to avoid such costs of visual resource rehabilitation as a matter of economic efficiency of land stewardship. It can be done by raising the VQO of this prescription to Partial Retention. This is the only prescription that would allow MM and the DEIS (p. 4-102) allows 99,800 acres in the PRF Alternative. That is almost one and one-half times the total acreage in this prescription!! It just can't be done! (1)

RESPONSE: We consider developments and their ensuing visual impacts on a case-by-case basis, including MML lands. Because minimum management and protection and maintenance of environmental values are the objectives, we would not permit large-scale Modification or Maximum Modification of these lands, although they are allowed. The Preferred Alternative implies that Maximum Modification will only be allowed on Variety Class C lands which total 99,800 acres. There is no correlation between the *minimal* appearing landscape (Variety Class C) and the *MML* Prescription.

8. COMMENT: Plan – Faulty VQOs:

- Range-Forage – It allows for Modification, but there is scarce need to drop that far to meet the needs of the prescription. The activities can easily meet Partial Retention.
- Uneven-aged management – It allows for Modification. Uneven-aged management has historically been able to meet Partial Retention or Retention. It was not included in EFFALT analysis due to this very fact.
- <20 Cubic Feet Timber – These low productivity lands do not have to be altered heavily enough to go to Modification VQO. (1)

RESPONSE: Allowing a lower VQO does not necessarily mean a Forest development will have that degree of impact. USDA laws and regulations state that visual and

aesthetic concerns will be analyzed before any major development takes place on the Forest.

**9. COMMENT: Riparian Area – Riparian areas should be given enough protection to meet Partial Retention or better. Otherwise, they are not being given any special treatment as they so clearly deserve. These are key areas of any forest and need to be managed with great sensitivity. They are indicators of good or bad forest management. (1)**

**RESPONSE:** Please see EIS Appendix Q and the Riparian Area Management Prescription (#17) in Plan Chapter 4. It states that 9,274 acres of Riparian Areas will receive Partial Retention status.

**10. COMMENT: I do not support any visual quality prescriptions other than Partial Retention (Reg Class II) for 300 feet each side of major state highways. (21)**

**RESPONSE:** Forest Service direction states that all Sensitivity Level 1 roads located in Variety Class A and B areas shall receive a Retention Visual Quality Objective. Retention areas do not necessarily preclude developments or improvements on the landscape.

**11. COMMENT: It appears that the small amount of Forest Service lands within Silver State's claim block is primarily [under management prescriptions for] rangeland, timber-forage or "less than 20" timber. All but a small fraction is classified as "Partial Retention" or "Modification", the one exception is an 80-acre outlier to the National Forest lying atop Hayden Hill. This isolated tract is currently designated as a timber visual/visual retention tract. We strongly recommend an adjustment in the historical usage and probable future development, particularly since this area is in the middle- to background of Route 139 and is not a highly visible feature from the highway. Tract referred to lies in the west quarter of Section 31, T.37N., R.10E. Hayden Hill has been designated as a mineral development area by Lassen County, maintenance of this tract as a site for Visual Retention could hamper or at least complicate future mine development activities. We feel a minimal management designation might be more appropriate, and we request your consideration for redesignation. (42)**

**RESPONSE:** The western quarter of Section 31, T.37N., R.10E., does not fall within the Modoc National Forest boundary. Therefore, the land is under some other form of ownership and management.

**12. COMMENT: Areas viewed from "sensitive" roads should be managed for larger trees. The following areas should be added to your map for Visual Retention: all areas listed for the Recreation Prescription, Benton Meadow, plus strips along Bidwell, Lassen, Parker, and Pine Creeks. The north Highlands should have at least**

**Partial Retention VQO to protect the viewshed from Lava Beds. Disparities in VQO in the Raptor Management block should be corrected. (708)**

**RESPONSE:** An uneven-aged timber management scheme is being encouraged along major visually sensitive roads on the Forest. Under uneven-aged management, larger trees are left standing, in part, to give a natural-appearing look to the timber stands. For mapping purposes only, Raptor management areas take precedence over Visual areas when the two coincide.

**13. COMMENT: A "moderate" VQO is too restrictive for the Modoc National Forest. A "low" VQO would be more appropriate as well as productive and would benefit our local economy. (1230)**

**RESPONSE:** We developed all Visual Quality Objectives using USDA Handbooks #434 and #432 which generate Forest Service direction for mapping and managing the visual resource. Further, we feel we have presented a balanced mix of VQOs represented on the landscape in the Forest Plan to meet the visual desires of the collective public.

**14. COMMENT: The National Park Service recommends that the Visual Quality Objective for the Lava Beds National Monument's south entrance road (48N04) be reevaluated to determine if it might be more properly classified as Retention for a large segment of its length. The road provides distinctive landscapes including views of the Medicine Lake Highlands, Glass Mountain, east and west Sand Buttes, and other topographic features. In the winter, the obsidian which makes up Glass Mountain is often cloaked with snow giving it the appearance of a glacier which results in added visual beauty and interest. The road should therefore be classified as a Class A variety level. The road receives approximately 43,000 Forest and Monument visits each year and deserves designation as a Level 1 travel route due to its heavy usage. (1316)**

**RESPONSE:** Currently, we manage this road under a Partial Retention status. The Forest recognizes the importance of this road for tourist travel; and, because of this, we do not plan any major developments along this route. Under Partial Retention, management activities must remain visually subordinate to the characteristic landscape.

**15. COMMENT: Modoc National Forest is guilty...of using various prescriptions to buffer other prescription areas. Several examples are the extensive use of prescription 7 Visual Retention, prescription 4 SPNM, and prescription 13 Timber-Visuals to buffer the Wilderness and background of the highways. These buffers are not within the intent of NFMA and are in actuality *de facto* applications of the adjacent prescription. (21)**



RESPONSE: Forest management prescriptions are designed to complement one another and to facilitate in managing a cohesive mix of various multiple-use activities. We feel this mix of management prescriptions in the Forest Plan is the most appropriate to meet the needs of the collective public who use the Modoc National Forest.

**16. COMMENT: Riparian areas should receive VQOs of Retention or Preservation. (1214)**

RESPONSE: Please see EIS Appendix Q. It states that 9,274 acres of riparian areas will receive Partial Retention status. We feel that the Partial Retention status along with Forest BMPs and standards and guidelines adequately protect riparian areas.

**17. COMMENT: Class I, II and III streams should have visual quality objectives (VQOs) of Retention or Preservation. (1295)**

RESPONSE: See previous response.

**18. COMMENT: The PRF would allow VQOs to be lowered to Partial Retention or Modification in sensitive and highly scenic areas where these VQOs are proposed on your PRF maps. Anglers want attractive surroundings along trout streams. Your Forest needs to establish VQOs of Retention along all Class I and II fishing streams within the Warner Mountains. (548)**

RESPONSE: See previous response.

**19. COMMENT: Visual Quality Objectives (VQOs) of the "preferred" alternative are limited by increased use of clearcutting for timber harvest. Forest Service not to plan clearcutting in sensitive and highly scenic areas popular with our members, including: the Cave and Lily Lakes drainage, Fort Bidwell Creek Canyon, Twelve Mile Creek, Pine Creek Canyon, the East Creek and Parsnip Creek drainages, the Medicine Lake Caldera, and Mill Creek Meadows. (671)**

RESPONSE: The Final Plan provides for a shift in Forest timber harvest management practices to less clearcutting and more uneven-aged management techniques, especially in visually sensitive area.

**20. COMMENT: Even-aged timber management has a side effect of making a forest seem like a tree farm. (1030)**

RESPONSE: See previous response.

**21. COMMENT: DEIS page 2-131. The base year 1982 figures for visual resources are incorrect. They represent IVQOs instead of the actual situation. Existing visual quality acreages should have been displayed here. The visual quality index and the acreage figures for many of the VQOs are also incorrect. Maximum Modification acreages appear to be inappropriate as they are not dis-**

**played on the VQO map for the PRF Alternative, are to occur only in prescription 1, and that prescription has less acreage than is shown for Maximum Modification. (1)**

RESPONSE: As discussed in Chapter 4 of the EIS, the figure 62.6 represents the visual condition existing in 1982. Adopted VQO classes are shown on the VQO map accompanying the Forest Plan. The PRF Alternative map displays prescription allocations – not VQO classes.

**22. COMMENT: The acres of declined visual condition are not graphically displayed and are almost obscured in small type at the bottom of the graphic. Even though this may be revised to be more objective in the Final EIS, the damage has been done as most of the public will have been hoodwinked and miss the significance of the changes in visual condition in preparing their response to the DEIS. (1)**

RESPONSE: Thank you for your comments. We have reformatted the visual condition and index display to make them clearer. However, the assessment remains the same as that displayed in the draft EIS.

**23. COMMENT: Plan page 4-103 – The Raptor Management Prescription rightly calls for Retention and Partial Retention VQOs, but this was not correlated completely on the PRF VQO map. The acreages involved are probably less than 5000. (1)**

RESPONSE: For clarity of mapping purposes, the Raptor Management Prescription takes precedence over the Retention or Partial Retention status on the Preferred Alternative map.

**24. COMMENT: Page 4-109 – The Rangeland Management Prescription rightly calls for Retention and Partial Retention VQOs. However, this was not correlated with the PRF VQO map and acreage data and a few hundred thousand acres were incorrectly shown for Modification in this prescription area!! (1)**

RESPONSE: The VQO map is a separate map from the PRF map. The VQO map graphically portrays the visual resource alone, without any correlation to other resources. The Range map is a separate map as well. The PRF map takes all the resources into account, i.e. wood, water, wildlife, recreation, and range, and compiles them into the Final PRF map. For mapping purposes only, the most dominant prescription is mapped on the Final PRF map.

**25. COMMENT: Plan page 4-268 – By checking the prescriptions for VQO requirements and adding up the acres of Partial Retention or better in all the management areas, there are almost 920,000 acres in these categories. In addition, some portions of prescriptions 1, 11, 16, and 17 should be added to this. I would anticipate that correc-**



tion of these errors would bring Partial Retention or better VQO acreages up to 1,100,000 acres or more. If prescriptions 1, 11, 15, 16, and 17 were revised for VQOs as above, then it would be in the 1,400,000 acre range. (1)

RESPONSE: As displayed in EIS Appendix Q under the Preferred Alternative (Forest Plan), we will manage the Forest's visual resources at the medium program level, resulting in 608,700 acres managed for retention or partial retention. In addition, we will manage 9,274 acres of riparian areas and 52,111 acres of bald eagle management areas for partial retention. We've assigned a VQO class of preservation to 84,725 acres encompassing the South Warner Wilderness, Burnt Lava Flow (SIA), Glass Mountain Glass Flow (SIA), Medicine Lake Glass Flow (SIA), and the Devil's Garden Research Natural Area. In summary, we will manage 754,810 acres in the Forest Plan for partial retention, retention or preservation VQOs.

26. COMMENT: The Modoc National Forest has 33,500 acres of lands capable of producing more than 20 cubic feet/acre/year constrained by the Partial Retention Prescription. There is no need to keep this constraint constant for high as well as low resource production alternatives. (672)

RESPONSE: The Partial Retention VQO does not preclude timber harvest activities in this visual zone. All timber harvest activities in this area must remain visually subordinate to the characteristic landscape.

27. COMMENT: There is a discrepancy between the DEIS statement that 33,500 acres are affected and the Plan's indication that 42,564 acres are constrained. (672)

RESPONSE: We apply the Timber-Visuals Management Prescription, which provides for a partial retention VQO, to 66,835 acres in the Forest Plan. We apply the Visual Retention Prescription, which provides for a retention VQO, to 31,127 acres, of which 22,522 acres are on lands capable of producing more than 20 cubic feet of timber per acre per year (> 20 lands). Prescription allocations are shown in EIS Appendix D and Plan Appendix P.

28. COMMENT: It appears in the DEIS that about 33,500 acres are constrained by Partial Retention prescriptions, although the Plan indicates that 42,564 acres are constrained. (1282)

RESPONSE: See previous response.

29. COMMENT: Recommendation: the Modoc National Forest should reassess the visual constraint and vary it by alternative. Tradeoffs in resource values and a rationale for exceeding the Regional MMRs should be included. (672)

RESPONSE: Please see Visual Resources, under "Comparison of Alternatives" Chap. 2 – EIS.

30. COMMENT: Visuals: Should you decide to utilize clearcutting, the Visual Retention VQO needs to be changed to uneven-age timber management only. (708)

RESPONSE: Uneven-aged timber management will be emphasized in the Visual Retention zones. We will allow small clearcuts if they meet the visual quality objective of Retention.

31. COMMENT: I cannot see how clearcutting will be compatible with objectives for Retention (Appendix Q) which call for maintaining "a natural-appearing landscape" with management activities "not visually evident to the casual observer." I would prefer the use of individual tree selection or four-step shelterwood in foreground Retention areas. (1274)

RESPONSE: See previous response.

32. COMMENT: The proposed 31,000 acres of Retention leaves out many very visually sensitive areas which should be given a higher degree of visual protection. These include the following areas: Medicine Lake Caldera; Cedar Pass – should be upgraded to Retention. (1274)

RESPONSE: Under Forest Standards and Guidelines, State Highways 139 and 299 (which includes Cedar Pass) will be given special consideration in the area of visual resources. See Plan Chapter 4

33. COMMENT: Broad scenic corridors (foreground viewshed) should be maintained along some of the more attractive recreational waterways such as Bidwell Creek, Parsnip Creek, Pine Creek and its forks, Parker Creek and forks, and Lassen Creek. The prescription for these corridors should not permit clearcutting. Retention standards should be prescribed for the SMZs of all Class I and II perennial streams. The Preferred Alternative would allow standards to be reduced to adopted VQOs which in some cases would be "modification." This is unacceptable. (1274)

RESPONSE: Please see EIS Appendix Q – VQOs and Program Levels which states that 9,274 acres of riparian areas are protected under the Partial Retention VQO status. Also, the Forest BMPs and the State (Clean Water Act) laws help protect Forest waterways and riparian areas from excessive development.

34. COMMENT: Mt. Vida – More of the region adjacent to Mt. Vida should be managed for Retention. This includes the northeast slope of Mt. Vida, the area around Larry Flat, and Mt. Bidwell. (1274)

**RESPONSE:** The Forest feels that the mix of VQO objectives in the Final Plan is appropriate to meet the needs of the collective public who use the Modoc National Forest.

**35. COMMENT:** Mill Creek Meadows – The allocation of RARE II area B5160 for even-aged management with a prescription of modification will create a visually incompatible intrusion into the South Warner Wilderness, particularly the northeastern half which will penetrate nearly two miles into the Wilderness. This area most logically belongs in the Wilderness and should be added following obliteration of the existing primitive road. If this does not occur, the area should at least be managed for Retention. (1274)

**RESPONSE:** The RARE II (A5160 Mill) area was added to the South Warner Wilderness under the 1984 California Wilderness Additions Act. The (B5160 Mill) area was intentionally omitted from the Wilderness due to access requirements to the special use Bowman Ditch, whose existence predates the designation of Wilderness.

**36. COMMENT:** The provisions for “dispersion” and for visual quality are not justified in the DEIS and the impact of these programs on other uses of the Forest are not stated so that we can intelligently consider their validity. (1282)

**RESPONSE:** EIS Chapters 2 and 4—timber sections—analyze dispersion constraints and impacts. EIS Chapters 2, 3 and 4, and Appendix Q discuss visual quality.

## 280 - Water

**1. COMMENT:** All alternatives fail to meet water quality objectives until thirty to forty years in the future. We believe the importance of renovating riparian areas and improving water quality justifies a much shorter time frame, e.g., within the first ten-year implementation period. (15)

**RESPONSE:** Because of current funding and personnel limitations, the often slow response of a resource to management changes, and the anticipated impacts on grazing permittees, we do not think that meeting all water quality objectives in a shorter time frame than forty years is practical. Many water quality improvements will come through changes in allotment management plans. Watershed improvement projects that are related to other Forest activities will also provide opportunity for improvement (Plan Chapter 3). The Plan also states that the completion target for the most degraded watersheds is twenty years (Chapter 4—*Standards and Guidelines*).

**2. COMMENT:** See DEIS, pp. 4-107 to 4-109, an alternative of livestock exclusion should be analyzed and information about the costs of each option should be provided so that rational decisions can be made. Supporting data must be included in the impact statement. (1257)

**RESPONSE:** If livestock can graze an area without detriment to other resources, then the practice is valid. NEPA requires that we analyze an array of reasonable alternatives. In light of the Forest Service multiple-use mission, the long history of public land grazing in the area, and substantial impacts anticipated on permittees and the local economy, we do not feel it is reasonable or appropriate to analyze an alternative that provides for total exclusion of livestock Forestwide. A variety of grazing management strategies, including exclusion, will be reviewed on a case-by-case basis for each allotment.

**3. COMMENT:** Riparian areas—EIS 3-92 to 3-97: We wholeheartedly agree with your statements that livestock grazing needs to be well managed. However, we suggest that protecting riparian areas and water quality requires entire watershed treatment or protection. In other words, all actions in the watershed, including road work and timber harvesting, affect streams and riparian areas. Therefore, we cannot agree that livestock grazing is the “primary cause” of riparian area degradation and water quality problems. (530)

**RESPONSE:** We agree that all activities within watersheds have the potential to interactively degrade riparian areas. However, because grazing is more widespread over the Forest than most other activities, we feel it is the primary impacting activity. We will evaluate each stream or riparian area on a site-by-site basis to determine the causes for habitat degradation or limitations to recovery, and to develop solutions to the problem.

**4. COMMENT:** Stream improvement projects of 1.5 miles annually is inadequate to prevent or restore damage done or to be allowed by proposed grazing and timber cutting in riparian areas. (692)

**RESPONSE:** The 1.5 miles of improvements per year refers to stream improvements through structures such as log weirs and streambank stabilization. Stream improvement through non-structural means, such as changes in grazing strategy, should be accomplished at a rate of 10 miles per year. These figures apply to stream improvements. We prevent damage by applying best management practices (BMPs) to all forest activities. We will apply BMPs as allotment management plans are revised.

**5. COMMENT:** It is the nature of streams to eat away at their banks, just as it is the nature of wind to eat away at the mountains. I have observed, that yes, livestock may deteriorate the bank of a stream. I have also observed that four-wheelers and three-wheelers literally eat stream banks. If I had to choose between putting livestock off the

streams and putting four-wheelers and three-wheelers off the stream, I would let the food-producing animals stay.(979)

**RESPONSE:** While it is true that streambank erosion is a natural process, it is also true that a relative streambank build-up is part of that same process. We agree that all uses occurring in watersheds have the potential to interactively degrade riparian areas within them. When improper livestock management, off-highway vehicles, or other uses on the Forest occurs, streams erode without the build-up. The result is a net loss of streambanks and deposition of eroded material onto the substrate, where it can be detrimental to aquatic organisms among other things. We are trying to manage all Forest activities so that they will not have detrimental effects, both singly and combined, on watersheds. We will evaluate streams for causes of substandard water quality on a site-by-site basis during allotment management plan reviews. If necessary, we will implement appropriate management changes.

**6. COMMENT:** EPA commends the DEIS' disclosure of existing water quality problems and strongly supports the proposed monitoring programs, riparian restoration measures, and decreases in grazing outputs, as means of identifying and improving water quality problems in the Forest.(1355)

**RESPONSE:** Thank you for your comment.

**7. COMMENT:** Plan 4-40: Is a 400-foot buffer zone required for established snow courses? Why?(126)

**RESPONSE:** The California State Department of Water Resources recommended a 400-foot buffer zone for snow courses. The buffer prevents soil compaction on the snow course and changes in snow drift that may change future snow accumulation. Equipment will be prohibited from the snow course within the zone. Harvesting may be permitted, however, if the design of the harvest is conservative and does not disrupt snow drift patterns. We will carefully plan activities within the 400-foot zone—we will not use the zone to exclude them.

**8. COMMENT:** Management area direction: 33 Lake City 4-174 both Mill and Soldier Creeks meet all 5 Class I stream criteria. Paragraph 4 implies that they are Class II. This should be corrected. (This should be checked for all eastside Warner streams as many of them meet Class I criteria by providing domestic water.) (333)

**RESPONSE:** In Forest records, Mill Creek is currently considered and managed as a Class I stream because of the domestic use criterion. Soldier Creek is not listed as a domestic water supply.

**9. COMMENT:** 4-9. Watershed

— Item 2. What are second and third order watersheds?

— Item 4. What are the downstream impacts if the Modoc NF acquires water rights? This could adversely affect many wildlife and fish species as well as Ash Creek Wildlife Area.(364)

**RESPONSE:** Where the channel of a stream is first defined as perennial (headwaters), the stream is considered to be first order; and the land that drains into it is the first order watershed. When 2 first order streams come together, they form a second order stream; the total drainage is a second order watershed. When 2 second order streams come together, they form a third order stream; the entire drainage is a third order watershed.

Aquiring water rights should not affect downstream beneficial uses, including wildlife and fish. During water development projects, the Forest must maintain water quality for downstream beneficial uses according to the Clean Water Act.

**10. COMMENT:** 4-152, 4-154. (1) Stream flow deflectors, (2) weirs, (3) exclusion and control of livestock and (4) low head check dams to raise stream grade and water table should be added to the acceptable practices to remedy channel degradation as long as such structures to not create fish passage problems.

**4-154, Element e, Item 5.** Add revegetation as a preferred method to remedy stream channel degradation.(364)

**RESPONSE:** Guidelines need not include an exhaustive list of structural and non-structural improvements. We select specific improvement practices after a site inspection, which includes assessing impacts of projects on other beneficial resources, such as fisheries. While revegetation may be considered, it may not necessarily be preferred, depending on the results we want to achieve.

**11. COMMENT:** California Native Plant Society (CNPS) is distressed at the practices proposed to remedy stream channel degradation due to livestock grazing and timber harvest. Rip-rapping, in particular, is a solution that should only be used when all other methods have been tried and exhausted. CNPS requests that alternative restoration methods for bank stability be explored and tried first. Bioengineering methods which rely on vegetative solutions should be used. In extreme cases, rock rip-rap can be underplanted with willow and cottonwood, which results in thick vegetative growth when properly designed.(1214)

**RESPONSE:** We have modified Standards and Guidelines in Plan Chapter 4 to include several practices.

**12. COMMENT:** 4-155, Element L, Standards and Guidelines — 2. We recommend the following be added: all temporary earthen roads, which are not outsloped, shall be water-barred during the period 1 November to 1 June of each year. Water bars shall be installed every 100 lineal

feet or 10 foot change in elevation, whichever is less. Energy shall be dissipated from the diverted water and bedload decanted prior to entry into stream channels.(364)

RESPONSE: The decision on the frequency of water bars is made on a site-by-site basis. If segments of roads are not sloped or are far from a stream, water barring may not be appropriate. Decisions on the design of such roads will comply with water quality standards after on-the-ground analysis. Establishing such a standard at the Forest-wide planning level is inappropriate.

13. COMMENT: 4-156, Element L. Standards and Guidelines—11. This item should be a standard and modified to read, “no excavated material shall be allowed to enter the live stream.” Change “b” by deleting “when-ever possible.”(364)

RESPONSE: We have retained the item as a guideline in the Final Plan because decisions are made on a site-by-site basis. Under the Clean Water Act, the Forest is required to consider all beneficial uses. By following best management practices, we anticipate no fish barrier problems because of failing banks.

14. COMMENT: Priority be given to fencing and beaver removal from Lassen Creek as part of your stream restoration program in consideration of this stream's importance as spawning area for redband trout. (692)

RESPONSE: Manipulating animal populations is under the jurisdiction of the California Department of Fish and Game, although the Forest cooperates with the Department as much as possible on Forest lands. In the case of Lassen Creek, the issue is the impact of beaver dams. When dams obstruct Goose Lake redband trout migration, then the Forest and CDFG work cooperatively to remove the obstruction, which may also mean removing beavers. In some cases, as in portions of Lassen Creek, beaver dams form sediment traps that allow banks to stabilize; and dams provide rearing habitat which benefit the Goose Lake redband trout.

Changes in grazing strategy may be more effective than corridor fencing which poses problems of fence maintenance and water development for livestock. To say that priority should be given to fencing, as well as beaver removal, without evaluating the situation is inappropriate. The Forest Service is a multiple resource agency and tries to provide all resource users an opportunity to use the land as long as their activities do not negatively impact other resources. If changing grazing strategy is a means of eliminating impacts on the Goose Lake redband trout, then it is more in line with the Forest Service goals than strict corridor fencing.

15. COMMENT: Special consideration of Parsnip Creek, a highly productive and unique spring creek, any consideration for use of this creek for hydroelectric development be deferred.(692)

RESPONSE: The environmental analysis required by FERC for licensing as well as the Forest's analysis for issuing a special use permit for hydroelectric development will consider impacts on the environment, including impacts on the aquatic ecosystem. We believe that specifically addressing hydroelectric development on Parsnip Creek is inappropriate at the LMP level.

16. COMMENT: Excessively long period to take to rehabilitate degraded riparian areas. Forty years, [proposed Plan] p. 2-6, is simply too long to wait for an end to be put to the abuse and impairment of the productivity of these areas by livestock.(1257)

RESPONSE: We anticipate that it will take 40 years for the vegetation to respond, and to review and revise all allotment management plans. Changes in allotment management plans require analyzing *all* resources in an allotment — not only the water. Allotments that have the most degraded watersheds will have first priority for review.

17. COMMENT: Trees should not be felled into streams, lakes or bogs.(1295)

RESPONSE: Too many trees in a stream degrade watersheds; however, a paucity of trees results in streams with too little cover for fisheries, or insufficient hard structures to hold streambanks together. We decide on a site-by-site basis whether trees are felled within a streamside management zone or into the water.

18. COMMENT: We support the watershed and range improvements that improve the quality of water leaving the Forest, and look forward to their timely implementation. You may wish to consider coordinating the timing and locations of these improvements with land-disturbing practices to minimize sedimentation.(1316)

RESPONSE: Most watershed and range improvements are coordinated with other forest activities so that analyses are more efficient.

19. COMMENT: Elements f and k [in proposed Plan] — Water and Soils: The watershed restoration standard responding to management direction 1 should be amended to identify the quantity of restoration work that is to be achieved in a given year. We recommend that restoration occur in direct proportion to the level of degradation.(1316)

RESPONSE: The management direction is correctly stated: BMPs will be used to meet water quality objectives. In EIS Chapter 4 — *Environmental Consequences*, we state that under all alternatives, degraded watersheds currently

contributing to water quality degradation will be restored within 20 years. Remaining degraded watersheds will be recovered to meet water quality standards by the next 20 years. Most restoration will be accomplished through changes in allotment management plans which are prioritized according to riparian conditions (Forest Plan Appendix S).

**20. COMMENT: (DEIS) 3-146. Static watershed condition is unacceptable. Future management of the Forest should be directed toward improving watershed condition and not just preventing the current condition from becoming worse.(1317)**

**RESPONSE:** We agree. Static watershed condition is unacceptable. In EIS Chapter 4— *Environmental Consequences*, we state that under all alternatives degraded watersheds will be rehabilitated to meet water quality objectives. Activities in those watersheds that are not degraded and have watershed conditions below cumulative watershed thresholds must comply with BMPs to maintain water quality and prevent the watershed condition from exceeding cumulative watershed thresholds.

**21. COMMENT: Page 4-40: Add section j: Provide review of and comment on development proposals which have the potential to impact watersheds through the county review process.(101)**

**RESPONSE:** The Plan provides direction for activities conducted on Forest lands. It also provides direction for coordination with county government and other public agencies.

**22. COMMENT: We encourage you to continually work with the Bureau of Reclamation on any development or expansion of any increased water storage or use.(114)**

**RESPONSE:** Thank you for your comment. We will coordinate with the appropriate state and federal agencies on a site-specific basis.

**23. COMMENT: If you intend to restore all degraded watersheds by the year 2000 the conservation alternative is the logical choice.(1031)**

**RESPONSE:** Not necessarily. Because the Forest Service is a multiple-resource agency, the alternative we select as the preferred alternative reflects Forest Service goals of multiple-resource management. If various resources within the same area may be used without adversely impacting other resources, then we feel such uses are valid and should be allowed. Under all alternatives, we anticipate restoring watersheds that are degraded and currently

degrading in two decades. Remaining watersheds will be improved to a desired condition in the next two decades.

**24. COMMENT: Water (pp. 4-39 To 4-40): We recommend that criteria a through f be elevated to the level of standard.(1316)**

**RESPONSE:** Applying specific BMPs or determining watershed improvements is site-specific. Therefore, we consider these criteria as guidelines in the Plan. However, we must implement BMPs to meet water quality objectives; we changed that item from a guideline to a standard (Plan Chapter 4— *Standards and Guidelines*).

**25. COMMENT: The DEIS gives excellent treatment to the reduced budget alternative. This is particularly important because the budget for implementing the preferred alternative cannot be guaranteed. We support the reduced budget alternative's lowering of resource outputs to compensate for its reduced emphasis on watershed improvement projects.(1355)**

**RESPONSE:** Thank you for your comment.

**26. COMMENT: The information provided in Appendix S is helpful in the development of our section 319 program for nonpoint source management. (1355)**

**RESPONSE:** Thank you for your comment.

**27. COMMENT: To be equitable for tax payers, these improvements should be funded not only through the normal Forest budgeting process, but augmented as necessary by the industry that primarily caused riparian and water quality degradation. We find considerable inconsistency in the fact that livestock permittee fees have remained constant for many years while riparian areas have been allowed to degrade. (14)**

**RESPONSE:** Livestock permittee fees have not remained constant for many years; rather, they have fluctuated commensurate with a formula established by Congress. Because grazing fees are set by Congress, the issue is beyond the scope of the Forest Plan. Standards and Guidelines and Management Direction displayed in the Plan (Chapter 4) provide for protection and enhancement of riparian areas.

**28. COMMENT: To protect water quality and fishery habitat, MNF should include the following in all EA's for proposed activities:**

- in cases where small or large diversion dams affect the natural flows, the EA should evaluate whether the existing minimum flow is adequate to maintain water quality and protect fishery habitat below the dams from potential impacts from the timber harvesting and other activities.(548)

**RESPONSE:** Wording in EAs is not established in the Forest Plan. Consideration of past, present, and future activities as a result of a project is part of the environmental analysis process. The potential for activities to cause impacts is subject to environmental analysis and disclosure under NEPA regulations.

## 281 - Water Quality

**1. COMMENT:** We view with concern the Plan's statement (p. 3-37) that "approximately 37% (208,700 acre-feet) of the water produced on the Forest does not meet established water quality standards, and may be adversely affecting beneficial uses." We realize, however, that one of the goals of this planning process and Forest Plan is to apply future management practices that will result in attainment of water quality objectives. The Plan's recommended 40-year time period (p. 2-6) to achieve 100% compliance with water quality objectives is arguably a very long time frame. We understand funding constraints and the sensitivities of dealing with certain management practices, but it would appear that a more realistic time frame should be established. A long time frame could conceivably result in inaction during the 10- to 15-year life of this Plan. If the Forest ultimately decides that the 40-year time frame is most appropriate, the Plan and DEIS should better develop both the rationale for the time period and the actual commitments to be met during the life of this Plan. (194)

**RESPONSE:** In the EIS Chapter 4 *Environmental Consequences*, we state that under all alternatives, those watersheds that are degraded and are currently degrading will be improved to meet water quality objectives within the first 2 decades. Watershed improvements will most likely be achieved through review and revision of Allotment Management Plans. We will review and revise an average of four plans per year, using the priority listed in Appendix S based on riparian condition in allotments. Evidence of improvements in condition as a result of changes in management as well as structures will occur slowly in the riparian system. This is why the 40-year time frame is appropriate.

**2. COMMENT:** It is wishful thinking to expect water quality to improve significantly while maintaining high commodity outputs projected for the preferred alternative (or for any of the alternatives evaluated). (671)

**RESPONSE:** We disagree. We think that application of Best Management Practices (BMPs) will maintain and improve water quality. Watershed improvements through changes in management, as in Allotment Management Plans, should also effect substantial improvements in

water quality. Our goal is to improve all Forest degraded waters to meet water quality objectives.

**3. COMMENT:** (Primarily for temperature and/or sediment). Regional board staff support immediate implementation of those measures necessary to accomplish this goal. Achievement of water quality objectives should become and remain the highest priority on the Forest. (1068)

**RESPONSE:** All Forest activities are already subject to BMPs for water quality in order to maintain and improve water quality on the Forest. Achieving water quality objectives is a primary Forest goal.

**4. COMMENT:** Water is one of our most precious resources, and steps need to be taken to preserve the quality of water. The water quality improvement plan should be accelerated so that State standards should be met within 20 years instead of 50+ years. (1222)

**RESPONSE:** The projected 20-year period for recovering the most degraded as well as currently degrading watersheds, and the next 20-year period for recovering the remaining degraded watersheds, come from an acknowledgement that improvements in water quality may take time to become evident even after changes in management or implementation of watershed improvement projects. Recovery time depends on measures taken and condition of the habitat. Additionally, we feel an accelerated improvement schedule would unrealistically burden users dependent on Forest resources, and result in substantial economic loss to the local economy.

**5. COMMENT:** The proposal to comply with State water quality levels at the end of the fourth decade is positive. But again, we feel that those water quality levels can be reached much sooner if grazing practices were modified. (1295)

**RESPONSE:** Changes in Allotment Management Plans take time. Even after changes are made, recovery time will depend on changes made, structural improvements installed, and current condition of the habitat. Additionally, we feel an accelerated improvement schedule would unrealistically burden users dependent on Forest resources, and result in substantial economic loss to the local economy.

**6. COMMENT:** Water quality issues: We commend the DEIS's documentation of the problem and the measures it identifies to address the problem. Although the full restoration time frame is four decades, the DEIS makes a long-term commitment to restoration and proposes excellent monitoring and protection measures. (1355)

**RESPONSE:** Thank you for your support.

**7. COMMENT:** While we believe that improvements in water quality will result from the proposed protection and restoration measures, the extent of the Forest's water quality problems may warrant reductions in timber harvest levels and road building activities. Such reductions could help the Forest achieve compliance with water quality standards sooner than the projected four-decade time frame. (1355)

**RESPONSE:** We apply BMPs for water quality to maintain and improve watershed condition. We will determine streamside management zones on a site-by-site basis, which may curtail timber harvest or road building. Most of the methods for improving watershed condition will come through review and revision of Allotment Management Plans. Changes in these plans take time because gathering information required to make management decisions is a long process. Even with changes, improvements in water quality may not be immediately evident, depending on management changes made and the habitat's response to changes or structural improvements.

**8. COMMENT:** The Plan incorporates a misinterpretation of North Coast Regional Water Quality Control Board water temperature regulations that would make it impossible for grazing permittees to use the land. A Forest Service employee sought to confirm the Forest Service interpretation of State water quality regulations after the Plan was released. An employee of the North Coast Water Board agreed with their interpretation, however, that person was not authorized by the Regional Board to speak for it. The executive officer for the North Coast Regional Board stated that the thermal regulation was not intended to apply to cattle grazing practices, but to water diversions that are subsequently returned to streams and released from sewage treatment plants. It would be a good idea for the Forest Service to leave the interpretation of California laws and regulations to the State and those State agencies so authorized to enforce them. (1359)

**RESPONSE:** The Forest does not attempt to interpret State laws and regulations. The Forest was trying to ensure that its Plan was in compliance with State laws and regulations to avoid future conflicts. With respect to the applicability of water quality objectives to grazing practices, the State water quality objectives apply to both point and non-point sources of pollution. Regional Boards have consistently applied objectives to non-point source pollution since the passage of the State Porter-Cologne Act. Non-point sources of pollution include grazing, timber harvesting, and road construction. The Forest has been given the responsibility to manage and protect the water on National Forest System lands in California through a Management Agency Agreement. This is achieved by im-

plementing BMPs. The effectiveness of BMPs are measured using State objectives, such as water temperature. The overall objectives of the Forest water quality program are to apply BMPs and measure their effectiveness against the State objectives. If the objectives are not met, the practice must be changed.

**9. COMMENT:** We support the SOC alternative and the Modoc County Cattlemen's position. Stewardship has been proven to provide a solution to conflict and is an excellent method to address permittee concerns that we cannot live with, listed as follows: water quality control standards. (1071)

**RESPONSE:** Water quality control standards (water quality objectives) are not established by the Forest. Water quality management plans, developed for each hydrologic region, are under the jurisdiction of the State Water Quality Control Board, as provided for by the Clean Water Act, PL 92-500 and Section 208. Water quality objectives, therefore, are established by the State. To meet water quality objectives on national forests in California, the U.S. Forest Service (Pacific Southwest Region, Pacific Northwest Region, and Intermountain Region) developed Best Management Practices (BMPs) for the protection and improvement of water quality. These BMPs were certified by the State and approved by the EPA.

Furthermore, a Management Agency Agreement between the State Water Resources Control Board and the U.S. Forest Service provided for the U.S. Forest Service to retain its status as the management agency for implementing water quality management actions on California national forests. In accordance with the Agreement, the Forest Service developed policy which directs Forests to be responsible for identifying and correcting water quality problems, perpetually implementing BMPs, and identifying processes for improving or developing BMPs. The Plan provides direction for meeting these responsibilities in order to achieve water quality objectives that have been established by the Regional Water Quality Control Boards (Lahontan, Central Valley, North Coast, and Klamath Basin).

**10. COMMENT:** Water quality sections of the documents provide inadequate information to identify the designated beneficial uses or beneficial use standards by stream. The conclusion, which states that 37% of the waters within MNF do not meet water quality standards, is not supported by hard data. This conclusion is based on "visual observation and an assessment of beneficial uses."

The PRF requires the Forest Service to meet 100% of the beneficial use standards adopted by the State Water Quality Control Board (SWQCB). Has the State WQCB



indicated that the beneficial uses of identified streams are being degraded? (1217)

**RESPONSE:** According to the former Forest Hydrologist who did the analysis, "The analysis was done by compiling information from visual observation of gullies, stream banks, and gravel embeddedness, stream channel classification surveys, sediment samples, thermograph studies, channel stability observations, stream bank erosion measurements, stream transect measurements, photo points, and fisheries surveys. There is always error when compiling this type of data; however, it is an approximation, and the best available at this time." We included this information in revising EIS Chapter 3 *Affected Environment*.

Protection and enhancement of beneficial uses are the primary objectives of State water management plans. Because various water systems may have different beneficial uses associated with them, and different beneficial uses may have different water quality requirements, the beneficial uses must be identified before the correct water quality objectives are applied. The list of beneficial uses in the DEIS was used to identify which water quality objectives we would apply when determining if a listed stream meets water quality objectives.

**11. COMMENT:** On page 3-144 of the DEIS in Table 3-18, *Streams Not Meeting Water Quality Objectives*, the data presented appears to be unsupportable. on investigating and attempting to find the supporting data MNF personnel were unable to produce it, causing questions to be raised concerning the validity of the information presented. This failure to use substantiating data therefore invalidates the statement on page 4-105 of the DEIS which states causes that 37% of the surface water does not currently meet water quality objectives. (1283)

**RESPONSE:** According to the former Forest Hydrologist who did the analysis, "The analysis was done by compiling information from visual observation of gullies, stream banks, and gravel embeddedness, stream channel classification surveys, sediment samples, thermograph studies, channel stability observations, stream bank erosion measurements, stream transect measurements, photo points, and fisheries surveys. There is always error when compiling this type of data; however, it is an approximation, and the best available at this time." We included this information in revising EIS Chapter 3 *Affected Environment*. References for the determinations are in the Analysis of the Management Situation – Water Quality – found in the Forest planning records.

**12. COMMENT:** Implementation of an aggressive riparian recovery program would guarantee improved riparian conditions, water quality, and water flows. It has been demonstrated that protecting riparian areas can lead to

improved aquifers within the riparian zones, resulting in protected flows. Some presently intermittent stream courses could become perennial, which has also been demonstrated by studies. (1317)

**RESPONSE:** Thank you for your comment. We feel that implementing the Riparian Area Management Prescription (Plan Chapter 4, Rx 17) in Forest activities, including review and revision of Allotment Management Plans, will result in improved riparian conditions.

**13. COMMENT:** Implementation of BMPs does not constitute compliance with water quality standards *per se*. In the event that a Forest project, undertaken with or without appropriate BMPs, creates a water quality problem or causes a standards violation, the State and Regional Boards retain the authority to carry out their responsibilities for management of environmental quality. (1355)

**RESPONSE:** We implement BMPs to maintain and improve water quality and to recover our watersheds to meet water quality objectives. The Management Agency Agreement (1981) between the State Water Quality Control Board and the U.S. Forest Service (Pacific Southwest, Pacific Northwest, and Intermountain Regions) provides for agency coordination in the event that Forest actions result in a water quality standards violation with or without implementing appropriate BMPs. The Forest realizes that the State retains authority for protecting water quality and ensuring that land management activities do not adversely affect beneficial uses. However, the Agreement also provides that the Forest Service has authority and responsibility to protect water quality on the lands which it administers. As a result, Forest Service policy directs Forests to be responsible for developing and improving BMPs.

**14. COMMENT:** Under water monitoring (p. 4-39 of the Plan), benthic invertebrate diversity and stream channel substrate condition should be included parameters at least on Class I streams that have been degraded. (15)

**RESPONSE:** Under the revised monitoring procedures, we will monitor stream channel substrate composition. Benthic invertebrate diversity will be more difficult to monitor; but we may include it if other parameters are not sufficient to indicate changes in systems. Monitoring benthic invertebrates is a long process and expensive if non-Forest personnel must be contracted to perform the job. Furthermore, benthic invertebrates can be very specific in terms of the type and size of substrate they are in, water temperatures, water velocities, etc. This means that to monitor benthic invertebrate diversity with accuracy, monitoring requires extensive sampling before and after projects because of the narrowness of microhabitats as well as the annual and seasonal variation that may influence diversity measurements. In some instances, such re-



finer analysis may be required. For example, if benthic invertebrates are the only organisms using a Class I stream, the organism may be monitored. However, for most, we may be able to determine changes in systems by monitoring other parameters, such as substrate composition, biomass of fish, water clarity, etc.

**15. COMMENT:** Actions such as doubling the SMZs or excluding livestock should have been taken before the TOC [threshold of concern] was reached. Now that it has been exceeded, management direction should be given to exclude grazing, logging and OHV use in their drainage until they have recovered. Why weren't Rush and Cottonwood Creeks given priority 1 status for rehabilitation? (1260)

**RESPONSE:** The Plan specifies management direction for recovery of degraded watersheds to meet water quality standards. To do so may require exclusion or curtailment of other resources. We will make those decisions on a case-by-case basis. Implementing BMPs should prevent further degradation of habitat and allow for recovery of watersheds.

We have prioritized rehabilitation efforts according to streams that are already degraded and continuing to degrade (Plan Appendix S). Cottonwood Creek exceeds the TOC mainly because of its sensitivity to adverse impacts from additional activities, and because of its current condition as a result of a natural occurrence. It is degraded but currently stable. As stated in EIS Chapter 3, Rush Creek, while exceeding its threshold, is improving. Although not listed as a "priority" stream for watershed improvements, Rush Creek contains an endangered species – the Modoc sucker – and is therefore undergoing watershed improvement in concordance with the Modoc Sucker Recovery Action Plan.

**16. COMMENT:** There are no area-specific directions to resolve the water quality problems identified for Cottonwood, Dutch Flat, and Rush Creeks (Plan 3-39) other than "...minimize cumulative watershed impacts on stream channel condition and water quality by assessing the effects of each land-disturbing activity prior to its undertaking." This direction sounds good, except that it is applied to other streams not identified as having water quality problems in the AMS. The MA direction should provide some specific action to resolve the identified water quality problems in the two MA's – Highgrade and North Adin. (107)

**RESPONSE:** We will determine specific actions for implementing appropriate BMPs and watershed improvement plans on a site-by-site analysis basis. This is true for all watersheds on the Forest. We will begin recovery of degraded watersheds and will prioritize them according to level of current degradation and stability of the water-

shed. We will restore streams that contain endangered species as outlined in recovery or action plans for the respective species. In the case of Rush Creek and Dutch Flat Creek, the species is the Modoc sucker, and recovery efforts have already begun.

**17. COMMENT:** Plan 4-40 – Water – e. "Completion target is two decades." Why wait? Is this an excuse to do nothing for the first 10 years? (126)

**RESPONSE:** We already implement BMPs for water quality for all Forest activities. We will implement Forest-wide Standards and Guidelines immediately upon approval of the Record of Decision. However, it will take 20 years to improve water quality in our watersheds that are currently degraded and degrading; because funding and personnel are limited, and gathering and analyzing data required to review and revise Allotment Management Plans is a time-consuming process. In most cases, we must make changes in grazing management if watershed structural improvements are to be effective. In addition, improving water quality after changes in management or installation of structures may not be immediate, depending on the management change, the type of structure installed, or the responsiveness of the watershed.

**18. COMMENT:** Plan 4-153 Element e 1-c: What is the advantage of providing shade on intermittent streams? (1153)

**RESPONSE:** Shade helps maintain water temperatures, for which water quality objectives have been established. Shade and water temperature of an intermittent stream can affect water quality in two ways. If the intermittent stream flows into a perennial stream that has beneficial uses, lack of shade on the intermittent stream can result in a high temperature inflow into the perennial stream, thereby affecting the perennial stream's water quality. If the intermittent stream itself has beneficial uses, then the water temperature must be maintained for the stream to meet water quality objectives.

**19. COMMENT:** P. 4-154 Elements f & k 3-b-2: How do you know that diurnal water temperature variations didn't exceed 5°F. and/or 72°F. naturally? (1153)

**RESPONSE:** We changed the Standard in the final Plan. See the Riparian Area Management Prescription (#17) in Plan Chapter 4. **@COMMENT = COMMENT:** Plan 3-26; 4-150, 153, 154: Shade vegetation requirements should only be applied to streams that have year-round flows. Most Class 2, 3 & 4 streams do not carry water during the critical July-September period. What data establishes a 5°F. water temperature increase as critical to fish habitat? The EIS and Plan needs a stream classification system or table to show streams that qualify for shade retention. What data justifies an 80% crown closure vs.

40% or 50%, etc.? Streams that don't require shade retention should not be managed as such, and should have a 50-foot SMZ. (126)

**RESPONSE:** We will apply shade requirements to streams that have or can affect streams with beneficial uses in order to meet water quality objectives for temperature. The objectives are not restricted to any particular period of time. See the Riparian Area Management Prescription (#17) in Plan Chapter 4 for revised water temperature standards. The 80% crown closure is set forth in a guideline and may be increased or decreased if site-specific information indicates otherwise. The width of an SMZ is not merely determined by shade requirements. Widths are established on a site-specific basis and may be determined by factors such as stability of slopes, shade requirements, or beneficial uses.

**20. COMMENT:** Plan 3-38; 4-150, 152: Why is there a difference between natural debris and logging related debris? If debris is beneficial to the streamcourse, does the source make a difference? There are other ways to ensure large debris beside leaving large volumes of mature timber within the SMZ. (126)

**RESPONSE:** Logging debris can be detrimental if too much is left in the channel. For example, it may clog the channel and flush out in a torrent, causing damage downstream. The preferred large woody debris is natural recruitment or, if natural recruitment is not available, artificially placing sound, large logs. Allowing for natural recruitment by leaving the SMZ intact is the easiest way to maintain a source for large woody debris. In addition, large trees in the SMZ also provide late seral wildlife habitat and stream shade.

**21. COMMENT:** Plan 4-105: Where was testing done and at what time of year to determine that 30% of the total water quality failure is caused by erosion and sedimentation? (126)

**RESPONSE:** The analysis was Forestwide. Erosion and sedimentation that lead us to rate watersheds as degraded are evident at all times of the year. The most recent report was compiled in March 1988, but the field assessment occurred mostly in the summer months. Specific sites are included in the *Analysis of the Management Situation – Water Quality* in Forest planning records.

**22. COMMENT:** DWR also notes that the documents express concern over the lack of water for new stockpounds and wetlands due to over-appropriation. Vegetation management should not have been dismissed as a source of water for these purposes. The State Water Resources Control Board has issued permits to appropriate water if an applicant could demonstrate that vegetation man-

agement would salvage enough water to offset the consumptive use. (364)

**RESPONSE:** Thank you for your comment. The Forest will explore all avenues to improve water quality and quantity; and we have not dismissed vegetative management. The *Analysis of the Management Situation – Water Quality* includes an analysis of the potential and feasibility of increasing water availability through vegetative management. The AMS in the Forest planning records in the Forest Supervisor's Office.

**23. COMMENT:** Medicine Lake (61): Where water is scarce, riparian areas need to be protected. This does not just refer to shade, but a buffer along the stream to keep temperatures of run-off low and filter out sediments. Both Paynes Creek and Bullseye Lake have trout, which are sensitive to both these influences. (708)

**RESPONSE:** The Riparian Area Management Prescription (Plan Chapter 4, Rx 17) outlines direction for maintaining water quality of riparian areas, including Paynes Creek and Bullseye Lake.

**24. COMMENT:** Hydroelectric development that would have a negative impact on fisheries and/or recreation should not be allowed. (1048)

**RESPONSE:** We will review impacts on fisheries and recreation from a hydroelectric development during the licensing process by FERC and during the environmental analysis performed by the Forest before issuing a special use permit.

**25. COMMENT:** I would like to see the section on water quality include a write-up on Giardia. (1048)

**RESPONSE:** Giardia is so widespread that to address it in the Forest EIS or Plan is inappropriate. The Forest Service recommends treating raw water or taking water from home (see Forest Service brochure, *Is the Water Safe? Think Before You Drink* GPO:1985-0-482-883, 1985).

**26. COMMENT:** The mandated number of miles designated for government stream projects should be increased to 3 miles per year instead of reduced! (1222)

**RESPONSE:** We anticipate that we can improve stream habitat through structural means (e.g. log weirs, bank revetment for erosion control) at a rate of 1.5 miles per year. We can make improvements through non-structural means (e.g. changes in grazing strategy, changes in camping site locations) at a rate of approximately 10 miles per year.

**27. COMMENT:** DEIS 4-136, 137 (Adverse environmental effects which cannot be avoided):

- What are State water quality objectives for sedimentation and water quality? How far below standard are Forest practices? Schedule methods for meeting standards. What is duration of temporary impacts?
- If standards are not being met now and have not been met in past, what assurance is there that standards will be met in the future? Why have they not been met? (1248)

RESPONSE: Factors influencing water quality cover many areas, including: bacteria, biostimulatory substances, chemical constituents, color, dissolved oxygen, floating material, oil and grease, pH, pesticides, radioactivity, sediment, material that can settle, suspended material, tastes and odors, temperature, toxicity, and turbidity (taken from the Water Quality Control Plan Report, Vol. I). They may vary depending on the Region in which a water system lies. To list all water quality objectives in detail is beyond the scope of the Plan.

The duration of temporary impacts depends on the sensitivity of the beneficial use involved, and is determined on a site-by-site basis.

Current Forest practices aim to meet water quality objectives through the implementation of State certified and EPA approved BMPs for water quality in all Forest activities. In EIS Chapter 3 *Affected Environment*, Table 3-18 lists objectives that are not being met in degraded streams. Causes for past deficiencies in meeting water quality objectives are described in the section on water quality. In Chapter 4, *Environmental Consequences*, we state that under all alternatives, those watersheds that are degraded and currently degrading will be improved to meet water quality objectives in two decades. The remaining degraded watersheds will be improved within the next two decades. The priority of work during these two periods will depend on the condition of riparian areas, beginning with the worst.

**28. COMMENT: Plan Appendix N:**

- What have been funding levels in past decade for range and riparian area enhancement? Annual funding needs and decadal funding to meet future schedule.
- Which streams have received problem correction since the date priorities were established, 1984; since BMPs adopted, 1979; since MAA signed, 1981?
- How far have site-specific analyses of range and riparian conditions progressed? Completion date? Budget past, present, future?
- Priorities are phased over two decades. Will site specific analyses take two decades? Relation of these priorities to other Forest priorities. (1248)

RESPONSE: We have identified the need for riparian improvement for the past decade. Range and riparian

improvements have been implemented, such as the Lassen Creek Watershed and Fisheries Habitat Improvement Project, the Sweagert Flat Improvement Project (upper meadow in Ash Creek drainage), and Dutch Flat Creek Improvement Project. We have implemented site-specific projects in many drainages. Revision of Allotment Management Plans is prioritized according to riparian condition (Plan Appendix S).

We can analyze all the sites in less than two decades. However, site-specific analysis should be performed as close to project implementation as possible so that the information is current both for stream restoration projects and stream projection projects. Because funding and personnel are limited, and reviewing and analyzing information for Allotment Management Plans is a long process, two decades for recovering watersheds to meet water quality objectives is reasonable. We anticipate that it will also take two decades for watersheds to recover after management strategies have been changed and stream improvement structures installed.

Applying BMPs for water quality is management direction for all Forest activities. Maintaining and improving water quality is a high priority on this Forest with respect to other activities.

**29. COMMENT: Water monitoring plans should include periodic testing of drinking water made available to the public and staff. Water quality standards and guidelines for use of groundwater supplies should be indicated. Disposal of sewage and solid wastes on Forest lands, and associated impacts on natural resources should be addressed. (1316)**

RESPONSE: We *do* monitor water for potability. Results are available at the Forest Supervisor's Office and at the District Offices. A schedule of testing is also available at those sites, although it is not included in the Plan. Regional Water Quality Control Boards establish water quality objectives for groundwater and disposal of sewage and solid wastes. Forest practices, including implementation of BMPs for water quality, must meet the Boards' requirements. Impacts are determined on a site-by-site basis.

**30. COMMENT: Water ([Plan] pp. 5-16 To 5-17): Water quality management and watershed conditions. The "variation from standard requiring further action" for each of these resources should be amended to consider the failure of the Forest Management Plan to improve existing degraded conditions as well as monitoring to determine if areas now meeting standards are also degrading unacceptably. (1316)**

RESPONSE: The EIS *does* address improvements of degraded and degrading watersheds. In Chapter 4 *Environmental Consequences*, we state that under all alternatives, degraded watersheds will be improved to meet water

quality objectives. Those that are degraded and continuing to degrade will be improved within the first two decades. The remaining degraded watersheds will be improved by the next two decades. Watersheds not currently degraded will be maintained in at least acceptable condition by implementing BMPs for water quality. EIS Chapters 2 and 4 discuss alternatives and projected impacts.

As activities are implemented, we monitor watershed condition to determine if condition is worsening as a result; therefore, the "deteriorating condition" variation is appropriate. This statement would cover those watersheds that are still degrading, since their condition would appear to be worse than at the time of the site inspection for monitoring baseline information. We are trying to stop the degradation and then improve the stream condition.

**31. COMMENT:** We are concerned that water quality be protected but we find the DEIS lacking in substantiation of the need for the measures proposed. We find no justification for the widths of riparian zone, no indication of the miles of stream affected (perennial or intermittent), no justification for shade requirements on intermittent streams, a baffling dependency on "natural" debris as beneficial compared to logging debris (why is a cull log less beneficial to the stream than a merchantable tree that is allowed to deteriorate and fall into the stream?). Further, we are unable to determine the costs, in commodities foregone, that will result from these apparently arbitrary provisions. (1258)

**RESPONSE:** Plan Appendix M explains how streamside management zones were developed. If a site inspection indicates that a wider or narrower SMZ is required, that decision is made at the project level.

The percentage of waters on the Forest that do not meet water quality objectives are listed in EIS Chapter 3—*Affected Environment*.

Shade is required for maintaining temperatures to avoid adversely impacting beneficial uses (water quality standard). If an intermittent stream flows into a stream with beneficial uses, shade may be required to prevent intermittent flows from causing increases in water temperature of the receiving stream. If the intermittent stream has beneficial uses of its own, shade may be required to maintain water temperature of the intermittent stream itself. The guideline is to maintain 80%, with possible increases or decreases resulting from a site inspection.

Cull logs, though they may remain in a stream long enough to backfill with sediment, have the potential to wash out and cause downstream damage. Sound, large logs are needed to maintain debris jams over many years and

provide the nick points required for energy dissipation to reduce downstream scouring.

Costs depend on the SMZ width and the management within it. Total exclusion is not necessarily the result of establishing an SMZ. This decision is made at the project level, and is, therefore, not addressed in the Plan.

**32. COMMENT:** I support the PRF because — it will protect and improve Forest water sources and creeks by controlling and limiting livestock grazing, timber harvest, and road construction. (7)

**RESPONSE:** Thank you for your support.

**33. COMMENT:** The Department of Water Resources (DWR) comments that there is no significant difference in water yield and water quality impacts for the management alternatives, except for alternative industry. DWR recommends deleting this alternative because of its potential for adverse water quality impacts. (364)

**RESPONSE:** We are required by the National Environmental Policy Act (NEPA) to display and analyze a reasonable array of alternatives. Because of its positive economic effects, we consider the Industry Alternative (IND) reasonable; and, therefore, we analyzed it in depth. We did not choose IND as the Forest's Preferred Alternative, in part, because of its potential for adverse effects on water quality.

**34. COMMENT:** Water quality should be maximized. (1048)

**RESPONSE:** Watersheds on the Forest will be recovered to meet water quality objectives, set by the Regional Water Quality Control Boards for compliance with the Clean Water Act.

**35. COMMENT:** I would like to give my approval to the Forest Service Plan. The waters in the South Warner Wilderness are unfit to drink; cattle muddy the creeks and their feces sit in the bottom of the lakes. (1049)

**RESPONSE:** Thank you for your support.

**36. COMMENT:** [Plan] P. 4-152 Element d 2: Change to "where stream channel degradation has occurred, undertake erosion control measures." (1153)

**RESPONSE:** The Range portion of the Riparian Area Management Prescription (Rx 17) to which you refer specifically addresses range issues. Other causes for channel degradation and erosion control measures are covered in their respective elements.

**37. COMMENT:** [Plan] P. 4-40 21 F: Redundant — same as e. (1153)

**RESPONSE:** [Forest-wide Standards and Guidelines for Water] Item 6 formerly e.) outlines procedures for improving degraded watersheds. Item 7 (formerly f.) explains that water quality, with respect to in-stream flows for beneficial uses, will be maintained. The distinction is that Item 6 is direction for improvement while Item 7 is direction for protecting watersheds.

**38. COMMENT:** DEIS Table 4-18 (p. 4-106): Notes that "Estimated Percent of Water Yield Meeting Objectives" will reach 100% under the PRF by the 4th decade. What are priorities for the 3 decades (only 2 decades are given)? (1248)

**RESPONSE:** We will improve watersheds primarily through changes in Allotment Management Plans, although other activities will also provide watershed improvement. These plans are prioritized in Plan Appendix S according to the current condition of the riparian system. After the first 2 decades, during which watersheds that are degraded and still degrading will be improved, remaining degraded watersheds will be recovered in order of condition, beginning with worst.

**39. COMMENT:** To protect water quality and fishery habitat, MNF should include the following in all EAs for proposed activities: pre-project analysis which identifies the existing water quality condition of the waterways which may be potentially impacted by sedimentation caused from the proposed activity and other activities. This analysis must include the cumulative impacts to water quality from all activities. The analysis must be conducted by a professional water quality biologist. (548)

**RESPONSE:** We evaluate all Forest activities on a site-specific basis for impacts to resources, including water quality. Applying BMPs for water quality prevents impacts to aquatic resources. We study cumulative watershed impacts on activities affecting second and third order streams (DEIS p. 3-145ff.). Typically, the Forest Hydrologist, Forest Soil Scientist, or other qualified personnel conducts the study.

**40. COMMENT:** [Plan] 3-37: Poor water quality in the Lost River below Malone Dam is responsible for keeping fish production at low levels in the Lost River in Oregon. (1317)

**RESPONSE:** The Forest is responsible for preventing downstream degradation of water quality as a result of its activities; we will maintain and improve water quality on the Forest through watershed restoration projects and implementation of BMPs for water quality. However, managing off-Forest activities that may affect water qual-

ity is beyond the Forest's jurisdiction and the scope of this Plan.

**41. COMMENT:** Proposed timber sales and other proposed activities may impact water quality and fishery habitat in Parsnip Creek, Pine Creek, S. Fork Pit River, Ft. Bidwell Creek, Twelve Mile Creek, and East Creek watersheds, including Cave and Lily Lakes drainages, and Medicine Lake Caldera and Mill Creek Meadows drainages. Water quality and fishery habitat must be protected by your Forest at all times in accordance with Section 1604 of the NFMA and Section 319 of the Clean Water Act. (548)

**RESPONSE:** By applying BMPs and Forest-wide Standards and Guidelines for water quality, we will maintain or improve water quality, including fishery habitat. BMPs were developed by the Forest Service and certified by the State Water Quality Control Board and approved by the Environmental Protection Agency for compliance with the Clean Water Act.

**42. COMMENT:** Where existing water quality and fishery habitat requirements are not being met, or may not be met, timber sales should be delayed or terminated, grazing allotments modified or reduced. (671)

**RESPONSE:** Delaying or curtailing Forest activities where water quality is not currently being met may not necessarily help the situation. Applying BMPs to all Forest activities should prevent further degradation of riparian systems during the course of those activities, including timber and livestock grazing. We may improve watersheds, including fishery habitat, through changes in grazing management or through structural improvements funded by a variety of sources, e.g., timber and range. We will determine how to maintain or improve water quality on a site-by-site basis.

**43. COMMENT:** Plan, Appendix S: Why weren't Cottonwood and Rush Creeks given priority 1 for correction since they were identified as exceeding watershed threshold limits? (107)

**RESPONSE:** We have placed a high priority on rehabilitating streams that are currently degraded and continue to degrade. We rated Cottonwood Creek as exceeding its threshold mainly because of (1) its sensitivity to adverse impacts from additional activities, and (2) its current condition as a result of a single natural occurrence—not because it is still degrading. As stated in EIS Chapter 3—*Affected Environment*, Rush Creek is critical habitat for an endangered species, the Modoc sucker, and is therefore undergoing watershed improvement in conformance with the Modoc Sucker Recovery Action Plan. We

are already implementing erosion control measures in Rush Creek to lower its CWI rating.

## 283 - Water Quantity

**1. COMMENT:** Plan de-emphasizes the possibility of water yield increases and the value of snowpack management. On pages 2-6 and 3-37, the Draft Plan states that the opportunity to increase water yields on the Forest is limited. We feel that options for managing vegetation to increase water yield should be left open, pending upcoming results from studies by U.C. Berkeley and others.

We suggest an additional guideline in the Forest Standards and Guidelines—water (page 4-40), “Recognize opportunities for enhancing water supplies and quality gains through vegetative management.”

On page 3-37, it is unclear what PG&E would be asked to give up to alleviate forest and downstream water shortages. (707)

**RESPONSE:** We disagree. The Forest will continue to review new literature concerning opportunities to increase water yields. Current literature review indicates that this Forest has little opportunity for increased water yield. To obtain increased water yields, the following criteria must be met:

- The area must produce runoff (this eliminates about 1/3 of the Forest).
- The area must be outside of Wilderness Areas.
- The area must be vegetated with commercial forests.
- The area must receive at least 25 inches of precipitation (as our water yield analysis has shown) to have the capability of producing additional water through vegetation manipulation.

When other factors such as dispersion are considered, the potential is minimal for increased water yields on the MNF.

**2. COMMENT:** Continued downplaying of Forest management to increase water production. Explain why there are few opportunities to add to existing water supplies. Draft Forest Plan, page 3-37, says there are few opportunities, but it doesn't explain why. Don't five tree height diameter patches work on the Modoc? Doesn't heavy partial cutting work? What size of cut patches did you use in analyzing the water alternative? Would increased yields from forest management practices have to be greater than natural variations to consider them worthwhile? (1021)

**RESPONSE:** See the previous response for an explanation to the first portion of your comment. Only about

165,000 acres on the Forest has the potential for increased water yields. Most of this potential increased yield would be lost due to inadequate or nonexistent storage facilities. Or it would collect in saline-alkali lakes where it becomes unuseable due to the high salt content. After considering the above, the Forest Plan ID Team, on the advice of the Forest Hydrologist, chose not to do an intensive modeling assessment for increased water yields.

**3. COMMENT:** No references in the LMP documents to climate change, drought planning, or anything else that suggests the FS is prepared to respond to deleterious climatic events. This is a serious oversight.

Once a drought event is underway and its effects become apparent, the FS must have authority to make swift and major changes in management activities to prevent long-term damage to the landscape and its outputs (e.g., major cuts in grazing AUMs, and deferral of regeneration cuts). Authority must extend to allow significant negative departures from timber and grazing targets for MNF. Reduced targets must remain in effect until precipitation returns to a viable level for, say, 5 yrs.

Although my time is limited, I would be glad to work with MNF on drought planning on a volunteer basis. But this assumes you recognize the need, so my time is not wasted. (1351)

**RESPONSE:** Our Forest has very limited opportunity to respond to water quantity situations caused by fluctuating climatic events. To protect watershed condition, soil productivity and water quality during drought conditions, an increased effort in wildfire suppression is implemented throughout the Forest. In addition, livestock grazing is curtailed early in the season when necessary to eliminate overuse which could result in accelerated soil erosion and water quality degradation problems. This has often resulted in significant departures from the permitted AUMs.

Our Forest is always open to new ideas and suggestions. We encourage you to visit and work with us on drought planning.

## 291 - Water Rights

**1. COMMENT:** No consideration [was given] to the impact of the private intermixed land and the miscellaneous water sources. (1158)

**RESPONSE:** We consider private land needs as well as other resources (i.e., fish and wildlife) when the FS applies for water rights. When the Forest applies for a water right, it is applying for that water or portion thereof that is

unappropriated and not currently used by downstream water users.

## 293 - Meadows

**1. COMMENT:** On page 3-80, the DEIS discusses the opportunities of using fire for range improvement. Use of fires in management of meadows on the Modoc NF will be detrimental to species that depend on willow clumps for nest sites. Removal of shrubby vegetation has been especially detrimental to willow flycatchers elsewhere in its range. The DFG recommends that meadows be surveyed for existing and potential willow flycatcher populations and that shrub growth be protected and enhanced in areas where the vegetation supports species that are dependent on this habitat.(364)

**RESPONSE:** Fire as a management tool for rangeland vegetative manipulation projects is only one of the many tools available for this purpose. We would not necessarily use fire for vegetative manipulation of meadows. Our goal in riparian areas is to increase the density and size classes of willows, where they are part of the potential natural vegetation. The Riparian Prescription (Plan Chapter 4) ensures that willow flycatcher habitat will be enhanced on the Forest.

**2. COMMENT:** California Native Plant Society objects to the management direction for meadows, seeps and springs which recommend "leaving strips or small clumps around meadows"; and allowing cover and canopy reductions. The importance of meadows and their edges to wildlife and diversity, require special management. CNPS has developed a meadow management prescription which we urge the MNF to adopt. (1214)

**RESPONSE:** We recognize the importance of riparian habitats on the Forest. The Riparian Prescription applies to essentially all Forest riparian areas. The goal of this prescription is to manage riparian habitats for resources dependent on them (wildlife, fish and water). Timber harvest will be allowed within riparian areas only when it is not detrimental to riparian-dependent resources. Standards referred to in the Riparian Prescription relate only to wet meadows, seeps, and springs. Timber harvest is only permitted on 5% of the area within 200 feet of the seep, meadow or spring, per decade. The goal for shrub management is to increase the shrub component of these areas, which is currently lacking. These standards are modified in the final Plan so that they are less confusing.

**3. COMMENT:** Harvesting timber from meadow edges [should] only occur where it can be clearly demonstrated that a lowered water table and/or FS mgt. practices are not responsible for the problem. (1214)

**RESPONSE:** We agree. We believe that the Riparian Prescription provides sufficient guidance to ensure that management activities within these areas will be conducted only if riparian-dependent resources are maintained or improved. We will resolve potential conflicts within riparian areas in favor of riparian-dependent resources.

## 295 - Riparian Areas

**1. COMMENT:** It is imperative that livestock be fenced out of riparian areas to insure that further stream bank degradation does not take place and to afford damaged areas an opportunity to recover. (15, 107, 364, 671, 692, 1048, 1222, 1285, 1317, 1382)

**RESPONSE:** Fencing riparian areas is one method of proper livestock management and needs to be considered on each allotment during development of the Allotment Management Plan, along with other methods of controlling livestock. Fencing riparian areas does not necessarily mean that livestock will never graze these areas again. Often fencing is installed to provide flexibility in grazing systems where previously only season-long grazing existed. Several Forest riparian areas may require complete or temporary grazing exclusion to promote recovery, and meet State water quality objectives. Merely riding, salting, or developing water will not resolve riparian area grazing conflicts as will fencing.

The policy of the Forest Service is to give "preferential consideration to riparian dependent resources..." (FEIS, Affected Environment), and fencing may at times be required to fully implement this policy.

**2. COMMENT:** Fencing the riparian areas from livestock will not correct the problem. (80, 479, 697)

**RESPONSE:** See response above.

**3. COMMENT:** 30% Utilization level for herbaceous species within riparian areas which are grazed season long. This standard will have a greater impact to livestock permittees than any other aspect of the documents, yet it is an impact which is not even addressed in the DEIS. It is likely that most riparian areas will reach the 30 percent utilization level of riparian areas early in the grazing season. (517, 574, 579, 1063, 1217, 1296, 1387, 1389)

**RESPONSE:** We agree that this guideline is restrictive, and does not need to be applied to all riparian areas across the Forest. Generally, season-long grazing in riparian areas causes erosion and detrimental stream channel and vegetative changes; and is, therefore, not compatible with



riparian-dependent resources unless utilization is very light.

We refined this guideline to apply to high priority streams only (Rosgen C1, C3-6, B-6, and F3-5 streams. See Plan Chapter 4—Riparian Area Management Prescription (#17)—and Appendix T). These generally are low gradient streams that erode easily and have a high potential for both damage and recovery. Other channel types are more resistant to livestock grazing, and the 30% utilization standard is not necessary. These latter channel types still have the same cover requirements as specified in Standards and Guidelines.

This utilization level for herbaceous species within high-priority stream types and riparian areas under season-long grazing is based on the level of utilization that will leave a 4- to 6-inch herbaceous stubble height at the end of the grazing season. This stubble height provides sufficient herbaceous forage biomass for plant vigor maintenance, streambank protection, and sediment entrapment during the following spring runoff. A shift to shrub use (except highly palatable shrubs) does not generally occur if 4 inches of herbaceous stubble remains (Clary and Webster, 1989). A higher level of utilization is allowed if grazing occurs early enough in the season to allow regrowth.

**4. COMMENT: 4-156, Element L [Facilities], item 12. The following should be substituted: "No streamside gravel borrow shall be allowed. All quarried gravel shall be taken from outside the riparian protection zone and all borrow pits shall be restored to native vegetative cover immediately upon completion of excavation activities." (364)**

**RESPONSE:** Thank you for your comment. Some of your suggestions have been incorporated in the Standards and Guidelines.

**5. COMMENT: Riparian Rx: p. 4-150 S&G c. - Change (S) to (G). Add "Streamside shade is provided by topography, vegetation, overhanging banks, rocks, etc." P. 4-150 S&G d. and e. - Change from (S) to (G). P. 4-151 S&G a.2. - Delete last sentence. Change "all classes of animals" to "wildlife and livestock." (73)**

**RESPONSE:** Thank you for your comment. Some of your suggestions have been incorporated into the Standards and Guidelines.

**6. COMMENT: We question why the high priority rating, S-1 (DEIS Plan). (984)**

**RESPONSE:** Your comment refers to prioritizing range allotments for analysis in Appendix S-1. We prioritized allotments for range analysis based on several factors,

including established and perceived needs according to range condition, and time elapsed since the last analysis.

**7. COMMENT: Plan 4-33 - Riparian S&G: c. This conflicts with Plan 3-27 which states that only by livestock exclusion could riparian conditions be most successfully improved. Structural and non-structural "improvements" are a waste of effort and funds if the underlying grazing management problems are not corrected first. Please clarify. (107)**

**RESPONSE:** We agree that, in many cases, structural range improvements alone are not effective in changing the ecological condition of a land unit unless the overall grazing management is also conducive to changing ecological conditions. The draft Plan 3-27 mentions several grazing strategies besides livestock exclusion that can improve riparian conditions, e.g., spring and early summer grazing, rest-rotation grazing, double rest-rotation, and changing class of livestock.

**8. COMMENT: 4-150. Standards and Guidelines—c. should be modified: "Modify land management activities on adjacent lands in the drainage to maintain acceptable water quality levels and limit siltation." 4-151. Standards and Guidelines—c should be modified: "Where possible, 100% of the streambank will be maintained in a stable condition." (364)**

**RESPONSE:** We revised those standards and guidelines in the final Plan. Thresholds of Concern are established and identified at the planning level to provide a caution for site-specific analysis and activity proposals. These proposals are analyzed case by case. If they appear to have unacceptable on-site or downstream effects in conjunction with other activities, the project is deferred, discontinued or modified to reduce potential impacts. Plan Chapter 4 provides bank stability guidelines.

**9. COMMENT: Cattle will not be allowed in streams that have exceeded the Threshold of Concern (TOC) or where the stream has reached 75% of the TOC limit. Livestock will not be allowed in areas designated for wildlife high habitat capability unless the area is at and maintains high habitat capability.**

**Livestock will not be allowed to jeopardize more than 20% of bank stability, even temporarily.**

**Timber harvesting will not take place in drainages that have exceeded the TOC limit. Geothermal, gas and oil resources extraction and development is prohibited in riparian areas. (500)**

**RESPONSE:** See response above.

**10. COMMENT: Riparian areas. Standards and Guidelines should be strictly enforced. Inclusion of monitoring and enforcement provisions in the final Plan. (1068)**



**RESPONSE:** Those provisions are in the Plan, Chapters 4 and 5.

**11. COMMENT:** I recommend that the Standards and Guidelines be written to allow the Forest Service and permittees a practical and workable timeframe in which to address needed riparian improvements. (1072)

**RESPONSE:** We agree that the Forest Service and permittees need time to solve riparian area problems. However, we have an obligation to correct our riparian area and water quality problems within approximately 20 years, allowing 20 more years for complete recovery.

**12. COMMENT:** Riparian Rx: Range Utilization—section 1.a.3. says shrubs are to be managed to reach at least 50% of the natural site potential. Calif. Native Plant Soc. requests that the figure for shrubs be increased to 80% of site potential. (1214, 1317)

**RESPONSE:** Desirable shrub potential depends on the ecological type of the vegetation community being considered, and the management objectives for that vegetation community. An example is the willow/wooly sedge plant association (Kovalchik 1987), sites which occur at lower and middle elevations throughout the Forest. Willow canopy cover can reach 80-90% in this community; at this level, livestock grazing opportunities are limited. If this community is managed to maintain a willow cover of 50%, livestock grazing is possible while maintaining suitable fishery habitat. The willow distribution is more clumpy and less continuous, which favors optimal willow flycatcher nesting habitat. The manager may well opt for maintaining the community at this level of natural site potential because it provides her/him with the most flexibility. In this example, maintaining shrub potential at 80% of site potential is too limiting.

We want to retain flexibility to manage areas according to ecological potential, when that potential is known. Riparian areas are now being classified according to ecological type on the Forest.

**13. COMMENT:** [Riparian Rx] Element E 3. [Timber] (page 4-153) would allow vegetative type conversion of riparian areas when it specifically protects or enhances riparian-dependent species. How can a type conversion of riparian ecosystems possibly benefit dependent species? (1214)

**RESPONSE:** An example of a desirable type conversion is the intentional conversion of a Kentucky bluegrass grass community within a riparian area to a sedge-grass or sedge community. This conversion would occur on some sites when the water table is raised. Another example is regen-

erating decadent aspen stands in riparian areas by group selection cutting or thinning understory white fir.

**14. COMMENT:** Related to this issue, Appendix J appears to be inconsistent with the Mgt. Direction for Riparian Areas (Plan 4-7 [S&Gs]). CNPS strongly objects to the conversion of natural ecosystems at public expense, merely to benefit a few livestock operators. CNPS requests that these policies be eliminated and brought into compliance with the regional MMR for riparian areas. (1214)

**RESPONSE:** We agree that type conversion from native to non-native vegetation species in wet and semi-wet meadow sites (as specified in Appendix J) is normally an unsuitable practice. However, there may be times when artificial means will be necessary to rehabilitate a deteriorated meadow.

**15. COMMENT:** Riparian areas ([S&GS] pp. 4-33 to 4-34). We recommend that criteria a., b., and c. be elevated to the level of standards. Recommend that the Plan expand Criterion c. by setting mandatory target goals of improvement, by quantity and quality, for degraded riparian areas. If goals cannot be met because structural improvements are not funded, then non-structural methods should be applied. (1316)

**RESPONSE:** The riparian criteria in Chapter 4 have been retained as guidelines. S&Gs for Riparian Areas (3.) references Appendix S, which prioritizes improvements for degraded riparian areas.

**16. COMMENT:** Plan. P. 4-33. The Standards and Guidelines and Management Prescriptions in the Plan for riparian areas are the minimum necessary to maintain and recover the listed, proposed, and candidate fishes. No deviations below these standards and guidelines should be tolerated. (1316)

**RESPONSE:** Thank you for your comment. We will implement and enforce Standards and Guidelines on a site-specific basis.

**17. COMMENT:** I can't see giving up many acres of pasture for a small riparian seep or spring. (144)

**RESPONSE:** Springs and seeps are important elements of resource biodiversity. They also fall into the definition of riparian areas, and we are required to consider them as such.

**18. COMMENT:** Concerned with the treatment of riparian habitat and water quality problems. The measures planned to correct them are wholly inadequate. Control of domestic grazing animals is a recognized need, but the proposed controls are limited; are phased in over a 50 year span; and are partially dependent on a substantial

budget augmentation for the Forest, which is unlikely, based on current economics. (364)

RESPONSE: We feel that the management measures in the Plan are adequate in providing a high level of protection for riparian habitat and water quality.

19. COMMENT: The Plan does not discuss to what extent other rangeland on the Forest could be effectively reallocated among all permittees to minimize the impact on any one rancher in the event the "amenities alternative" approach to grazing [is selected]. The right solution is to improve the most damaged riparian areas now by selectively eliminating livestock; when public money is available for fencing and other management practices that allow more grazing consistent with good water quality and healthy riparian areas, then the permittees should be allowed additional AUMs. (16)

RESPONSE: The types of options you mention will be addressed in site-specific Allotment Management Plans. Riparian areas are prioritized for treatment in Appendix S.

20. COMMENT: DEIS 2-60. Theme - the last emphasis statement should be "restoring degraded riparian habitat." the phrase "... in high priority areas ..." should be deleted. We believe that all degraded riparian areas should be restored. 2-62. Riparian areas - change the first word in the paragraph from "enhance" to "restore." (364)

RESPONSE: Some riparian areas have more potential for damage and recovery than others. These are prioritized in the Plan (Chapter 4 - Standards and Guidelines, and Appendix S). The word "enhance" has not been changed because "restore" is not always an appropriate term to use. It assumes damage, which isn't true in every case.

21. COMMENT: Fishing and recreation values on Pine Creek have been lost because of heavy livestock grazing. Key riparian areas need protection which could, but does not necessarily demand, a cut in livestock numbers. Current mgt for riparian areas (Plan 3-27) states that excluding livestock from riparian areas is the most successful strategy. MNF should implement these exclusions and then consider a grazing regime for these areas. Complete livestock control and an appropriate rest period should be provided before alternative "double-rest" or "spring grazing only" systems are experimented with. (474)

RESPONSE: These types of management strategies will be considered and implemented through site-specific Allotment Management Plans.

22. COMMENT: Riparian areas: legally guided by executive order number 11990 which requires all federal agencies, including the Forest Service, to protect wetlands. Although some riparian-dependent sensitive species,

such as the willow fly-catcher, Modoc, Lost River and shortnose suckers and redband trout have been designated as MIS, we are concerned about habitat protection for these sensitive animals. The Plan (p. 3-26) states that the riparian habitats throughout the MNF are only in "fair ecological condition" due to present and past grazing practices. Proposals to study these species and their habitats to determine "critical habitat" should be included in the final Plan and FEIS. (661)

RESPONSE: Refer to the comment section on Management Indicator Species (Resource 84). We select Management Indicator Species in part for their habitat requirements. EIS Chapters 3 and 4 discuss MIS.

23. COMMENT: Management Prescription 17 (Riparian Areas) is too weak to provide adequate protection and restoration to instream and riparian habitat. Timber harvest in the SMZ should occur only when it is utilized for fish and wildlife enhancement. (671)

RESPONSE: The Standards and Guidelines specify leaving old growth in Streamside Management Zones.

24. COMMENT: Riparian and meadow habitats...value in supporting communities and a large number of species dependent on limited amounts of disjunct habitat. On NF lands we have an excellent opportunity to protect our rapidly disappearing meadow and riparian habitats. (1018)

RESPONSE: Thank you for your comments.

25. COMMENT: Riparian areas. Many of them have been allowed to slip to a state of high erosion. Much work has been done in the Prineville, Oregon, area repairing eroded riparian areas. I would urge in depth study and adoption of their methods. Mostly, they are low cost and economically effective. (1065)

RESPONSE: Thank you for your comments. Several of the methods used in the Prineville area have been adopted here with success. One of the better projects is the use of cut-tree juniper revetments to armor raw stream banks.

26. COMMENT: (DEIS, pg 2-164) the Preferred Alternative provides for riparian area improvements on only 15 grazing allotments. What about the riparian areas in the remaining grazing allotments? How will State water quality objectives be met on streams within these remaining allotments? (1068)

RESPONSE: This is the number of allotments that will receive structural riparian area improvements. We anticipate that we can improve the remaining riparian areas with adjustments in grazing strategies.

27. COMMENT: Calif Native Plant Soc. is concerned about the regeneration of shrubs and trees when grazing

pressures occur. Can the MNF demonstrate that 20% utilization of shrubs such as willow and aspen will insure the recruitment of young individuals? (1214)

RESPONSE: Twenty percent utilization of current year's annual growth is light use. Regeneration of willows and aspen will occur at this level of utilization.

28. COMMENT: Your views on stream rehabilitation are encouraging. I endorse accelerating this process and pressuring the cattle industry to work out methods to eliminate overgrazing and stream damage. (1223)

RESPONSE: We will eliminate overgrazing and stream damage through interdisciplinary allotment planning processes.

29. COMMENT: Unrestricted, uncontrolled cattle grazing is costing Californians the loss of their trout stream heritage. This must stop. (1295)

RESPONSE: Standards and Guidelines in Chapter 4 of the Forest Plan provide for protecting and enhancing riparian areas.

30. COMMENT: We oppose the proposals to increase grazing particularly in riparian and wet meadows. Grazing fees should be increased to reflect industry standards, and cover administrative costs. (1295)

RESPONSE: We are not aware of any proposal in the Modoc Plan to increase grazing on riparian areas and wet meadows. The grazing fee formula is set by Congress and updated annually. The process is beyond the control of the Modoc National Forest.

31. COMMENT: With continuous, season-long grazing as the predominant grazing management practice in riparian areas (Figure 3-22, Pg. 3-96 DEIS), it is unlikely the trend will improve without substantial management direction change. A major effort by the Forest is required immediately to reverse the FEIS situation. No grazing should be permitted on riparian areas in less than "good" condition. (1317)

RESPONSE: We agree that continuous, season-long grazing in certain types of riparian areas is an inappropriate practice. We have modified Forest Standards and Guidelines to identify sensitive stream types, associated riparian areas, and management practices appropriate to those stream types. We will evaluate and implement alternative grazing management systems and measures through the allotment planning processes.

32. COMMENT: A change in management that is not dependent on increased funding is preferable. The riparian zones of Boles Creek, Mowitz Creek, and Willow Creek below Boles Creek are rated in poor condition. This is unacceptable, since these creeks are assumed to be the

major spawning areas for Lost River and shortnose suckers from Clear Lake. Livestock management strategies on the range allotments associated with these creeks should be "Strategy D", with exclusion of cattle from the riparian zones as the primary practice. (1317)

RESPONSE: We changed the priority for Boles Creek from Priority 2 to Priority 1 in response to your comment. Mowitz Creek and Willow Creek are already Priority 1 streams (Plan Appendix S).

33. COMMENT: Livestock grazing [should be] permitted only in areas that have good ecological condition or trend is moving toward good condition. (52)

RESPONSE: The management objective for all rangelands is good ecological condition (Rangeland Management Prescription 10 - Range - Maintenance and Extensive Allotments). If ecological condition does not meet this objective, we will evaluate and implement corrective management measures through the allotment planning process.

34. COMMENT: Modoc NF should evaluate alternatives that involve a lower livestock use in riparian areas. The economic benefits to fish and wildlife are claimed to occur far in the future. When these fish and wildlife benefits are brought back to present net value (DEIS, 2-153), they have relatively little value compared to the more immediate benefits of continued livestock grazing, the primary cause of the deteriorated habitat and fish and wildlife values. This analysis approach, therefore, perpetuates the present degraded and unsatisfactory habitat. An objective analysis requires that the habitat and wildlife values be modeled as fully recovered in year one; then if grazing is superimposed on this model, the economic impacts of grazing on fish and wildlife can be more fairly assessed and the real value of correcting past grazing abuses can be seen. (364)

RESPONSE: EIS Chapter 4 displays economic impacts. Appendix B discusses economic modeling approaches.

35. COMMENT: The strategies other than "no grazing" generally do not improve range. "Only isolated areas are improved" by these methods (DEIS 3-95). Why are these methods generally not effective? Why only in isolated areas? What is meant by "isolated areas"? (1248)

RESPONSE: These methods (fall grazing, reducing livestock numbers, riding, salting, and using rotation systems) are effective in certain circumstances. They generally will not restore the most sensitive riparian habitats to good ecological condition if those habitats are presently in a less than desirable state.

36. COMMENT: Protect riparian areas by rotating livestock to transitory range. (1303)

RESPONSE: We can use this option in some areas. We will evaluate and pursue opportunities to utilize transitory forage where practicable.

37. COMMENT: [Plan] 3-27. Riparian areas in poor condition cannot sustain grazing for any duration if recovery is the goal. ODFW suggests the use of rest-rotation and early season grazing strategies only after full recovery of the riparian area. (1317)

RESPONSE: We agree with your comments, as they apply to certain sensitive stream types. We will evaluate and implement a variety of grazing management systems, including exclusion, as appropriate on an allotment-by-allotment basis.

38. COMMENT: The document claims two methods are used extensively on the Modoc NF to improve riparian condition by controlling grazing: creating riparian pastures that are grazed in the fall and excluding cattle through fencing; (DEIS, 3-95). How can these methods be used "extensively" when it was previously stated that most projects have been deferred? (364)

RESPONSE: Exclusion and fall grazing are the two methods that have been used most often to date. Corridor fencing has been used across the Forest, but only on short stretches of streams.

39. COMMENT: The definition of riparian areas is inconsistent between the DEIS and Plan. The definition of riparian areas includes only "perennial stream channels" (DEIS, 2-35) where the Plan definition includes "ephemerals and intermittents". We believe that all three elements must be included in the definitions of riparian area and streamside management zones in both documents. (126, 364, 1248)

RESPONSE: Intermittant and ephemeral streams are considered riparian if they exhibit distinctive riparian vegetation that require free or unbound water.

40. COMMENT: Riparian and meadow communities. On page 4-29 of the Plan range guideline a(2) requires that satisfactory ecological condition be maintained or enhanced on suitable rangeland. Ecological condition is based on degree of displacement from climax - climax stands are in good condition; very early seral stands are in poor condition. This is standard SCS method, and it generally works well for upland sites. A problem arises in riparian settings. Because streamside zones are physically disturbed by flooding, mature soils cannot develop nor can a "climax" condition be attained. The problem is virtually intractable. There is no agreement on what the potential vegetation should be; therefore, no one can assess how far a site is from its potential and thus, its condition. Therefore, this guideline is meaningless in riparian settings. (364)

RESPONSE: We disagree. Climax ecological conditions, including landforms and vegetation, *do* occur within riparian zones as these soils and vegetative conditions have developed with recurrent flooding, and are adapted to regular flood events. Several land management activities can have the effect of modifying these systems to unstable, early seral conditions. Determining ecological potential and condition is continuous, and will be accomplished in concert with environmental analysis for site-specific projects.

41. COMMENT: To relieve the pressure on the riparian areas, brush control would be the greatest improvement thus allowing more of the native grasses to come back. (697)

RESPONSE: Thank you for your comment. Forest Standards and Guidelines (Plan Chapter 4) allow for several structural and non-structural improvements, including brush manipulation.

42. COMMENT: The Plan should include a statement here (3-26) that water continues to be available for livestock and wildlife when riparian areas are fenced for protection—either piped away or water gaps left, etc. (107, 988, 1064)

RESPONSE: The Forest currently develops water outside of riparian areas when necessary because of fencing, or to obtain better livestock distribution to relieve pressure on riparian areas. A guideline is present in the Plan to meet this concern.

43. COMMENT: FMP 4-148; 3-186: the [Riparian] Rx and its S&G's beg more questions than they address. —how can two fundamentally opposed primary emphases be reconciled— (1) protection and enhancement of riparian-dependent resources and (2) utilization of riparian area for timber; livestock; developed campgrounds; boat ramps; beaches; trails; ORV; firewood; geothermal, oil, gas and mineral exploration and development? (1248)

RESPONSE: Best Management Practices (BMPs) and Forest Standards and Guidelines deal with conflicts such as those you mention. We substantially revised Forest-wide Standards and Guidelines, adding more specific management information. In the FEIS and Final Plan, we make a clear commitment to the protection of riparian habitats.

44. COMMENT: Work can be done to help the riparian areas by falling juniper trees in the gullies to help hold the water back and stop erosion. This would work well on the West Valley Allotment. (1255)

**RESPONSE:** Thank you for your comment. Cut-tree juniper revetments is a good structural practice to protect raw streambanks in some stream types.

**45. COMMENT:** Cattlemen cannot operate under the restrictions set fourth in the riparian standards. They are unrealistic and impossible to comply with if the non-riparian areas are to be used. At this time the proposed changes would result in staff reductions of two veterinarians and six support personnel in our business alone! In many cases large sums of private capital have been invested to improve the range management of public lands. Implementation of 3.1 riparian standard of the Forest Service Plan threatens to make useless what generations of cattlemen have worked to accomplish. (1284)

**RESPONSE:** The Standards and Guidelines specify which kinds of riparian areas are of greatest concern. We believe that by identifying and prioritizing those streams which have the greatest sensitivity to livestock grazing, we mitigate some of your concerns regarding implementation of the Riparian Standards and Guidelines.

**46. COMMENT:** Riparian areas (PLAN 5-12). We recommend that the "variation from standard requiring further action" be amended. Variances requiring further action should be the failure to protect existing good quality habitats as well as the failure to see improvement in degraded habitats that require restoration. (1316)

**RESPONSE:** Monitoring requirements are expressed in terms of percentages to provide a quantitative measure of change.

**47. COMMENT:** Calif. Native Plant Soc. requests that MNF develop a monitoring objective for riparian areas which quantitatively determines age class structure of woody vegetation. (1214)

**RESPONSE:** We feel that this would be a valuable addition to the monitoring objectives because shrub species respond differentially to impacts such as wildlife and livestock browsing. Developing ecological descriptions is the first step toward a monitoring objective; we are developing them now. We feel that some riparian shrub communities are changing in species composition; however, we currently have limited data to support this hypothesis.

**48. COMMENT:** Plan 3-26 - Riparian: we question the basis for the use of SMZs in lieu of the 100-foot zone required in the regs. 36CFR 219.27 (e) defines riparian areas as "...approximately 100' from the edges of all perennial streams, lakes, and other bodies of water." The SMZs variable width which starts at 50' does not comply with this planning reg. Please clarify. (107, 126, 1048)

**RESPONSE:** 36CFR 219.27 (e) requires special attention be given to zones of "approximately" 100 feet. It further

states that "this area shall correspond to at least the recognizable area dominated by riparian vegetation." It is the intent of the variable width SMZ to include all area dominated by riparian vegetation. At times this riparian vegetation is only 10 feet wide, and is encompassed by a 50-foot SMZ. At other times the riparian vegetation may be over 200 feet wide, in which case an SMZ will be prescribed of greater width. We believe this variable width concept meets the intent of the law.

**49. COMMENT:** Plan 4-11 - Forest Objectives: no outputs or activities in Table 4-2 for riparian or for improved rangelands. We can suggest for grazing—"acres improved to satisfactory condition," and for riparian—"acres or miles of stream improved to (some index)." (107)

**RESPONSE:** These types of objectives are included in site-specific Allotment Management Plans, or similar site-specific management documents.

**50. COMMENT:** Plan 4-33 - Riparian S&G: a. What does this mean? App. M doesn't prescribe mgt, but merely classifies riparian areas. Should refer to BMPs in App. N. (107)

**RESPONSE:** Thank you for your comment. We amended the statement which now reads: "Manage [riparian areas]...according to the Riparian Area Management Prescription, and Appendices M and N."

**51. COMMENT:** The following levels of protection should be considered in the S&Gs for riparian protection:

- Class I, II and III streams should have VQOs of retention or preservation.
- Within the SMZ, old growth conifers or hardwoods should be retained for snag-dependent wildlife and for large woody debris development needed for stream stability.
- New road systems will be designed and constructed to minimize disturbance to the riparian areas. Transport of sediment from disturbed areas shall be minimized by ponding, vegetative buffer strips or other means.
- Log lands shall not be located within riparian zones or on areas where surface runoff will discharge directly into the channel.
- Trees shall not be felled into streams, lakes or bogs. (1018)

**RESPONSE:** Riparian areas have a VQO of partial retention in all alternatives, for a total of 9,274 acres. We modified the Standards and Guidelines for riparian areas to retain timbered sites in certain stream types in an old-growth condition. Streamside Management Zones (SMZs) and Riparian Standards and Guidelines specify

that roads and landings shall be located away from riparian areas.

**52. COMMENT:** What will it cost to make miniature wilderness areas along streams and the guise of riparian zones, eliminating the highest quality timber remaining on the forest? (1036)

**RESPONSE:** The goals of the Modoc National Forest Plan include the statement "Manage [riparian areas]...to maintain or improve riparian-dependent resources". Forest Standards and Guidelines further elaborate on this goal. Maintaining water quality and related resources is a legal mandate and a management objective. The cost of repairing watersheds damaged by logging (assuming this can be done) far exceeds the value of any timber contained therein. EIS Chapter 4 discusses economic impacts.

**53. COMMENT:** DFG is of the opinion that the riparian prescription should be more restrictive in the types of allowable activities. The existing Plan allows for the removal of firewood, the development of oil and gas resources, selective timber harvest, and grazing activities. These are some of the most damaging to the riparian corridor. Riparian area would be better protected if all oil and gas development was done by slant drilling so that no activities would occur within the riparian zone. Timber harvest in riparian areas should be limited to the removal of trees that have a negative impact upon fish and wildlife resources. (342, 364, 692, 1222)

**RESPONSE:** The activities you mention are valid and non-dependent uses of riparian areas. If Forest users demonstrate through site-specific analysis that they can utilize non-dependent resources within riparian areas without detrimental effects to dependent resources, then their activities may be allowed.

**54. COMMENT:** 4-263. Clear Lake MA. Riparian improvements in upstream areas of Boles and Willow creeks in other management areas may be necessary to improve flow and water quality conditions sufficiently to allow recovery of populations of Lost River and shortnose suckers. (364)

**RESPONSE:** The Riparian Prescription (Rx 17) is displayed in the Final Plan for the areas you mention.

**55. COMMENT:** 5-1 and 5-2. We recommend that Willow Creek and tributaries (MA 32) be added to the list of streams requiring riparian improvement with high priority (see comments on Fandango MA). (364)

**RESPONSE:** We agree that Willow Creek is in poor condition and needs to be improved, especially because it is habitat for the Goose Lake redband trout. However, the Forest has very little control over the condition of Willow Creek as most of it and its tributaries are on private lands.

Currently only 1-1/2 miles of more than 10 miles of stream is administered by the Forest. These factors were heavily considered when the streams were prioritized for riparian improvement.

**56. COMMENT:** In reviewing the Riparian Rx and where it is to be applied within MA 31, many suitable sites for this tool appear to have been overlooked. There are many more miles of streamcourses needing protection than are shown in your records. (540)

**RESPONSE:** We will apply the Riparian Area Management Prescription where site-specific analysis indicates that it is appropriate. The 9,274 acres displayed in the Plan is an estimate, but may vary in application.

**57. COMMENT:** Improve riparian areas by placing small rock dams in creeks to catch sediment thereby decreasing erosion. (913)

**RESPONSE:** Placing small rock check dams in riparian areas is an acceptable practice. However, channel type must be considered as gullies and streams with fine material may erode into the banks if obstructions are placed in the bottom. We will evaluate the utility of this type of structural improvement on a site-specific basis and implement where appropriate.

**58. COMMENT:** Are all riparian areas and water quality poor now throughout the forest? (1153)

**RESPONSE:** No. Forest riparian areas are generally in fair condition. See FEIS, Summary of the Analysis of the Management Situation, section 16.

**59. COMMENT:** The Water and Riparian areas section, beginning on page 4-103 [DEIS], indicates that major effects on water quality and quantity do not include mineral development. It is unrealistic not to discuss minerals as one of the possible effects. In fact, this would be one of the great places to discuss how standard procedures during drilling allow both the BLM and FS to mitigate these impacts. There is no discussion of mitigation on page 4-133, means to mitigate, either, although mitigation is a significant part of fluid mineral development. (1245)

**RESPONSE:** EIS Chapter 4—*Environmental Consequences* discusses impacts. Impacts to water and riparian resources from mineral exploration and development are evaluated and discussed on a site-specific basis. Plan Appendix I displays mitigation stipulations for oil and gas.

**60. COMMENT:** Plan App. S: have the priorities [listed on S-1] been completed? — completion of site-specific analyses of range and riparian conditions? — strategies based on Mgt. Direction, Plan Ch. 4. (1248)

RESPONSE: No. These items have not been completed.

61. COMMENT: Feasibility of fenced livestock exclusion areas around all riparian areas or more appropriately along MNF boundary. (1248)

RESPONSE: This isn't feasible because of cost restraints, nor is it appropriate in all areas.

62. COMMENT: 3-96: Are rangelands generally overstocked? To what extent is inadequate distribution a cause of overgrazing on total forest as well as riparian areas? (1248)

RESPONSE: Generally, rangelands are not overstocked. Inadequate livestock distribution and season of use are causing problems on some allotments.

63. COMMENT: 4-58: Inventory of riparian areas (by miles) where "grazing strategies or structural improvements are not used."

- inventory riparian areas where strategies-structures are "ineffective".
- why structures/strategies "not used"?
- why "ineffective"?
- cost-benefits of using effective strategies/structures.
- what constitutes "strict control of livestock"? how strict has control been in the past? Reasons for variation of strictness in specific areas and under specific policies.
- is enhancement of wildlife mgt in riparian zone a more compelling alternative to "enhancement of grazing mgt"? (1248)

RESPONSE: The points you noted in your comment are generally reserved for evaluation and discussion site-specifically as Allotment Management Plans are developed. They are not discussed in detail in the EIS or the Forest Plan.

64. COMMENT: What is assurance of implementing Riparian Rx under PRF and other alternatives emphasis on livestock and timber operations in riparian zone? [sic] (1248)

RESPONSE: See Plan Chapters 4 and 5 - *Management Direction and Monitoring and Evaluation*. We will implement the Riparian Prescription as appropriate on an allotment-by-allotment basis.

65. COMMENT: Can assumption be made that poor range is mainly in riparian areas? Forest map of good, fair, poor rangelands. Mile/acres of riparian areas in these 3 categories.

- nature of riparian enhancement projects. (1248)

RESPONSE: Poor condition range acres are not all in riparian areas. Maps showing rangeland conditions are located in the planning records located in the Supervisor's Office, Alturas. See FEIS, Chapter 3 *Affected Environment*, for a breakdown of range condition.

66. COMMENT: The Plan states (p. 2-7) that 100% of deteriorated riparian areas will be rehabilitated in 40 years. However, the Plan (p. 2-7) states only 15 miles of stream per decade will be improved as fish habitat. We are troubled that the levels of riparian rehabilitation proposed are not high enough to support native fisheries. (1295)

RESPONSE: The 15 miles of stream improvement, or 1.5 miles per year, refers to structural improvements only. We can improve approximately 10 miles per year through managing livestock and other resources. This adds up to 100 miles per decade, and 400 miles in four decades.

67. COMMENT: Calif Native Plant Soc. is pleased that a riparian inventory is included under technical planning needs. (1214)

RESPONSE: Thank you for your support.

68. COMMENT: Maximize protection for all riparian areas. Implement riparian improvement priorities as soon as possible. (1030)

RESPONSE: That is our intention, within the objectives and constraints of the Plan.

69. COMMENT: We have seen the productivity of [riparian] areas decline for many years and have seen no improvement until recently in limited areas like Lassen creek. We strongly support the implementation of the Riparian Rx, as presented, on all riparian areas in the Forest, and urge that special emphasis be given to riparian systems that support or are capable of supporting a sport fishery. (551)

RESPONSE: Thank you for your support.

70. COMMENT: I support the PRF because it will protect and favor riparian-dependent resources such as water, fish, vegetation, and wildlife over all other uses and demands. (15)

RESPONSE: Thank you for your support.

71. COMMENT: We firmly support Standard and Guideline 15.b. stated on 4-33 of the Plan, i.e., "Where (riparian area) uses conflict, favor protection of riparian dependent resources...over other resources." (15)

RESPONSE: Thank you for your support.

72. COMMENT: We firmly support the continued use of Best Management Practices as the primary approach for



protecting riparian values from timber and grazing activities. (15)

RESPONSE: Thank you for your support.

73. COMMENT: Plan 2-7 - wetlands and riparian: great! (107)

RESPONSE: Thank you for your comment.

74. COMMENT: Plan 3-27 - structural improvements: are willows "hardwoods"? We recommend the use of "plantings", since sometimes *Carex* might be the best species to use. (107)

RESPONSE: The term "hardwoods" usually means willows, although species of cottonwood are suitable in some habitats. *Carex* species are indeed excellent choices for vegetating some habitats.

75. COMMENT: Plan 4-148: we request that vegetation be included in the description as a riparian-dependent resource, as it was in other sections of the Plan. (1214)

RESPONSE: Thank you for your comment. We included "vegetation" in the list of streamside-dependent resources.

76. COMMENT: Using <30% of the forage production of riparian areas is a noble statement, but I would like to see it put into practice. Cows are not riparian-dependent species. (1243)

RESPONSE: We will implement utilization criteria on an allotment-by-allotment basis.

77. COMMENT: The riparian provisions provide, *inter alia*, that "where uses conflict," riparian resources are to be protected, p. 4-33. See p. 3-26, and which is long overdue. The proposed guidelines and standards need clarification or revision in several important respects as well as application—in the Plan—to grazing allotments within the Forest. (1257)

RESPONSE: Thank you for your comment. We revised and clarified Standards and Guidelines and pertinent management prescriptions.

78. COMMENT: Suggestion is made in the Plan that livestock either should not be permitted in or greatly restricted from riparian habitat. To effect such control would be totally impractical and unrealistic. (1275)

RESPONSE: We will make decisions affecting levels of livestock grazing on particular parcels of land in site-specific Allotment Management Plans. Our intent in the Plan

is to minimize impacts to sensitive and valuable riparian resources. We feel that this objective is valid and realistic.

79. COMMENT: p. 4-259-264. We support all efforts to protect the streamside riparian zones in the Clear Lake drainage. (1316)

RESPONSE: Thank you for your comment.

80. COMMENT: CNPS feels that grazing fees should be increased to reflect industry standards and cover administrative costs. (1214)

RESPONSE: Grazing fees are set by Congress and updated annually. The Forest has no authority to change grazing fees.

81. COMMENT: Plan D-2: the <20 and >20 riparian area acreages should be accurately measured on the ground. (126)

RESPONSE: Thank you for your comment. We will continue to update our timber inventory.

82. COMMENT: How do you regulate wildlife usage of a riparian area? (914)

RESPONSE: The Forest Service does not regulate wildlife. This is the function of the California Department of Fish and Game. The Forest Service can manipulate and regulate *habitat* that may be suitable for wildlife, among other things. Habitat regulation is a primary emphasis of this planning effort.

83. COMMENT: Since riparian vegetation "recovers slowly", is it not appropriate to remove livestock from riparian areas as close to immediately as possible instead of allowing grazing to "continue causing sedimentation for several decades"?

— since grazing continues for several decades, how can riparian areas recover by 3-5th decade? 3-5 decades from when—the 3rd decade? The situation is bad to worse now. The 6th to 8th decade is outside Plan range—no results can be expected within span of Plan. (1248)

RESPONSE: We decide to graze livestock or remove them from an area through the process followed when preparing an Allotment Management Plan.

Some kinds of riparian areas with high recovery potential will exhibit positive changes almost immediately when grazing management is changed. These areas will recover within the span of the Plan. Other areas are less resilient and will take longer. These latter areas may require more intensive management action.

84. COMMENT: Has funding level in recent years been sufficient to allow completion of range analyses and de-



velopment of mgt. strategies? Required funding level to complete analyses/mgt strategies. Specific budgets. (1248)

RESPONSE: Though funding has been constrained, we have completed some range analysis and management plans. Budgets are discussed in EIS Appendix B.

85. COMMENT: What are principle current and future causes of degradation? "Current" is dated by Meehan and Platts, 1978. How many years prior to 1978 publishing date were Meehan and Platts data gathered? (1248)

RESPONSE: (1) Principle current and future causes of current conditions are outlined in Plan Chapter 3: *Summary of the Management Situation*. (2) Please refer to Meehan and Platts (1978) publication for data and methodology they used to produce that publication.

## 298 - Wetlands

1. COMMENT: Currently only six wetlands have exclusions. An immediate measure which can be taken is to make the grazing season shorter so as not to interfere with nesting waterfowl. (62, 708)

RESPONSE: Livestock grazing probably has a minor effect on nesting ducks and geese on ephemeral wetlands. Beyond nesting islands, the Forest has relatively poor nesting habitat for both ducks and geese. Puddle ducks will not nest over open water. They will nest on islands, around the perimeter of these wetlands, and in upland areas adjacent to the wetlands. Nest sites around the perimeter of the wetlands are usually depredated, primarily by coyotes. Nest sites in the uplands also have a high failure rate. Geese nest almost exclusively on islands or structures constructed specifically for them.

Livestock grazing in wetlands can have adverse effects on waterfowl brood rearing cover in these reservoirs, and on non-game bird species that nest over open water such as sandhill cranes, grebes and terns. We completely exclude livestock grazing from some of our wetlands; on others we permit grazing only in the late summer or fall, after the wetlands have dried up. Management direction for these wetlands is developed on a site-specific basis at the allotment management planning level. During this process, we address such options as late-season grazing and exclusion for specific wetlands in terms of nesting and brood rearing habitat.

2. COMMENT: Management practices: Wetlands development should be balanced against grazing reductions (season and total AUMs.) (708)

RESPONSE: See the previous comment.

3. COMMENT: Objection in the Standards & Guidelines section [proposed Plan] 4-111 #4-g: to exclude livestock grazing in some wetlands. You shouldn't favor the wildlife over livestock. We don't think ground should be classified as wetlands when it is dry the first of June. There should be a clear definition of what a wetland is. (984)

RESPONSE: Excluding livestock from wetlands is one option for managing these habitats; we do not apply exclusion on all wetlands. The Rangeland Management Prescription states that exclusion of livestock will be considered in some wetlands, and that these will be evaluated on a site-specific basis during allotment management planning procedures.

4. COMMENT: The mitigation actions proposed in the Plan and DEIS to avoid or minimize the effects of resource use on wetlands and the species that depend upon them are inadequate. The proposed efforts for restoration of wetland areas appear to be insufficient to provide improvements within a reasonable period of time. Habitat restoration also appears to be highly susceptible to changes in the Forest budget and likely to be one of the first activities deleted when budget allocations are reduced. Protection and restoration of wetland habitats should be directly linked to Forest resource use. We recommend that unless wetland habitat values on the Forest can be maintained and improved that habitat degrading activities be curtailed accordingly. (1316)

RESPONSE: The Riparian Management Prescription states that riparian areas, including perennial wetlands, will be managed with an emphasis on fisheries, wildlife and watershed values. This prescription contains specific direction for managing riparian areas for all resource values. We will resolve potential conflicts in riparian areas in favor of riparian-dependent resources.

Many ephemeral wetlands and reservoirs on the Forest have the propensity for management as waterfowl nesting areas. More than 35,000 acres of wetlands on the Forest could function as waterfowl production areas. Short emergent marshes are the most productive for this purpose. They evaporate to approximately 8,600 acres by the fall. These areas provide valuable habitat for migrating waterfowl and shorebirds. Major limiting factors precluding development of all wetlands are livestock grazing, and the availability of water rights and funding. The Devil's Garden Ranger District manages most of the wetlands on the Forest. These wetlands have been prioritized in terms of waterfowl habitat development. As funding becomes available, we will conduct habitat improvement projects. To date, MNF has developed or improved 22 wetlands totalling 10,000 acres. These

wetlands have substantial habitat for waterfowl and other wetland-dependent species.

**5. COMMENT: [Proposed Plan] 2-7. [Regarding] wetlands and riparian areas without major changes in the management of livestock, including a high level of structural improvements: we do not believe 100 percent rehabilitation in 40 years is obtainable. (1317)**

**RESPONSE:** We are promoting recovery of riparian areas on a site-specific basis at the allotment management planning level. Livestock management changes will be necessary on many allotments to achieve these goals. Our management strategy is to use structural and non-structural habitat improvement projects in conjunction with livestock management to improve riparian habitat conditions on the Forest. Where this has been done, our results to date have been excellent.

**6. COMMENT: 4-221. Wetlands developments in the Devil's Garden MA have been accompanied by declines in both sage grouse and pronghorn production. Pronghorn kid survival has averaged 12 per 100 does there in the past 10 years compared to 39 kids per 100 does in the Likely Tables herd. It can be hypothesized that inundation of pronghorn kidding areas and early summer foraging sites has been detrimental to pronghorn there. Sage grouse, formerly common there, are rarely observed now. (364)**

**RESPONSE:** Although some habitat may have been lost for these species, we believe the impacts of wetlands development on pronghorn and sage grouse have been relatively minor. Wetlands developments may even enhance habitats occupied by these species by providing riparian vegetation (particularly forbs) during the summer when

this forage group is important to sage grouse broods and pronghorn fawns.

Much of the Likely Tables herd is dependent on agricultural lands (alfalfa), which may be a reason this herd is doing better than other herds. The encroachment of juniper over the past 50 years has also undoubtedly reduced the amount of habitat for both of these species. See the management indicator species (resource 084) comments for further information on these species.

**7. COMMENT: Support the emphasis to increase productivity of the Forest wetlands extremely important for wildlife, forage, and recreation production. (807)**

**RESPONSE:** The Plan provides direction for improving these wetlands. Thank you for your support.

**8. COMMENT: Eliminate grazing in the waterfowl production areas. Waterfowl will nest up to one mile from brood water or transition waters. These areas need protection. A cost-effective program will include isolating wetlands through fencing at least 3/4-mile away from water, or eliminate grazing in favor of other mgt tools. (806)**

**RESPONSE:** Puddle ducks will nest up to one mile away from water. However, much of the upland vegetation available on the Forest is considered marginal for nesting ducks. We found a high incidence of failure in such nest sites, mostly due to depredation. We believe that islands constructed so that they are suitable to both ducks and geese will result in a higher fledgling rate. In some cases, we have fenced wetland areas to maintain upland vegetation for nesting ducks. As mentioned previously, we will evaluate wetlands on a case-by-case basis to determine management activities that will benefit waterfowl production.

### 300 - Wild and Scenic Rivers

**1. COMMENT:** I urge you to include rivers and streams/creeks in our National Wild and Scenic Rivers System, such as Pine Creek and Parker Creek. (14)

**RESPONSE:** During the spring and summer of 1989, the Modoc National Forest compiled an evaluation team to determine Wild and Scenic River eligibility of the Forest's waterways. Please see EIS Appendix T – *Wild and Scenic River Study* which displays the results of the team's evaluation.

**2. COMMENT:** We expect the Forest to inventory and evaluate the pertinent streams in the Forest for Wild and Scenic designation. Candidate streams include the Pit River and its tributaries, Lost River, Willow Creek (Doublehead), Boles Creek, Cottonwood Creek (both), Parsnip Creek, East Creek, Pine Creek, Shields Creek, Davis Creek, Mill Creek, and Soldier Creek. (500)

**RESPONSE:** See previous response. All the creeks and streams you mention were evaluated by the team during the eligibility determination. The team determined that Willow and Boles Creeks were eligible for further consideration. We will complete a suitability study and make our recommendation within three years of the Final Plan release.

### 350 - Public Involvement

**1. COMMENT:** The Forest Service quite obviously expended a considerable amount of effort preparing the Plan. What seems to me to have been lacking was the direct involvement of those from outside of the Forest Service whose livelihoods and quality of life depend. Form those committees now, and use the current draft plan as a nucleus to be shaped into a Plan that does the best possible job of balancing the divergent interests of all who will be affected. (1, 2, 73, 219, 993, 1057, 1254, 1247, 1273, 1283, 1304)

**RESPONSE:** We agree with your suggestion to clarify issues and develop potential solutions with the direct involvement of people representing major interest. Between the draft and final Plan, we formed public working groups who helped us shape this document. EIS Appendix A discusses our extensive public involvement effort.

**2. COMMENT:** Forest Service personnel need to work closer with the general public who work and make their living on the Forest. (150, 1189, 1285, 1313)

**RESPONSE:** We will continue to improve our public involvement efforts which include consultation and collaboration with local, state, and national interests. EIS Ap-

pendix A discusses our extensive public involvement effort.

**3. COMMENT:** The people in our north state area...should have more input and impact with what is done on NF land than people in southern Calif. or the San Francisco area, because their livelihood depends on proper mgt of the Forest. (163)

**RESPONSE:** We believe we have considered local needs while balancing national interests. EIS Appendix A discusses our extensive public involvement effort.

**4. COMMENT:** No effort was made to obtain public comment, input or information from the affected industries during the eight-year period in which the Plan was being prepared. Objection is made to this procedural defect in the Plan. (1275)

**RESPONSE:** We disagree. Extensive effort has been expended to involve all affected parties in the land management planning effort. Public involvement is discussed in EIS Appendix A.

**5. COMMENT:** I would like to be involved in future decisions regarding our Forest. (5, 894, 930, 1025, 1214, 1250, 1254, 1266, 1283)

**RESPONSE:** Your name has been place on our mailing lists. Thank you for your interest in land management planning.

**6. COMMENT:** Plan 4-4 – "involve and cooperate..." with everyone but why not the general public. We object. Please add a statement that the interested public has as much right to participate in on-the-ground mgt decisions as "...federal, state, and local agencies, industry, and private landowners...." (107)

**RESPONSE:** Thank you, the addition has been made in the *Forest Goals and Objectives* section of Plan Chapter 4.

### 355 - Unresponsive to Public Needs

**1. COMMENT:** Plan is hopelessly complex. It defies understanding by the public for which it is intended. You have given the public 120 days to review a plan that took you eight years to develop. You have assumed that ordinary people have the time and the ability to sort through complex technical issues and pass judgment issues that affect our livelihood for years to come. (1062)

**RESPONSE:** We understand by virtue of size, the documents were intimidating to the general public. The Regional Office gave is specific direction regarding organization and content. Ordinarily, a DEIS is published for review for three months. Because our DEIS was re-

leased in November 1987, we added a month to the review period. We also conducted a series of public workshops to provide an overview for better understanding. Appendix A describes our extensive public involvement process.

**2. COMMENT:** Too long has the selfish demands of the environmentalists dictated the policies of public lands in such a way that locks off the land from many user groups. The increasing closures of the past have caused much of the problems that are claimed as cause for closure now. Many of the current closure policies are inconsistent, arbitrary, and capricious. (6)

**RESPONSE:** While we do not agree with your assessment, we thank you for taking the time to express your opinion.

**3. COMMENT:** Many of us hope that the Forest Service will soon get the message that the public is expecting something different from the national forests than the Forest Service has wanted to provide. We want the national forests managed more sensitively for cultural resources, wildlife, scenic quality, protection of soil and water and especially riparian areas, and for a broad spectrum of generally more passive types of recreation. (1)

**RESPONSE:** National Forests are instituted to provide commodities as well as nonmarket goods (such as recreation) to the public. We feel the Plan provides a balance of uses over time that will benefit the American public.

**4. COMMENT:** The Forest Plan takes a very conservative position towards commodity outputs and a very liberal position on amenities. (108)

**RESPONSE:** See previous response.

**5. COMMENT:** The citizens Conservation Alternative to the Modoc NF Plan is submitted because conservationists believe that the Plan's PRF, not to mention several more exploitative alternatives with higher commodity outputs, over emphasize commodity production at the expense of amenities. (500)

**RESPONSE:** EIS Chapter 2 discusses the Conservation Alternative.

**6. COMMENT:** The proposed plan is heavily weighted towards the viewpoints of the preservation groups. These groups have greatly influenced the policy making within the Forest Service. (905)

**RESPONSE:** National Forests are instituted to provide commodities as well as nonmarket goods (such as recreation) to the public. We feel the Plan provides a balance of uses over time that will benefit the American public.

**7. COMMENT:** The Plan continues to be predominantly a commodity program. Equal consideration to other aspects of the Forest, particularly wildlife, is not evident.

The documents convey no sense of urgency for the timely collection of data necessary to bridge the vast info deficiencies. Until the DEIS and Plan offer all Forest resources equal, integrated consideration and opportunity, the requirements of NFMA cannot be fulfilled. (1248)

**RESPONSE:** National Forests are instituted to provide commodities as well as nonmarket goods (such as recreation) to the public. We feel the Plan provides a balance of uses over time that will benefit the American public.

**8. COMMENT:** The people of Modoc County represent a minority opinion on Forest issues compared to the larger national interest. In the face of the emotional battles the Forest will incur in the upcoming months I urge the Modoc NF to maintain the larger national interest and not compromise that interest because the locals can yell louder. (473)

**RESPONSE:** Changes were made in the Plan as a result of further analysis and more than 1400 responses to the DEIS and Draft Plan. Responses included proposed alternatives from two citizen's groups. We feel we adequately considered local needs while balancing national interests.

**9. COMMENT:** We challenge the Forest Supervisor to truly listen to what the public says and not to shove through the predetermined plan that you have been using the past several years. (1036)

**RESPONSE:** See previous response.

**10. COMMENT:** Lack of user input throughout the process leads me to believe the document is nothing more than an environmentalist "wish list." (603)

**RESPONSE:** See previous response.

**11. COMMENT:** I would like to give my approval to the Forest Service Plan. Stick to the facts of the study instead of the emotional misgivings of certain people in Modoc. (1049)

**RESPONSE:** Changes were made in the Plan as a result of further analysis and more than 1400 responses to the DEIS and Draft Plan. Responses included proposed alternatives from two citizen's groups. We feel we adequately considered local needs while balancing national interests.

**12. COMMENT:** Modoc County has always been dependent on agriculture for its economy which is basically lumber, livestock, and hay. This plan is attacking all of these industries, by reducing the use of government land, which the County of Modoc is dependent on. If the Forest Service intends to proceed, I feel that the livestock, lumber, and hay people of this county, which this county

affects, should be compensated, or awarded some kind of reimbursement. (748)

**RESPONSE:** As stated above, changes were made in the Plan as the result of public comment and further analysis. We do not feel that the Plan is an attack on any user group, but rather a sincere effort to balance uses to provide a maximum net benefit to the public as a whole. Reduction of use, if any, will be made on a case-by-case basis at the site-specific level. The Forest Service does not have the authority to compensate users for reductions in a permitted use and therefore is outside the scope of the Land Management Plan.

**13. COMMENT:** People in the communities within and adjacent to the National Forest are part of the forest ecosystem too, and they should receive equal consideration with all other forest species. (10)

**RESPONSE:** We feel the Forest Plan offers the best balance of resources that will promote harmony among people and resources.

**14. COMMENT:** We find government agencies such as the Modoc NF proposing plans which show inadequate consideration of local economic and social circumstances and which may be detrimental to those factors. The Modoc Plan is severely derelict in meeting its ethical and legal requirements to maintain local economic and social values. Social and economic impacts of the Plan were given only token consideration. (1328)

**RESPONSE:** We disagree. According to NFMA, the objective of planning is to provide an adequate basis for identifying the alternative that comes nearest to maximizing net public benefits. Local social and economic resources are described in EIS Chapter 3. EIS Chapter 4 identifies social and economic impacts.

**15. COMMENT:** The Forest Service seems to be departing from these principles [of multiple-use and the sustained yield act] by opting for single-use management as directed by special interest groups, and ignoring the fact that most of these uses are compatible with each other if they are managed conscientiously. The Draft Forest Plan does not live up to its multiple-use calling. (1312)

**RESPONSE:** The Multiple-Use-Sustained-Yield Act of 1960 declares that national forests shall be administered for outdoor recreation, range, timber, watershed, wildlife, and fish based on "the most judicious use of the land for some or all of these resources." We carefully considered all resources in each alternative including the Preferred Alternative which is the basis for the Forest Plan. Alternatives differ by the degree of emphasis of one resource in

relation to another. We feel the Forest Plan provides the maximum net benefit to the public.

**16. COMMENT:** Through this last planning period our national forests have been suffering great abuses, and it is time for that to stop. These forests belong to all U.S. citizens and more importantly to all the natural inhabitants. You have the responsibility to maintain the forest intact for all of us. (76)

**RESPONSE:** National forests belong to the American public, and the Forest Service is the manager. We are confident the Forest Plan provides management direction to benefit forest resources and public. While we do not agree that "national forests have been suffering great abuses," we thank you for taking the time to express your opinion.

### 370 - Other Comments

**1. COMMENT:** This Plan is contrary to the principles of the Organic Act of 1897 and the Sustained Yield Act of 1960. The Forest Service is a public agency designed to manage our Forest and work with the local communities they affect. Forest Service has ignored the economic needs of the very community they should be serving. (1057, 1395, 1258)

**RESPONSE:** The Organic Act of 1897 was the basic law for establishing the National Forests. It stated "*No national forest shall be established, except to improve and protect the forest within the boundaries, or for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States....*"

The Multiple-Use Sustained Yield Act of 1960 contains the following information: *Section 1 – "It is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes."*

*Section 2 – "The Secretary of Agriculture is authorized and directed to develop and administer the renewable surface resource of the national forest for multiple use and sustained yield of the several products and service obtained therefrom. In the administration of the national forest due consideration shall be give to the relative values of the various resources in particular areas."*

*Section 4 – "'Multiple use' means the management of all the various renewable surface resources of the national forest so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform*

*to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resource, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output."*

The Forest Plan was prepared to meet the legal requirements and regulations of the National Forest Management Act, but directly follows the spirit and intent of the Organic Act and Multiple-Use Sustained Yield Act. The Forest Plan prescriptions and projected outputs are designed to meet the needs of the American people while meeting the intent to "improve and protect the forest within the boundaries." The Forest Plan is responding to "changing needs and conditions," "without impairment of the productivity," and "with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return...." To imply that the Forest Service must maximize commodity outputs to meet local economic needs is contrary to the principles of these two laws. The Forest Service does intend to provide sustainable development for people with due consideration for all resource values.

**2. COMMENT:** While there are many examples of generous to excessive proposals to provide for wildlife, visual quality, and other amenities, we find no evidence of attempts to develop high levels of commodity production critical to local communities. The MNF has failed to demonstrate the diligence to minimize environmental conflicts while meeting its economic mandates. (1258, 1252)

**RESPONSE:** We do not agree. The IND and RPD alternatives provide high levels of commodity production. The Forest Plan provides management direction in Chapter 4 that allows for sustained development of resources while minimizing environmental conflict. You have not provided adequate information to support the comment.

**3. COMMENT:** Forest officials are more concerned with the statistics of wildlife habitat than the welfare of our small communities. (718)

**RESPONSE:** The regulations for implementing the National Forest Management Act requires that "fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area." (36 CFR 219.19) One of the principles upon which forest planning is based "responsiveness to changing conditions of land and other resources and to changing social and economic demands of the American people." (36 CFR 219.2(14)). These regulations require the Forest Service to be responsive to

both wildlife and small community needs. Alternatives displayed in Chapter 2 of the FEIS provide for various levels of wildlife habitat and economic development needs. The Record of Decision displays our rationale for selecting the Preferred Alternative.

**4. COMMENT:** I am extremely concerned about the PRF Plan for the MNF. I believe there are a number of NEPA violations, and I believe you are slanting the Plan to satisfy local loggers and ranchers at the expense of the greater public. (169)

**RESPONSE:** The Forest Plan complies with NEPA to the best of our knowledge. The Forest Plan is a balanced program between commodity and non-commodity values.

**5. COMMENT:** The Modoc [draft] EIS does not include a no-action alternative as required by NEPA and NFMA. A no-action alternative is needed to compare the existing Plan with the proposed Plan. Until the existing plans are formally amended, they must serve as the no-action alternative representing current management. 40 CFR 1502.14(A), 36 CFR 219.12(f)(7). Subjecting the no-action alternative to new yield tables, new land suitability, MMRs, MIRs, and new standards and guidelines and then displaying the results as no change from current management direction is deceptive and fails to conform to NEPA and NFMA. The potential yield of the existing timber resource plan is 75.3 MMBF/yr. However, the current direction alternative lists the allowable sale quantity as 51.4 MMBF/yr. This difference prevents accurate comparisons of outputs and impacts with the Preferred Alternative. (1070, 1263)

**RESPONSE:** The Forest followed national and regional direction in preparing the Current Alternative which serves as the no-action alternative. The NFMA regulations at 36 CFR 219.12(f)(7) states, "At least one alternative shall reflect the current level of goods and services provided by the unit and the most likely amount of goods and services expected to be provided in the future if current management direction continues." This regulation allows two options, to compare against current levels of production or to project the continuation of current policies. The Timber Management Plan of 1975 was produced using a different inventory and does not meet current laws and regulations. While that plan is current management direction until it is replaced, it cannot continue as direction after the Forest Plan is approved. For this reason the Forest chose to compare against the current levels of production, with 1982 as the base year. This year was chosen to be consistent with the 1985 RPA and other forest plans in the Region. We display timber comparisons among alternatives against the 1975 Timber Man-

agement Plan in the timber comparisons section of EIS Chapter 2.

**6. COMMENT:** "Current management"... as used in the documents is a very misleading term with respect to the timber sell program. It is, of course, based on the timber program in 1982 which has a reduced sell. For the past decade under the current timber management plan and for the prior timber management plan, the Modoc NF annually sold about 63 MMBF. Therefore the Preferred Alternative is only about 82% of the current program. The description of the "current alternative" on page 4-10 of the EIS needs to be corrected because it will cause a decline in all the factors listed in the last sentence. (256)

**RESPONSE:** See the previous response.

**7. COMMENT:** The MMR process was undertaken without public review or public comment. The MMRs adopted in the Plan violate the requirements for public participation, interdisciplinary analysis, and integrated planning mandates of NFMA. They did not examine a range of alternatives and, because they prevent development of a high level output of certain resources, we believe they violate the Multiple-Use Sustained-Yield Act. Modoc MMRs override the attainment of high level timber production goals. In as much as the proposed ASQ is a 16% reduction from the existing figure, non-declining even-flow yield has been violated. Draft documents indicate that multiple-use objectives were overridden and subverted. e.g., you erroneously identify the requirement for 1.5 snags per ac. as an MMR. The statute requires that you maintain viable populations of vertebrates. That is the MMR. That statute says nothing about numbers of snags per ac., or snags at all.

There is no indication that other alternatives were considered, e.g., nest boxes. There is no estimate of timber volume destroyed annually.

Snag standards seem to be based on snag availability rather than on need. You are dealing with the same mix of vertebrates that other forests in the vicinity have. They have not seen the need for this kind of program. You have not explained why MNF is unique. (1070, 1263)

**RESPONSE:** The Pacific Southwest Region of the Forest Service has established specific guidance for meeting NFMA regulations using an interdisciplinary team process. The Forest followed this guidance because it represents the best research information available. The standards became available for public involvement at the time the DEIS and draft Forest Plan were released for review. We modified applications of various standards based on the public review.

The standards alone do not prevent attainment of high timber production levels. The RPD and IND alternatives

both maintain high timber production goals. Reduction in ASQ is also influenced by the various alternatives' themes. As you state, the true minimum management requirement is to maintain viable populations of species. To accomplish this for snag dependent species, the Forest implemented the best guidance available which is the 1.5 snags per acre. Snags are discussed in EIS Chapters 2, 3, and 4, in the wildlife sections. EIS Appendix B displays supporting methodologies.

**8. COMMENT:** The issue of minimum management requirements (MMRs) has been the source of considerable controversy since the very early stages of national forest planning. This non-public process involving development of management prescriptions and land allocations significantly constrains the potential of the suitable timberland to produce forest resources in every alternative and makes the Modoc Forest Plan and draft EIS legally indefensible. The MMRs adopted in the Plan violate the public participation, interdisciplinary analysis, and integrated planning mandates of the National Forest Management Act, are void unless promulgated as formal rules pursuant to the Administrative Procedures Act, and completely disregard the requirements of the National Environmental Policy Act to examine a range of alternatives for major federal actions affecting the environment.

Furthermore, the MMRs violate the Multiple Use Sustained Yield Act because they prevent a high level output of other resources. NFMA contains no statutory requirement to develop minimum management requirements. The supposed source of MMRs is the Forest Service planning regulations. 36 CFR 219.27. A persistent thread running through section 219.27 is that resource protection practices shall be consistent with other multiple use objectives. One resource was not to override the attainment of another resource. The Modoc MMRs override the attainment of the timber resource production goals and hence violate NFMA and MUSY. The National Forest Management Act also requires that guidelines for soil, water, diversity, wildlife, etc., are to be developed to achieve the goals of the RPA program. 16 U.S.C. 1604(G)(3). The Modoc Plan violates this provision of NFMA because RPA program goals were not a factor considered in developing MMRs and the Modoc MMRs preclude meeting the RPA timber goal.

The Department of Agriculture's general counsel clarified the intent of the MMR direction in an April 4, 1985 memo. MMRs were intended to be "the smallest amount of constraints possible" and were to be limited to those specified by statute. If the MMR constraints had been applied to the Modoc Forest Plan in a manner consistent with the regulations found at 36 CFR 219.27 and in the "smallest amount possible," WFA would not find them particularly objectionable. However, the Modoc NFs interpretation of MMRs has resulted in restrictive land use



prescriptions that WFIA believes far exceed what was intended by the NFMA regulations and certainly surpass the level of constraints described in the OGC opinion. The net effect of this interpretation has been the narrowing of the range of alternatives seriously considered in the draft Forest Plan, the foreclosure of opportunities to efficiently increase or maintain current timber production potential and the dedication of a substantial portion of the Modoc NF's resources without the public process mandated by NFMA and NEPA. (1070)

RESPONSE: As described in the previous response, the Pacific Southwest Region developed guidance necessary to meet the NFMA regulations using an interdisciplinary team process. Releasing the draft EIS and Forest Plan allowed for public comment on the standards. This comment influenced our preparation of the final Forest Plan and EIS. (See EIS Appendix B, Snag Modeling for one example). As described above the RPD and IND alternatives yield a high level of timber production while meeting the MMRs. Higher levels might have been achieved with different MMRs, but these alternatives were also influenced by the alternatives' themes. The theme of the alternative is the "persistent thread" in 36 CFR 219.27 referring to "consistent with over-all multiple use objectives." The RPA targets were assigned to the Forest before any comprehensive analysis of the Forests capabilities was conducted. The Forest did model the RPA targets, although we had to include a departure alternative to achieve the first decade outputs. We believe that the process we followed in developing and the draft and final Forest Plan documents is in compliance with NFMA and NEPA.

9. COMMENT: MMRs developed for the Modoc are not "law" as often described by Forest Service personnel. The agency's hands are not "tied" as many representatives claim when it come to MMRs. Neither NFMA nor the regulations required that 5% of each seral stage be withdrawn, that the spotted owl be an indicator of old growth, or that the pileated woodpecker be given 300 acres of habitat.

The consequence of the Forest Service's failure to comply with proper procedure is the artificial narrowing of the range of alternatives and resource outputs. MMRs must be eliminated and alternatives to establish resource protection measures must be examined in a new DEIS. Protection measures that involve the same or more risk while allowing greater achievement of timber objectives must be considered. The goal should be to attain a high level output of renewable resources by integrating the resource protection measure with other multiple uses. (1070)

RESPONSE: See responses to previous two comments.

10. COMMENT: The DEIS also fails to provide a suitable array of alternatives. Minimum mgt. requirements are held throughout each alternative with no alternative specific management proposed. For example, regardless of management prescription of alternative, snags are held at the minimum level of between 1.1 snags/acre and 1.5 snags per acre by the fifth decade. Regardless of falcons, bighorn sheep and goshawks have little or no changes in population. In most cases, the populations displayed are only for the minimum viable or minimum targets (numbers) that would be required to delist a species. The failure to provide a larger array (above minimums) severely reduces the adequacy of the Plan and is contradictory to NFMA direction and the intent of the forest planning. (364)

RESPONSE: Responses to previous comments in this section provide much information about how management requirements were set. The DEIS did display alternatives which exceeded the minimum population levels for bighorn sheep and goshawks. Numbers of peregrine falcons are constrained by the habitat available. The Forest followed appropriate NFMA direction.

11. COMMENT: Commodity outputs, when added to the other NFs in Calif., are in demand and used throughout the State. The inability to review plans simultaneously is a significant limitation because aggregate effects of the final plans could be significant. Recommendation: suggest that aggregates of plans by economic region be reviewed publicly before final decisions on PRF Alternatives are made for individual NFs. (364, 672)

RESPONSE: The Region has distributed output summaries to interested parties, and included FEIS Appendix S to address this concern. Simultaneous release of all plans is not logistically feasible.

12. COMMENT: It seems odd to put specifics in the Plan when you know they are dependent on such things as Congressional designation of funds, fires, and other agencies' plans. I recognize that the Plan is supposed to be written as if budget is no object, but it would seem that a usable plan, under such circumstances, would go heavier on the goals, standards and guidelines, and not be so specific about miles of trails to be built and acres of land acquisition. Save the exact figures for the more certain situations, or you will either have millstones around your neck, or an unrealistic plan that gets ignored. (708)

RESPONSE: The Forest displays specific information so that the reader may better understand what we are presenting in the alternatives; specific information is also helpful in formulating future budgets. Actual accomplishment is dependent on the budget. When implementation



rates do not equal those projected, we may need to amend the Forest Plan. The goals, standards and guidelines will apply regardless of the budget levels. See EIS Appendix R.

**13. COMMENT:** We support reworking many aspects of the proposed Plan. Many flaws, discrepancies, and omissions have been found in various areas of the Plan that warrant redoing much of the Plan. (364, 959, 1036)

**RESPONSE:** One purpose for issuing a draft EIS and Forest Plan is to allow the identification of flaws, discrepancies and omissions before the final documents are released and implemented.

**14. COMMENT:** None of the alternatives are suitable. Your own data shows that the Modoc is capable of sustaining a 91 million board feet while meeting all environmental constraints. (1360)

**RESPONSE:** The Forest could not develop any alternatives or benchmarks capable of a sustained production of 91 MMBF while meeting all environmental constraints. EIS Chapter 2 reviews the development of alternatives.

**15. COMMENT:** The range of alternatives is incomplete: The foremost reason is the decision to essentially exclusively use even-age silviculture, concentrating on clearcutting, for all alternatives. One minimum level for cultural resources was used for all alternatives. Only one standard SPNM designation was used to define Zone B or OHV use for all alternatives. Essentially the same miles of open roads and trails for OHV were used in all alternatives. Suitability criteria were not changed between the different alternatives. A Wild and Scenic River assessment was not made. To achieve a true range of alternatives the following should be done. Stand prognosis or other uneven-age systems such as group selection should have been used for some alternatives. Different levels of inventory, protection and interpretation should be developed for cultural resources. Areas closed to OHV use should include sensitive wildlife habitats, archaeological sites or other resource protection. Different SMZs, range utilization standards or criteria for evaluating tree regeneration or physical criteria for evaluating timber suitability could be used. (1260)

**RESPONSE:** The Forest *did* provide a wide range of alternatives in the DEIS. Three levels of SPNM designation influenced the land available for OHV use. For the final EIS the Forest has incorporated uneven-aged management into the Preferred and Amenity alternatives and conducted a Wild and Scenic River assessment (see EIS Appendix T). Standards for cultural resource inventory and protection is set by law and does not vary. Criteria for determining tentatively suitable timberlands is held con-

stant across alternatives, but suitability will vary by the theme of the alternative.

**16. COMMENT:** The EIS fails to present a range of alternatives that offers a variety of multiple-resource outputs. Those who use the Forest for other than timber or grazing have little or nothing to choose between these alternatives. Plan is, in reality, primarily a timber and grazing management plan. Since output of the other resources is so insensitive to varying levels of timber and grazing management, then there should be little concern on anyone's part for working for maximum production of those two resources. (1263)

**RESPONSE:** The DEIS presents a range of alternatives for recreation opportunities, visual quality, and wildlife management. Public comments on the documents reveals enormous concern about maximizing range and timber production at the expense of other resources.

**17. COMMENT:** DEIS 2-2, 3: You speak of development of reasonable alternatives not within your jurisdiction, formulation of reasonable alternatives which might require a change in existing law or policy, development of a no-action alternative, and development of alternatives reflective of the full range of resource outputs from maximum to minimum. We believe that you did not comply with these directions. (1263)

**RESPONSE:** We prepared a set of alternatives that offers a wide range of resource outputs and provides a no-action alternative (as described in our response to a previous comment). The Forest did not identify a reasonable alternative that would require a change in existing law or policy.

**18. COMMENT:** We believe based on reviewing the DEIS, that: (1) the Modoc's Preferred Alternative fails to meet clear Congressional mandates; and (2) the proposed Plan will have a significant adverse impact on our member associations if implemented as written. (1070)

**RESPONSE:** We disagree with your first statement. The Preferred Alternative, and other alternatives as well, were developed to meet national and regional planning requirements which meet the intent of Congress. The Forest Plan may have an adverse impact on your member associations. Potential consequences are displayed in EIS Chapter 4 – *Environmental Consequences*.

**19. COMMENT:** DEIS App. E: Roadless areas section does not specify which areas are designated further planning areas or released areas. The Forest has the option to consider released areas for wilderness designation. Although it has not recommended any roadless area for wilderness dedication, the Forest is required to indicate mgt. alternatives and provide info for both further planning and released areas. (1248)

RESPONSE: All roadless areas on the Modoc NF were released in accordance with the 1984 California Wilderness Act (see section 196 – Roadless Areas in this appendix). Based on review of these areas, none were considered for wilderness designation. The various alternatives maps display the management areas which were assigned to roadless areas.

20. COMMENT: A group of rockhounds from an unspecified southern California club created a dangerous situation in the Plum Valley area. They undercut the bank on a rather large tree and then sawed off some of the roots to boot. An Oregon business group have recently taken a large amount of obsidian from the Davis Creek area. (5)

RESPONSE: This comment has been forwarded to the Ranger District for review.

21. COMMENT: I recommend that you appoint a committee similar to a technical review team that would include representatives of the timber, livestock, sportsmen, and other user groups as well as representatives of the environmental community to meet with your staff and try to assist you with the formulation of a plan alternative that would be more widely supported by the public in general. We need to work toward consensus rather than confrontation. (980)

RESPONSE: The Forest invited two such work groups in developing the final Forest Plan. The process used in discussed in Chapter 1.

22. COMMENT: This is a specific request to harvest the trees (daylight) along Hwy 139 in the general vicinity of the Hayden Hill road and Willow Springs area. The shade on this section of the hwy. Allows the ice to build up and stay for most of the winter. Harvesting these trees would do a lot to eliminate a safety hazard. This section of the road is often the only piece with ice on it. (136)

RESPONSE: This comment has been forwarded to the Ranger District for review.

23. COMMENT: The use of analysis areas rather than capability areas does not provide for adequate spatial accommodation of seral stages and diversity. In order to provide appropriate areas of habitat and diversity it is essential that the spatial arrangement, size and juxtaposition of these areas be a part of the modeling process. (364)

RESPONSE: Spatial arrangement, size and juxtaposition are all critical factors in developing habitat and diversity. The FORPLAN model does not have the capability to accomplish this. Standards and guidelines in Chapter 4 of the Forest Plan provide direction to incorporate these

factors at the project level, where the information is available.

24. COMMENT: 4-131. spotted owl is not included as a species occurring on the Modoc NF. Our records include an observation made in 1986, by Whisler, in T40N, R15E, NW1/4, section 16. (364)

RESPONSE: We have not confirmed this sighting, but we have conducted additional inventories at this location and others. Chapter 4 of the Forest Plan contains direction on management in potential spotted owl habitat in the Forest Standards and Guidelines for wildlife.

25. COMMENT: 4-57 through 4-157. Management prescriptions; standards and guidelines. There is no apparent system of selecting when a practice is a guideline or a standard. Some standards often contain permissive terms: 4-61 7a. (1), 4-72, 7.C., 4-106, a.4., 4-106 b. 4., 4-129 Timber a., etc. (364)

RESPONSE: We reviewed all standards and guidelines and assigned each an S for standard or G for guideline.

26. COMMENT: Page 4-121, the DEIS indicates that if the Preferred Alternative is chosen, there will be a decrease in habitat for pileated woodpecker and pine marten and presumably for other old growth conifer-related species. This is not only undesirable from a wildlife standpoint by itself, but it violates CFR 219.19, which in part requires the maintenance and improvement of habitat of all MIS. The DFG recommends that timber, grazing, and recreation management and practices be adjusted to permit the Plan to comply with CFR 219.19. (364)

RESPONSE: The over-all amount of seral stages which old-growth-dependent species can use is reduced in all alternatives. Therefore, we project that habitat for pileated woodpecker and pine marten will decrease. 36 CFR 219.19 requires maintaining a viable population. The Forest Plan will meet this requirement.

27. COMMENT: I'd like these species added to the final plan:

- *Gratiola heterosepala*: a State-listed endangered plant that occurs with *Eryngium mathiasiae* in vernal pool or swale areas near McArthur [California]. Such habitat also occurs in Big Valley.
- *Silene invisa*: which occurs in red fir forests. (676)

RESPONSE: We reviewed these plants but did not add them because they apparently do not grow on the Forest.

28. COMMENT: The COTP powerline and the OTH-Backscatter radar projects are not included in the planning at all. I can understand leaving out the powerline, as it is still tentative, but the radar site was approved in the early 80s. The powerline involves decreased timber inven-

tories, fuel reduction between lines, topping to compensate for lost snags, and interruption of habitat areas. The backscatter involves decreased grazing, and major modification of vegetation in the area for wildlife mitigation. (708, 997)

RESPONSE: We revised the document to include a discussion of these projects.

29. COMMENT: I would like to see standards and guidelines between the state and federal agencies conform with one another so that confusion between loggers and agencies could be eliminated and effective forest management could be implemented throughout our state. (1230)

RESPONSE: The Forest Service cannot direct the development of standards and guidelines for use on private lands. We provided the State with our standards and guidelines for their review.

30. COMMENT: It is also noted that the Forest Service no longer cites (36 CFR 221) as being part of their authorization although these regulations have not been superceded and should remain in force. Perhaps an acknowledgement of these regulations by the Forest Service would strengthen their emphasis on a continuous supply of timber, stabilization of communities and opportunities for employment. (1252)

RESPONSE: After forest plans are developed under 36 CFR 219, timber plans developed under 36 CFR 221 will be superceded.

31. COMMENT: Use of 1982 as a base year for comparison is misleading, especially for timber. Timber harvest on the MNF in 1982 was less than half the figure for all other years in the decade except for one, 1984. It was only 53% of the 1984 figure. (1263)

RESPONSE: The base year of 1982 was selected to be consistent with the 1985 RPA program and the other forest plans in this Region.

32. COMMENT: DEIS 3-2: It is only a few miles from K. Falls and Lakeview. Is there a reason to ignore those areas, other than that they are in a different political sub-division? (1263)

RESPONSE: We did not ignore these areas, but we did not incorporate them in the primary zone of influence.

33. COMMENT: The pvt land owner could be at the mercy of the FS Plan. E.g., several streams run in from FS land, through our land, and out again onto FS land. If an endangered species of fish is planted in one of those streams, what will we be required to do to "protect" it as it passes through our property? (1322)

RESPONSE: The Forest Service has no jurisdiction over private lands.

34. COMMENT: Every item that reduces sustained yield, such as snag management, goshawk areas, streamside zones and old growth retention zones should have an economic analysis to show the public what it costs. Every grazing permit that is eliminated should show the same analysis. (1360)

RESPONSE: Table 2-19 (EIS Chapter 2) displays the marginal costs of constraints. The Forest Plan does not propose the elimination of any allotments at this time. If such as proposal were considered in the future, we would conduct an economic analysis at that time.

35. COMMENT: In the Hayden Hill area south of Adin here about 15 miles, there is inconsistencies in that the boundary of the Forest is somewhat irregular, and the designation of how those lands are to be used somewhat inconsistent with the guidelines that are presented, particularly in the form of visual retention in that there are areas that are scattered around the boundaries of the Forest that are designated for visual retention which apparently don't coincide with the regulations as stipulated in the rest of the document. We would like to see that particular part of the Plan reviewed. (1401)

RESPONSE: We have reviewed and modified the Forest map where necessary.

36. COMMENT: The noxious weed program in 12.h [of the Plan] should be subject to NEPA and public involvement. (708)

RESPONSE: The noxious weed program is conducted in coordination with local, state and other federal agencies. It is subject to NEPA requirements.

37. COMMENT: Draft Plan—page 1-4; Forest Plan amendments, etc.; third paragraph, last sentence: This is not a true statement—only the decision to implement the Plan that is contained in the Record of Decision, is appealable. The process, issues, or any individual portion of the Plan or EIS are not, by themselves, appealable. Eliminate this sentence, and substitute a statement that tells where an appeal may be filed and within what time frame relative to the date of decision. (100)

RESPONSE: We deleted the paragraph.

38. COMMENT: Plan 4-3 MNF mission 1986-1995: What does the last mission mean? "Maintain a level of resource protection commensurate with values." We assume that soil productivity should be the bottom line, but this statement should be clarified. (107)

RESPONSE: This statement refers to fire protection program: our mission is to provide protection to resource

values at a level commensurate with the need for protection.

**39. COMMENT:** Under the Summary of the Analysis of the Management Situation, under local economic impacts, it should be noted that ranchers do not hold a "possessory interest" in the Forest. Public grazing is a privilege, not a right. (708)

**RESPONSE:** The statement refers to the State of California possessory interest tax on items such as grazing use permits. We revised the text in the EIS and Final Plan. You are correct that grazing on national forest lands is not a right; it is a permitted use.

**40. COMMENT:** Draft Forest Plan, page 4-10, forest planning, item 3. Since this is the Forest Land (and resource) Management Plan, there should be a description of how this Plan was coordinated with the contemporary development of the revised Modoc County land use plan. For example: regarding ORV use and restrictions, forest pest management, state and private forestry coordination, etc. (1021)

**RESPONSE:** The Modoc NF and Modoc County planning staffs coordinate by reviewing each other's plans.

**41. COMMENT:** The Industry Alternative should be renamed the commodity alternative. It was not prepared by any "industry" nor does it appear to be supported by any. (1243)

**RESPONSE:** We retained the same name for the IND Alternative to avoid confusion in comparing with the final documents.

**42. COMMENT:** [Mgt. Rx 17 description]: Use of "viable" as modifier of alternative developed recreation site is disconcerting. Definition, standards, guidelines for "viable" in this application of the term. (1248)

**RESPONSE:** Viable, in this case, refers to any other feasible option that would meet management requirements. The main intent is never to locate new developed recreation facilities in riparian zones.

**43. COMMENT:** The approach to public issues and Forest Service management concerns, which have not been updated since 1983, expressed in the draft environmental statement raise some very critical questions: "public issues are the driving force behind the Forest Plan" (DEIS 1-14). Is it a fact or a Forest Service perception that issues and concerns "drive" the planning process? We most emphatically disagree that the primary planning impetus

is a distillation of *ad hoc* opinions, whether originating from certain publics or agency personnel. In proper perspective, planning is intended by Congress to be "driven" by the will of the people as expressed in statutory mandates. (1252)

**RESPONSE:** Congressional mandates form the basic framework of the forest planning process. We must also determine local and regional public issues that are specific to the Modoc National Forest. Within the framework of the laws, public issues drive the planning process.

**44. COMMENT:** The SOC alternative is very general and does not go into the detail necessary to provide a land and resource management plan that can be implemented. In order to achieve that detail will require a great deal of research and discussion. (219)

**RESPONSE:** The Forest did not develop the SOC alternative because the authors did not provide details on its implementation.

**45. COMMENT:** Documents have earmarks of a preamble to AMS. Much of the data necessary for AMS have not yet been collected. Plan is required to offer specific mgt. program based on a completed AMS. At best, however, plan currently is a fragmentary agenda for info gathering — an expression more of need for info than a clearly defined budgeted schedule for obtaining data, conducting inventories, doing research. At this stage, data are so deficient that Forest rightfully needs to shut down operations until it knows what its doing.

- What degree of forest closure is feasible until data are collected and assessed?
- Nature of crash data collection program. Definition of further planning alternative as PRF Alternative. Means to enlist Forest staff, universities, research groups, citizen organizations, volunteers to assist intense, comprehensive forest inventory. Budget for this enterprise.
- Forest counsel opinion on how documents can be considered a management plan, how monitoring can legally be achieved without inventory baseline, or how any of the sharply defined NFMA planning steps can be achieved without this first inventory research step. (1248)

**RESPONSE:** Closing down operations until all available information is collected and analyzed is beyond the jurisdiction of the Forest. We will implement the Plan, and will amend or revise it if monitoring and evaluation findings so indicate.

**371 - Environmental Concerns, General**

1. COMMENT: With our burgeoning population we will be increasing ideas of the sociotype and healing aspects that our shrinking outdoors has to offer. This means guarding the few remaining roadless areas of our national heritage. And controlling man's greedy appetite for more and more of mother nature's last threatened areas. (47)

RESPONSE: The Forest Plan provides semi-primitive non-motorized recreation opportunities that can fulfill this need.

2. COMMENT: Deteriorated conditions, such as range in poor condition, should be rehabilitated before being subject to any consumptive uses. (1276)

RESPONSE: The management direction in Chapter 4 of the Forest Plan provides direction to rehabilitate range in poor condition.

3. COMMENT: I am concerned for the future of the Modoc NF, including the Warner Wilderness, the Modoc Plateau and the Highlands of Medicine Lake. Many of these areas have already been overgrazed and logged past the point of naturally renewing itself. I oppose all clearcutting and the use of herbicides as there are dangerous short-cuts to obtain lumber and grazing land. (975)

RESPONSE: The Forest Plan provides standards and guidelines to protect Forest productivity and range lands.

4. COMMENT: Concerns 3-11; the study does not address the acoustic degradational concerns of the residents through the overflights of the military aircraft during their low altitude interdiction maneuvers. The question of Guard maneuvers on the ground is a concern for the dispersed recreationalist, due to the road closures. Greater efforts need to be taken for the signing and posting of notices to the effect, prior to the fact. (3, 5)

RESPONSE: The Forest Service can provide input on overflights but is not the controlling agency. On-ground activities will be coordinated with the public's needs.

5. COMMENT: Both logging and grazing should not be conducted where because of soil condition and limited rainfall hamper the reforestation and growth renewal process. (199)

RESPONSE: The NFMA regulations require that timberlands will be declared unsuitable if they cannot be regen-

erated within 5 years after harvest. We also look at ecological condition when managing for grazing.

**372 - Cumulative Effects**

1. COMMENT: The Plan must fully consider its direct and indirect impact upon all of northeastern California. (1359)

RESPONSE: EIS Chapter 4—*Environmental Consequences* displays direct and indirect impacts.

**373 - MMR - Timber**

1. COMMENT: <20 lands will be harvested for timber on an "opportunity" basis, as reflected in Rx 16. It is our understanding that MMRs for suitable timberland exclude lands which are not suitable for timber production. CA Native Plant Society interprets Rx 16 to be a violation of the MMR. Have we misinterpreted its meaning? (1214)

RESPONSE: In its Land Management Planning Direction revised January 15, 1984, the Pacific Southwest Region indicates that the Lassen and the Modoc National Forests are the only R5 Forests with potentially significant amounts of land producing less than 20 cubic feet per acre per year that are also suitable for timber production. "...These two Forests must (a) include these less than 20 cubic feet per acre per year lands in the suitable land base...." The Forest plans to harvest, on an opportunistic basis, 5% of the standing inventory when appropriate standards and guidelines can be met.

**400 - Plan Implementation**

1. COMMENT: Plan does not set management priorities if the funding required for implementation (Plan 4-2) is not fully available or if more funds should be available. The plan should set such priorities and discuss their impacts. We are concerned that with underfunding, grazing and logging will go ahead without adequate planning, control and evaluation to ensure mitigation of impacts on fish and wildlife resources—a continuation of past adverse impacts. (364)

RESPONSE: EIS Appendix R displays the relationship of budgets to the implementation of the Forest Plan. All projects must be in compliance with the standards and guidelines.

2. COMMENT: Full evaluation of the alternatives cannot be carried out unless consideration is made as to how the alternatives will be implemented under various levels of budget constraints. Several levels of budget implemen-

tation for each alternative needs to be outlined. The Plan should clearly demonstrate how each alternative, if adopted, would be implemented at each of the budgeting levels. (1057)

RESPONSE: Under current national direction we are not supposed to develop alternate levels of budget for each alternative. EIS Appendix R discusses the effects of budget on implementation.

3. COMMENT: Recommendation—the actual management of individual areas should be addressed on a case-by-case site-specific basis. (1283, 1285)

RESPONSE: We manage projects on a site-specific basis. The Forest Plan provides the management direction to guide that management.

4. COMMENT: The Forest Service has not yet adequately explored or emphasized monitoring techniques. We are aware that monitoring can be a costly undertaking, but to comply with NFMA regulations to manage and protect diversity in the Forest, funding must be made available for monitoring.

RESPONSE: The Forest Service is still developing institutional monitoring processes. We rewrote Plan Chapter 5—*Monitoring and Evaluation* to reflect the most current direction, including funding.

5. COMMENT: With the majority of the allotments requiring some range improvements by either fencing or water development, brush control, fertilization and seeding, is there actually enough funding to improve all these areas at the same time and if not then will permits be cut even before range improvements can be implemented? You cannot undo years of poor management in just a few years; it would seem logical that improvements should be made before the grazing permits are cut. (1019)

RESPONSE: Range improvements and permitted numbers of livestock will be determined during development of allotment management plans (AMPs). We will conduct allotment management planning over the entire decade, which will set the stage for range improvements over the decade also.

6. COMMENT: This Plan states very specific guidelines and management prescriptions which will be adhered to. How do you plan to monitor and evaluate the effects of these management activities? What monitoring techniques do you plan to use? Will additional range and wildlife personnel be hired to monitor, evaluate, and write up allotment management plans? If stated range, timber, wildlife, riparian, water quality, and habitat improvement goals have not been reached within the first decade (for whatever reasons, such as budgets, weather, manpower, etc.) could you be court ordered to fulfill these

goals (requirements)? What would be the ramifications of such a court order to the local ranching community, local economy, and the Modoc NF? (1153)

RESPONSE: Chapter 5 of the Forest Plan displays the monitoring and evaluation process we will use during implementation of the Forest Plan. It includes items to be monitored, techniques, and variations that would cause further action. Evaluation of the results of monitoring may lead to Forest Plan amendments or even revision. Court orders would only result if it could be proven that the Forest Service is not following appropriate monitoring and evaluation techniques.

7. COMMENT: Plan p. 5-16—The monitoring of visual resource improvement was left out. (1)

RESPONSE: Thank you for bringing this omission to our attention. We have added visual quality monitoring to Chapter 5 of the Forest Plan.

8. COMMENT: On a final note, we would like to emphasize that both surveying and monitoring of sensitive species and communities are extremely important. We suggest that the Plan include surveys which will determine population and habitat status and trends for endangered and sensitive species. (661)

RESPONSE: Sensitive plant monitoring techniques include assessment of populations and habitats.

9. COMMENT: Please add to Chapter 5 provisions for monitoring for wildlife habitat in firewood use areas. (1030)

RESPONSE: We did not incorporate specific monitoring related to firewood areas because normal monitoring procedures will allow for this.

10. COMMENT: Do you feel it is possible to restore all the backlog restoration areas of the Forest Service land by the year 2000 as the Resource Planning Act directs? (1030)

RESPONSE: The Forest Plan schedules completion of backlog. Actual implementation will depend on adequate funding.

11. COMMENT: Plan App. B indicates inventory/research. Other research needs listed or mentioned throughout the documents might well be gathered together in App. B. Precise nature of studies not indicated. Budgets and completion dates are important. Lack of specificity in this dept. gives impression that studies are low priority in operation of Forest. (1248)

RESPONSE: Research is not conducted by the Modoc National Forest. This listing is to be used in coordination

with the research arm of the Forest Service to identify research needs.

**12. COMMENT:** The funding allocated in the Plan is grossly inadequate to implement a trend analysis program. The rarity of most listed or candidate species dictates that extensive and prolonged surveys be undertaken. Such surveys by their very nature are usually quite expensive to carry out. The information obtained from less intensive surveys may be unreliable and misleading. We strongly recommend that significantly higher levels of funding be allocated in the final Plan for monitoring sensitive wildlife and plant populations. A high priority should be given to obtaining initial baseline data where such data are lacking, and for performing sustained long-term monitoring. (1316)

**RESPONSE:** Plan Chapter 5 displays a higher funding level for monitoring. This could include trend studies.

**13. COMMENT:** The problems associated with gathering and analyzing data for endangered fishes in the Modoc Forest will continue to be complicated if, as is currently the case, the Forest does not have a trained fishery biologist on its staff. We recommend that this deficiency be remedied. (1316)

**RESPONSE:** The Forest now employs a fisheries biologist.

**14. COMMENT:** In situations where there is already good documentation to show that a listed, proposed, or candidate species is currently in a declining or depleted status, land uses that would exacerbate the situation should be avoided until recovery is well underway. (1316)

**RESPONSE:** The variation that would require further action would include the conditions you state. For example, we could discontinue certain management activities. We would determine the feasibility of other actions at the site-specific level.

**15. COMMENT:** The evaluation of habitat effectiveness for deer needs to be limited to an area of less than 10,000 acres. This area needs to be a permanent monitoring unit to evaluate the effects of roading, harvest dispersion, and grazing on big game over time. (1317)

**RESPONSE:** Currently, the Forest uses the deer herd area or the area affected by projects as the area of analysis.

**16. COMMENT:** [Plan] 5-19 monitoring plan for Lost River and shortnose suckers is inadequate in terms of frequency. This is especially relevant because of the lack of baseline population and habitat preference information on these fish. E-3 monitoring techniques for Lost River and shortnose suckers do not include population

sampling. This is contrary to the techniques noted on page 5-19. (1317)

**RESPONSE:** We made these changes in the final Plan. The monitoring frequency is now yearly.

**17. COMMENT:** MNF should develop an active ongoing monitoring program for all mgt activities that have environmental impacts. (500)

**RESPONSE:** Plan Chapter 5 displays our proposed monitoring program.

## 401 - Data Base/FORPLAN

**1. COMMENT:** The methods used to compute the inventory of standing timber are suspect and this means the data base is incorrect. With an incorrect base wrong conclusions have been arrived at. (603, 930, 1230)

**RESPONSE:** The data base is the best information available and is statistically accurate. We analyzed all alternatives using the same data base; and comparisons between the alternatives are valid. We will implement projects following the management direction in Chapter 4 of the Forest Plan. This direction is more for control than the inventory. The Forest will be rescheduled for inventory prior to a Forest Plan revision.

**2. COMMENT:** Recognition that sufficient data exists to warrant go-slow program on Forest development, not enough baseline info to justify current development or speed-up of resource exploitation. (1248)

**RESPONSE:** See previous response.

**3. COMMENT:** The data base flawed because too narrow a source has been used. To base an inventory of growing timber on such minute counts is irresponsible. (603, 705, 1230)

**RESPONSE:** The data base was developed using a statistically accurate sampling method. This allows development of a data base from a smaller number of sample plots.

**4. COMMENT:** The use of the FORPLAN linear programming model has wide acceptance. What may in a computer model, show a public benefit on a national level, is in fact, detrimental to the local economy of livestock and timber operations, and the communities and county governments that they support. Constraints are included in the model for wildlife and recreation, but not for local timber and livestock uses. The overall tone and direction seems to consider wildlife and recreation first and after all other interests. (1254)

**RESPONSE:** The accounting base of public benefit is a national base; and we the Modoc is a national forest. We



estimate impacts on the local economy using the economic impact computer model, IMPLAN. You are correct that constraints are not included for timber and livestock. Depending on the alternative, we imposed constraints for minimum levels of AUMs or the species mix for timber. Timber and livestock management are considered equally with other resource values.

**5. COMMENT:** The utilization of FORPLAN and the objective function of the planning process further biases the process toward commodity production. An example of this bias is the use of demand cutoffs for valuing wildlife and fish user days (WFUDs) and recreation visitor days (RVDs) while no other outputs have benefit values removed at any point. (364)

**RESPONSE:** We use FORPLAN as a tool for projecting the goods and services possible for a particular alternative. We constrain the model to reflect the themes of specific alternatives. The model can display bias; but we try to control that through the analysis of the alternatives. We imposed demand cut-off points on those resources where supply is projected to exceed demand. This was the case for recreation and wildlife use.

**6. COMMENT:** Regardless of the statements made regarding the interaction of price and cost trends in calculating Present Net Value (page B-36), by failing to treat other outputs in an equal manner, a deliberate bias is built into the analysis. We disagree that "using trends for timber but not for other resources does not significantly affect economic efficiency comparisons between resources," because as is stated, those data from which to make trends for other resources are not available. (364)

**RESPONSE:** See previous response.

**7. COMMENT:** In the DEIS it is apparent that the number of deer hunters functions as the demand for big game WFUDs. In fact, the number of deer hunters is clearly a measure of supply under current management strategies while the number of applicants for the area are a measure of the demand. The failure to utilize this concept may have resulted in lower big game WFUDs demand, thereby producing a premature triggering of a demand cutoff, which resulted in an additional bias. (364)

**RESPONSE:** Demand cut-offs for big game WFUDs is based on the best projections of the Forest, and is influenced by the CA Department of Fish and Game licensing policies. Demand can be influenced by the total number of hunters or the number allowed to hunt by CDFG policy. The Forest used the best projection available.

**8. COMMENT:** Only the current number of allowable tags per unit were used in the proposed plan to tabulate hunter numbers misconstrues the fact that every year there are 3 times that number apply for tags to hunt those

units. The fact many of those picked are from the opposite end of the State exemplifies Forest use not covered in DEIS or Plan. The fact there are also many non-resident hunters that pay for the chance of a tag draw to hunt the MNF wasn't seen. (558)

**RESPONSE:** See previous response.

**9. COMMENT:** I suggest you remove the 30% constraint which forces the model to cut at least 30% eastside pine in the first decade. Allow the model to choose the most economic species to harvest in order to cut 52 MMBF. (900)

**RESPONSE:** We did remove this constraint in the modeling of the final Preferred Alternative.

**10. COMMENT:** The Preferred Alternative's loss of timber-related jobs could have been avoided if the Forest had chosen to do so. The Forest's benchmark analysis shows that the Modoc has sufficient productive capacity to produce at least 70.5 MMBF per year in the first decade, with a long-term sustained yield capacity of 74.9 million board feet, without violating any of the laws or regulations designed to protect environmental values. DEIS Table 2-1. In our opinion, this fact provides unmistakable evidence of the proposed Plan's blatant violation of the agency's Congressional mandate to manage the national forests to contribute to the stability of local economically-dependent communities. (1070)

**RESPONSE:** The benchmark to which you refer allocates zero acres of semi-primitive non-motorized recreation opportunity and provides no visual quality protection over the Forest. These issues were voiced by the public and are part of the Congressional mandate for managing the Forest. Themes for the various alternatives incorporate these other management objectives. Depending on the level of management for visual quality and recreation, the ASQ is lower in the alternatives than in the benchmark. This also true of the benchmarks that maximize big game or range.

**11. COMMENT:** The sufficiency of an individual national forest's timber sale program will depend on four factors: (1) anticipated volume available from the Forest itself; (2) probable volume available from adjoining national forests in the Forest's market area; (3) probable volume available from State, private, and other federal lands in the market area; and (4) volume currently under contract. These four factors will determine whether the existing industry's critical minimum log requirement will be met or not, and must be adequately analyzed in the Forest planning process and considered in the decision. The timber supply information presented in the Modoc's DEIS and draft Plan, is inadequate as a basis for final decisions in the Forest planning process. The management direction for the Preferred Alternative states: "if



timber demands increase significantly, offer a maximum additional volume of 5.9 MMBF per year." However, nowhere in the two documents is there any indication of how the additional demand will be measured. (1070)

RESPONSE: Supplies available on other forest, State and private lands is, at best, only an estimate. The Modoc NF assumed that demand was higher than supply potential from the Forest; we also assumed that any volume offered would be sold. Therefore, ASQ is based on the management theme developed for each alternative.

We analyzed the Preferred Alternative in the draft using maximization of PNV for an objective function. As a result, we did not include some lands for timber harvesting because it was not cost efficient to do so. We estimated that if timber demands were to rise significantly, the Forest would reevaluate whether those lands were now economical to manage for timber harvesting.

We did not use maximization of PNV as the objective function for the final Preferred Alternative; this analysis is no longer appropriate.

12. COMMENT: The DEIS contains absolutely no indication that the Modoc made any attempt to assess future timber program levels on adjoining national forests. The final Plan must recognize that proposed reductions on adjoining national forests will lead to increased competition for Modoc timber. Recommendations for assessing cumulative economic effects: the FEIS should clearly describe how the selected alternative's timber sale program will relate to those proposed by adjoining national forests. This data is available now and cannot be ignored merely because the draft plans had not been published by all of the region's national forests. (1070)

RESPONSE: EIS Appendix S discusses the potential regional timber supply and demand situation. As discussed in the previous response, the Forest assumed all timber supplied would be in demand. From your comment, the more likely scenario would be the rise in price for timber on the Modoc NF, which would increase returns to the U. S. Treasury and county receipts.

13. COMMENT: The local people may deserve to have the SOC alternative analyzed and displayed alongside the other six (DEIS 2-118 to DEIS 2-172), plus a separate description of the SOC alternative and a new accompanying table (following Table 2-10, DEIS). This would be a considerable job, but it would surely expose the credibility of your analysis system and it would certainly be a first class response to what may be a legitimate concern in Modoc County. If your system is incapable of showing the SOC comparison in all aspects, then you could supplement the numbers with explanatory text. (1021)

RESPONSE: We could not analyze the SOC alternative in detail due to vast differences in approach for inventory, yield tables, management requirements. The IND Alternative most closely approximates the SOC alternative in timber management.

14. COMMENT: There is a first decade budget constraint that limits the amount of harvest that can occur in the first decade. One dollar additional budget will yield \$3.74 increase in present value. As a result, present net benefits are not maximized and the first decade's harvest has no opportunity cost (it could be increased and present net benefits would increase). That budget constraint is set at \$115,500,000 and it is in the solution complete with opportunity cost. The budget constraint overpowers the first decade harvest so much that the first decade's harvest has no opportunity cost associated with the volume constraints of non-declining evenflow. The budget constraint (or cost constraint, as it is not clear what the MNF calls this constraint) must be eliminated as a constraining factor in the FORPLAN model. (363)

RESPONSE: We removed this constraint, which was used as an approximation of a feasible regeneration program, in modeling the final Preferred Alternative.

15. COMMENT: The harvest level for the Big Valley Federal Sustained-Yield Unit is contained as a constraint within the rest of the Forest. As a result, the harvest from the rest of the Forest is less than it would be if the BVFSYU were held out. The BVFSYU harvest level is set external of the planning process according to Appendix R pages R-1 through R-3. The BVFSYU takes away money from the production of the rest of the Forest. It costs more to produce a unit of wood from the BVFSYU than it does from the rest of the Forest. The scheduling process for the rest of the Forest must exclude the scheduling for the BVFSYU. (363)

RESPONSE: We imposed constraints on the BVFSYU in response to public concern about maintaining high harvest levels in the Unit. In the final Preferred Alternative, we dropped the constrained level of timber harvest in the Unit to allow more flexibility Forestwide.

16. COMMENT: Livestock area AUMs for the Preferred Alternative indicate that 113,619 AUMs will be available in the first decade and nothing more is said about AUMs. The MNF fails to indicate that the FORPLAN output for the Preferred Alternative in the 14th decade yields 8.9 million AUMs on an annual basis yielding a net income from AUMs in the 14th decade of \$1.22 Billion. An obvious unreported mistake that nullifies each and every solution of the draft Plan and DEIS. As a result, all analysis concerning the present net worth and present net benefits for the MNF draft Plan are erroneous. (363)

RESPONSE: We analyze the economics only for the first 12 decades. Outputs from the 14th decade do not add to the PNV for any alternative. Therefore, because we did not constrain the model to make realistic solutions beyond the 12th decade, large AUM productions in the 13th and 14th decades have no influence on the analysis.

17. COMMENT: The modeling of the visual quality objectives were based upon an unknown "computer simulation". The constraints applied restrict the Forest area from harvest at an increasing rate, not in a "decaying" rate as indicated in the MNF draft Plan documentation. In addition, reported percentages in the documentation do not correspond to actual values utilized in FORPLAN. The EFFALT acres were modeled with a "decay function". The number of acres available to be harvested increases from decade to decade. In order to model this in FORPLAN, the MNF limited harvest in any one time period to a percentage of the acres available even though the appendix states that some type of coefficients were developed. (363)

RESPONSE: We used the same methodology used was the same for all alternatives. It provides a proxy for meeting visual quality objectives. We will determine actual constraints at the project level.

18. COMMENT: The dispersion constraint for regular acres (they also have VQOs) further constrain the available acres for harvest. The constraint applied in the first two decades is more severe than reported in the documentation. FORPLAN cannot model either dispersion constraints or VQOs. The documentation indicates that both EFFALT and dispersion were obtained by limiting harvest of a management area by "an average of 16% per decade". In actuality, only three of the 19 management areas had "an average of 16% per decade" in the first two decades (note that the MNF utilizes extensively the interval grouping technique of averaging coefficients). All the rest were less. Particular attention was paid by the MNF to make less acres available for harvest in the first two decades on those acres suitable for timber harvest (all RG1 acres). Furthermore, some management areas were constrained more than others in the first decade with no reason being given in the documentation. (363)

RESPONSE: We modified the modeling of dispersion and EFFALT by Regulation Class in the final Preferred Alternative. See EIS Appendix B for the current approach.

19. COMMENT: The MNF "hardwires" old-growth good-stockling areas to a particular level in the 8th and 16th decades to account for the old-growth B&C category or acres. These constraints effectively withdrew these acres from harvest consideration. These acres are not "outputs generated within FORPLAN", they are outputs

generated outside FORPLAN and there is no inkling in the documentation relating to the reasons why these specific acres are constrained. There are numerous other activities that the documentation indicates that are "outputs generated within the FORPLAN model" that were just inputs to the model such as the equivalent roaded acres. All of these "hardwired" values input to the FORPLAN model are never presented in the supporting documentation. If there is a reason for them to be in the FORPLAN model they should be presented and explained in the documentation. (363)

RESPONSE: We improved the documentation for these constraints in EIS Appendix B.

20. COMMENT: Acres in the visual retention category (22,500 acres) and the uneven-aged management are not actually included in the timberland base as indicated by the MNF. These areas have their removals and inventory levels "hardwired" in the FORPLAN solution. (363)

RESPONSE: We corrected the discrepancy in the final FORPLAN analysis. See Appendix B in the FEIS for details.

21. COMMENT: The yield tables utilized for the MNF were most likely generated with some type of simplistic process not revealed in the documentation, do not look like yield tables, and bear no relationship to the current inventory for the MNF. (363)

RESPONSE: We modified the yield tables with the assistance of the Regional Office to reflect Regional direction.

22. COMMENT: One indication that there is problems with the Modoc's basic data is found in the portrayal of age class distribution of the present timber inventory. Draft FLRMP App. D-2. According to the table there is presently no suitable acres of forest of age 20, 30, 40, 50, 60, or 80. This is rather difficult to understand since the inventory in the existing plan indicates acreage of forests in those age classes. Timber management plan 3-22. (1070)

RESPONSE: Appendix O in the draft and final EIS explain that for modeling purposes, the age classes to which you refer were aggregated. Past harvesting practices created very few stands in the age classes from 20 to 80 years.

23. COMMENT: ASQ for 600,000 plus acres was established from data gathered on a point 01 percent cruise without statistical analysis. (1230)

RESPONSE: The inventory was conducted following proper statistical procedures. Stratification of the Forest allowed for less intensive sampling while still retaining reliability.

24. COMMENT: I feel this Plan doesn't allow for any range improvement consideration in the last 25 years,

since most of the data used was from 1962. The usage percentage for grasses is unrealistic for anyone who has run livestock. Livestock management should be handled between your range conservationist and the permittee. That's what you pay the range con for, and he should know the situation better than anyone else. If he doesn't, fire him. (1267)

RESPONSE: We approximated forage availability from the range inventory. We will make range management decisions following the management direction in Chapter 4 of the Forest Plan during allotment management planning.

25. COMMENT: 3-14. The economic analysis is seriously biased because it shows only direct returns to the counties based on 25% of receipts. An adequate DEIS should show indirect receipts based on estimates of recreationists expenditures in the three counties involved for goods and services acquired in pursuit of this recreation. (364)

RESPONSE: Receipts to counties are based only on revenues directly generated by the Forest. We model indirect returns for employment and income effects in the IMPLAN model.

26. COMMENT: One measure of economic effects of the proposed Plan should be based on a comparison between the existing plan potential yield and the Preferred Alternative's allowable sale quantity. (1070)

RESPONSE: We made economic comparisons between actual output levels in the 1982 base year versus outputs in the alternatives. Potential yield described in the TM Plan was never experienced by the local counties.

27. COMMENT: Figures on p. 1-6 present net FS acreage of 1,654.4 M acres. Table 2-13 presents 1,663.3 M acres. The difference should be explained. (1263)

RESPONSE: The difference is the relative rounding used in the data base versus the legal acreage of the Forest. The difference is about 0.5%.

28. COMMENT: DEIS D-2: for PRF, if we add total acres in RXs allowing active timber mgt, we find that timber mgt will be conducted in 544,124 acres. Yet there were only

519,800 acres of CAS lands in the alternative—further evidence that your data base does not track and your RXs cannot be followed. (1263)

RESPONSE: We balanced total acreages in the final Preferred Alternative.

29. COMMENT: The two documents are very technical, very lengthy and very difficult to read. "FORPLAN," is a very difficult model to explain. It appears to be a general smokescreen to hide behind some of the benefits that the FS wants to derive from public lands that are contradictory to good economic sense. (115)

RESPONSE: The Forest Service uses FORPLAN to assist in the analysis of many variables over long time periods. There is no intent to hide management behind "a smokescreen". The management direction and objectives for managing the Forest are clearly spelled out in Chapter 4 of the Forest Plan.

30. COMMENT: The use of FORPLAN as the planning tool to achieve multiple use may not be the best choice. Would not the planning and monitoring concepts achieved through the available stewardship program be advantageous? The current plans show little allowance for flexibility. (1221)

RESPONSE: We use FORPLAN to analyze many complex variables over long periods of time. This does not preclude the need for common sense implementation, which includes public involvement. The monitoring and evaluation process described in Chapter 5 of the Forest Plan provides the flexibility needed to change the Plan if necessary.

31. COMMENT: I would like to have an independent agency collect the data for the next Forest harvest since the Forest Service has a problem of collecting data that is of a substantial nature and of any validity. (1398)

RESPONSE: The current inventory was the first attempt by the Forest Service to develop an integrated Forest-wide inventory for all resources. This inventory will improve over time. Currently the most cost efficient method for collecting inventory data is by Forest Service personnel or contractors.



## **Letters from Agencies and Elected Officials**

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Department of Energy  
Bonneville Power Administration  
PO. Box 3621  
Portland, Oregon 97208-3621

10-1000-10-100-10

Mr. Douglas G. Smith, Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, California 96101


Dear Mr. Smith:

Bonneville Power Administration (BPA) has reviewed the Draft Land and Resource Management Plan and the Draft Environmental Impact Statement for the Modoc National Forest. Both documents are comprehensive and well written and we recognize the amount of time and effort involved. Since BPA has transmission facilities located in the Modoc National Forest, we focused our review on energy considerations.

We commend the Forest for their evaluation of energy needs in the Draft Forest Plan. Energy production, in particular, has been handled more completely than in most other Forest Plans we have reviewed. However, utility corridors/energy transportation requirements have not been fully addressed. Regionally, it is extremely important that the Modoc National Forest make explicit provisions for managing existing transmission corridors and for providing for future corridors. BPA is concerned that the Draft Forest Plan has no such measures.

Our specific comments on the Draft Land and Resource Management Plan and the DEIS are enclosed. Our comments are consistent with PG&E's comments dated February 12, 1987.

Thank you for the opportunity to review these documents. If you need clarification of these comments or additional information, please contact me at 503-230-5136 (PTS 429-5136).

Sincerely,  
  
Anthony J. Morrell  
Assistant to the Administrator  
for Environment

Enclosure:

cc:  
John Check, PP&L, Portland, Oregon  
Bob Sipe, USFS R-6, Portland, Oregon  
Woody Robert Shaw, USFS R-5, San Francisco, California



Celebrating the U.S. Constitution Bicentennial - 1787-1987

# Proposed Land and Resource Management Plan

1. BPA has transmission facilities located in the Modoc National Forest. They are identified in the draft EIS, but not in the Plan. The Plan needs to accommodate BPA and other utility facilities. By not recognizing existing facilities, it does not acknowledge that some forms of resource management may be incompatible with utility siting and operations. Some areas may require restricted public access in order to protect the operation of existing utility facilities and/or the safety of the general public.
2. Chapter 2, Page 2-2--The Energy section should address the need for Forest-wide standards and guidelines to provide for the establishment and use of existing and planned utility corridors to encourage the efficient use of energy resources, and to foster price moderation of gas and electric service in the West.
3. Chapter 3, Section D, Subsection 4--This subsection should acknowledge the important role of energy transportation in the Modoc National Forest.
4. Chapter 3, Section D, Subsection 5, page 3-10--The Utility Transmission Lines subsection should acknowledge the California-Oregon Transmission Project which is in the final planning stage. The Western Area Power Administration released the Final EIS on the project in February 1988 and plans to issue its ROD in April 1988. Also, any other corridors or planned facilities should be mentioned.
5. Chapter 3, Section D, Subsection 9, pages 3-14 to 3-15--This subsection should mention established corridors and indicate whether or not they have been designated. In particular, the California-Oregon Transmission Project has progressed to the point where location, right-of-way widths, and estimated time of completion could be specified. Also, we do not feel it unreasonable to accommodate 1,500 to 2,000 acres of land for utility rights-of-way, considering the local, regional and national importance of energy corridors. Surprise Valley Electric Coop, PP&L, and PG&E all have facilities on the Modoc National Forest and should be consulted.
6. Chapter 4, Subsection B, Forest Mission and Goals, page 4-3--The Modoc National Forest mission statement should be amended to include the provision of adequate utility corridors necessary for a responsible energy policy in the West.
7. Chapter 4, Subsection B, page 4-5--Under Facilities, a goal should be added which provides for cost-effective and environmentally acceptable energy transportation in accordance with Regional energy policies and programs.

8. Chapter 4, Subsection D, Pages 4-22 to 4-23 - BPA supports the goal of avoiding the proliferation of rights-of-way. However, the Facilities discussion (Item e) should base the siting and allocation of single purpose transmission and transportation corridors on the location which is most suitable from an environmental, engineering, economic, public interest, and public safety standpoint. Our experience has shown that such a standard will in most cases result in the use of an existing corridor, but not always. For example, BPA had selected an existing corridor for the 500-kV Garrison-Taft transmission line in Montana. It crossed a large amount of private land. After considerable debate and study an entirely new right-of-way, crossing primarily public land, was selected as the most publicly and environmentally acceptable location.

The designation of existing or planned corridors suitable for multiple facility use through the Forest planning process should expedite permitting, if environmental and technical studies identify it as a preferred project location. For this reason, BPA and other utilities encourage corridor designation. Facility standards and corridor definition should also take into account reliability considerations which may require line separation.

9. Chapter 4, Subsection D, Pages 4-26 to 4-27--The utility corridor discussion (Item c) should take into account the concerns expressed in comment 8 above. It should also establish the definition or criteria for corridor designation and should clearly establish corridor avoidance and exclusion areas in response to FS Washington Office guidance. If these areas preclude or affect the development of utility facilities required for serving the public, then provisions should be made in the plan for windows across these areas. If corridors are precluded by the Forest, the Final EIS should address the local and regional impacts.

10. Chapter 4, Subsection E--A new management prescription should be created for utility corridors relating back to the Forest-wide standards and guidelines. In addition, the prescription should focus on forest and ROW management practices that provide responsible protection of energy facilities from fire and other hazards that affect the reliability of utility facilities. The Standards/Guidelines for the new management prescription should reference the Project Plan and Right-of-Way Maintenance Plan as important documents which guide the construction and maintenance of BPA transmission rights-of-way. These documents are required by the BPA/Forest Service Memorandum of Understanding. As an alternative, many Forests have established a management area specifically dedicated to utility facilities (including corridors), with their own management standards and guidelines. For instance, the Gifford Pinchot National Forest in Washington has taken this approach.

11. Chapter 4, Subsection F--The discussion of management areas should include the new management prescription or, alternatively, new management area for utility corridors suggested in comment 10 above.

12. Right of Facility Access - Utilities must have access to their facilities at all times for maintenance and in emergencies. This access should be recognized in the Forest Plan. BPA's Assistant Area Manager for Operations and Maintenance should be contacted to discuss actions, such as land transfers, proposed construction of buildings/structures near to BPA facilities, that could affect access to or their reliability.

Mr. Truman Conn  
Bonneville Power Administration  
Snake River Area - WD  
West 101 Poplar  
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Draft Environmental Impact Statement

1. Chapter 1, Section F, pages 1-12 to 1-13--Corridor allocation was an issue in the Plan because of the acreage involved; it does not appear here. It should be an issue.
2. Chapter 2, Section E, page 2-41--See comments 9 and 10 on the Forest Plan. The same concerns apply to the common Forest standards and guidelines listed under item 8 c.
3. Chapter 2, Section E, Subsection 3--A management prescription for corridors should be addressed, as requested in comment 10 on the Forest Plan.
4. Chapter 2, Section E, Subsection 5--This subsection does not compare the effect of the alternatives on existing or planned transmission facilities.
5. Chapter 3, Section E, Subsection 5, Page 3-42--Utility Transmission Lines should include a discussion of the California-Oregon Transmission Project, as well as other future transmission needs such as that needed to serve the proposed Over-the-Horizon-Backscatter defense radar site. Reference should be made the Facilities Map for their location. The Facilities Map should also be updated to include all existing and planned PPL, PGE and Surprise Valley Electric Coop. transmission corridors. In addition, the section appears to be incomplete.
6. Chapter 3, Section E, Subsection 9, pages 3-59 to 3-60--The three corridor projects identified should be provided for in the Forest Plan. Also no mention is made of the transmission that might be required to serve the Air Force proposed Backscatter defense radar system. The draft EIS incorrectly states that the land base would be reduced by 1,500 to 2,000 acres to accommodate only half of the projects. Many uses could still be accommodated. For example, ROW's provide wildlife forage and habitat as well as recreation use.



7. Chapter 4, Section B, Subsection 9, pages 4-46--The Forest Plan does not evaluate the impact on energy policy and programs. Energy transportation is an important regional and national issue which the Forest has failed to address. This section should identify the specific impact of each alternative on both the expansion of existing and the development of new corridors. This evaluation can be done on a broad corridor basis and need not be site-specific. The California Corridor Study prepared by PG&E in 1985 should be consulted for that purpose. Information is also available on potential routes for projects mentioned above (comment 6). If Forest Plan alternatives affect the use of an existing or planned corridor, the impacts should be analyzed. Such an analysis should include additional costs and environmental impacts as well as the effect of carrying out important energy programs. BPA and other utilities can provide assistance in determining these impacts.

VS10-AJ-11800

## BOARD OF FORESTRY

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Mr. Douglas C. Smith  
February 26, 1988  
Page Two

February 26, 1988

Mr. Douglas C. Smith  
Forest Supervisor  
Modoc National Forest  
441 N. Main Street  
Alturas CA 96101

Dear Supervisor Smith:

The California State Board of Forestry (Board) has completed the review of the Modoc National Forest Draft Management Plan. Several areas of concern were identified during this review process. Based on these concerns, the Board approved and supports several recommendations which we believe need to be addressed in the final management plan for the Modoc National Forest.

By law, the Board is charged with representing the state's interests in federal land matters pertaining to forestry.

The Board has approached the plan in the belief that the Modoc should be positioned to meet the needs of the people of California in the coming decade. Our analysis indicates that protection of the biological base and a reliance on the forest for local revenue are part of that position.

The Modoc Draft Plan and Draft Environmental Statement were compared with the five issue areas developed at the Board of Forestry's Centennial Conferences of March and December of 1985. The issues identified are: 1) rural economic stability and development; 2) protection and maintenance of the biological base; 3) social pressures on the rural land base; 4) rights and responsibilities of public and private ownership; and 5) coordination and planning.

As a result, areas of concern were identified for this region of the state. These areas are: 1) fire protection; 2) herbicides; 3) budget restrictions; 4) even-aged vs. uneven-aged silviculture; and 5) aggregate review. These issues were used by the Board to evaluate each alternative and to help determine which alternative would best meet the needs of this region of the state. The results of this analysis and the Board's recommendations are listed below.

## Recommendations

### 1. The Alternative

The Preferred Alternative (PRF) was developed to provide the best balance between commodity outputs, resource protection, recreational opportunities, protection of Native American and amenity values, and response to public issues and management concerns. The state is interested in an alternative that maintains a dependable and steady flow of outputs and services to benefit the dependent counties and local economies. The state has a corresponding interest that the chosen alternative protects the biological base of the forest. The alternative must reflect budget reality. For these reasons we can reasonably support the Preferred Alternative (PRF). Several concerns have been identified and, as a result, we have proposed recommendations which should be incorporated into the final selected alternative. Those recommendations are listed in the subsequent recommendations. The result of incorporation of these recommendations into the final alternative would be to stabilize rural economy dependent on the forest.

**Recommendation:** It is recommended that the Preferred Alternative be amended by incorporating the following recommendations into the final management plan for the Modoc National Forest.

### 2. Fire Protection

The Modoc National Forest (MNF) provides fire protection on 237,000 acres of State Responsibility Area (SRA) lands through contract (coop-agreement) with the California Department of Forestry and Fire Protection (CDF). Under this agreement, the Forest Service agrees to protect SRA lands at a level equal to that which CDF would provide if they were protecting them directly. The suppression strategies presented in the MNF plan do not address the protection of SRA lands as agreed to in the coop-agreement.

**Recommendation:** The final MNF plan should make it clear that a strong initial attack comparable to that provided other private lands, with control as the objective, will be the suppression strategy for all fires on or near SRA lands.

3. Herbicides

The MNF analysis of the outputs for the various alternatives assumes full use of herbicides for vegetation control. We could not find a discussion of how the forest would deal with the case of herbicides being prohibited. Prohibition or restriction of herbicide use could result in loss in timber yield and increased cost in vegetation management.

Recommendation: The Forest Service should develop and discuss a no herbicide strategy which specifically addresses the maintenance of the allowable sale quantity (ASQ).

4. Budget Restrictions

Sustained funding is probably the most critical issue in the national forest planning process. Each forest has indicated that the proposed plans present only targets that the forest believes could be attained if funding were available.

Further, most planners appear to be in agreement that forests do not have any obligation to maintain production at the proposed levels if there is insufficient funding. We compliment Modoc NF planners for recognizing this possibility in their reduced budget alternative.

5. Even-Aged vs. Uneven-Aged Silviculture

The DEIS and Draft Management Plan make it clear that even-aged silviculture will be dominant in management of the MNF suitable timberlands. Even-aged management may suit the eastside pine and understocked mixed conifer stands very well, but there is a large acreage of well-stocked, mixed conifer which should respond favorably to uneven-aged management. We believe the well-stocked, mixed conifer stands managed under an uneven-aged regime would help in maintaining diversity, provide good growth and yield, and avoid the stark visual contrasts that disrupt the visual quality.

Recommendation: We recommend the Forest Service reevaluate its position on uneven-aged timber management on the MNF. Timber stands that exhibit characteristics conducive to uneven-aged management should be considered for inclusion in this type of management regime.

6. Aggregate Review

The forest must satisfy the interests of the impact counties and their publics. Nevertheless, the impact of the forest has a much larger horizon. Its commodity outputs, when added to the other national forests in California, are in demand and used throughout the state and beyond. Demand for forest products alone will continue to increase to the planning horizon. The impact counties contain other national forests. The inability to review these plans simultaneously is a significant limitation because aggregate effects of the final plans could be significant. This is a major shortcoming of the present forest-by-forest planning process.

Recommendation: We suggest that in order to resolve this concern, aggregates of plans by economic region be reviewed publicly before final decisions on preferred alternatives are made for individual national forests.

In addition to these concerns, the Board notes and supports the comments of its Northern District Technical Advisory Committee. A copy of their recommendations is enclosed for your reference.

Sincerely,

*Harold R. Walt*

Harold R. Walt  
Chairman

st

cc: Paul Barker, Regional Forester  
Enclosure

01/19/88

MODOC NATIONAL FOREST LAND MANAGEMENT PLAN

The M.F.D.T.A.C. has been asked by the State Board of Forestry to provide input to the Board concerning the Land Management Planning process currently underway on National Forest lands.

These comments refer to the Draft Modoc National Forest (M.N.F.) Plan which is available for public review. The comments are discussed in the context of the issue groups identified in the Board of Forestry's Centennial II Conference held in December.

These issue groups were:

- A) Rural Economic Stability and Development
- B) Protection and Maintenance of the Resource Base
- C) Social Pressures on the Rural Land Base
- D) Rights and Responsibilities of Public and Private Ownerships.
- E) Coordination and Planning

The M.F.D.T.A.C. has developed nine major areas of concern with regard to the M.N.F. Plan. They are listed below not necessarily in order of importance:

- 1) Allowable Sale Quantity
  - 2) Timber Inventory Data
  - 3) Snag Management
  - 4) Seral Stages - Diversity
  - 5) Visual Constraints
  - 6) Range
  - 7) Historical Sites
  - 8) Harvest Rates on Lower Productivity C.A.S. Lands
  - 9) Rare, Endangered or Sensitive Plants
- These are discussed in detail below to assist the Board and F.R.R.A.P. in formulating their response.

1) Allowable Sale Quantity - The M.N.F. has 619,300 acres of capable, available and suitable (C.A.S.) timberland. Standing volume is estimated at 4.95 billion board feet with an average growth rate of 24 cubic/feet/acre/year or approximately 149 board feet/acre/year on lands capable of producing more than 20 cubic feet/acre/year. Even a reduction in C.A.S. lands to 435,000 acres results in annual growth of 64.8 mmbf/year. The M.N.F. sale quantity in the preferred alternative would result in the Forest growing considerably more than it is cutting over time. An examination of the beginning and ending inventory shows that total Forest inventory rises over time with over 29% of the Forest's acres in an age class 60-80 years older than anything currently on the Forest. This does not seem to be an efficient regime for the suitable timberland base. (See Attached Exhibits A, B-1, B-2).

Recommendation: The M.N.F. reassess its proposed A.S.Q. in light of the capability of the land base to produce and in conjunction with the inventory problems discussed in concern #3.

2) Timber Inventory Data - Sample Size Deficiencies.

The M.N.F.'s timber inventory consisted of 450 variable radius plots on 600,000 acres. This is a cruise intensity of between one and two one hundredths of one percent. The inadequacy of this sample size is demonstrated by the fact that the Modoc's inventory, unlike every other National Forest, has no pole and sapling 2-stands. This creates an age class gap and an underestimate of growth that reduces the A.S.Q. in FORPLAN due to even flow constraints. The model must "wait" longer for plantations to grow into merchantable size because no sapling and pole age class exists to fill the gap. (See Exhibit B-1 and B-2).

The M.N.F. has also placed all its plantations in a 0-10 year age class. This has the same type of effect on A.S.Q. as a lack of 2 stands. The gross averaging that the small sample size required leads to mistakes in calculating

growth rate by age class and current basal area stocking levels by age class.

**Recommendation:** The Modoc supplement their existing inventory data with additional plots in timber strata by age class. Enough plots should be measured to bring the inventory by strata up to Regional statistical standards. This should be done and new FORPLAN runs made prior to issuance of the final plan.

- 3) **Snag Management** - The M.N.F. intends to create snags by topping 7,000 snags per year to create wildlife habitat. This results in a drop in A.S.Q. for the Benchmark run of 6.6 mmbf and a 38 million dollars loss of present net worth for the first decade. Its cost of implementation is \$203,000/year.

Despite the fact that it is a Regional Minimum Management Requirement to retain 1.5 snags/acre on C.A.S. lands, no other Forest has instituted such a widening snag recruitment program. There is no conclusive evidence presented in the plan that wildlife populations dependent on snags are below minimum viable levels. Natural snag production from the large old growth inventory to be held over time, fires, insects, and the low level of harvest activity in the less than 20 cubic feet/acre/year lands, make this program unnecessary and a waste of the resource. The Scarface and Gerig fires alone produced 47,000 acres of snags in one year. The snag recruitment program is a "double counting" constraint whose need is already met by other constraints and prescriptions. It also may not be implementable when the down log requirement is added.

**Recommendation:** The snag recruitment program should be revised. Minimum viable wildlife populations are assured by other means. The loss in jobs and county and federal revenues is not justifiable in light of this. The M.N.F. should furnish the analysis along with the supportive data that demonstrate this program is needed to maintain minimum

viable populations. The cause and effect between snag recruitment and viable populations should be clearly demonstrated as required by the planning regulations.

- 4) **Seral Stages - Diversity**

The M.N.F. is required to keep 5% of the acreage of the Forest as a whole in each seral stage. This is required by Regional planning standards and guidelines and is used to ensure a range of habitat types to accommodate the needs of various wildlife.

The Forest far exceeds this requirement. By splitting the Regionally defined standard for seral stages into several more divisions, and by making separate requirements for less than and greater than 20 cubic feet/acre/year lands, the decrease in A.S.Q. due to this constraint is magnified. Reductions amount to 6.4 mmbf and 17 million dollars in P.N.V. in the first decade for the Benchmark run. This is done with no evidence presented in the plan that the current seral stage distribution fails to meet requirements for minimum viable populations of wildlife. The seral stage distribution envisioned herein has never existed in nature and may not be implementable.

**Recommendation:** The M.N.F. should reexamine its seral stage diversity requirement. Analysis along with Forest specific data should be supplied which demonstrates the cause and effect relationship between the seral stage pattern proposed and its necessity for viable wildlife populations. Seral stages produced by areas withdrawn from timber production should also be included in the calculation of sufficiency.

- 5) **Visual Constraints** - The M.N.F. has 33,500 acres of lands capable of producing more than 20 cubic feet/acre/year constrained by the partial retention prescription. This remains unchanged for all alternatives. Since the Regional M.M.R. for visuals is 300 feet along State Highways, there is no need to keep this constraint constant for high as well as low resource production alternatives. In addition, there

**NH V**

ppp

KPD

**RB0**

**NH V**

(a) Includes Big Game and Wild Horses as well as livestock range.  
(b) Percent of rangeland meeting State Quality Objectives by 5th decade.  
(c) ASQ-Annual Sale quantity, MMBA, Ft.  
(d) Does not include modified management even-aged prescription areas (Timber-Vegetation: Visual Retention)

is a discrepancy between the D.E.I.S. statement that 33,500 acres are affected and the Plan's indication that 42,564 acres are constrained.

Recommendation: The M.N.F. should reassess the visual constraint and vary it by alternative. Tradeoffs in resource values and a rationale for exceeding the Regional M.M.R.'s should be included.

- 6) Range - All Alternatives except R.P.D. show reductions in A.U.M.'s for livestock by 1990. The M.N.F. produces 23% of the total livestock forage allocated for Region 5. Opportunities exist forest wide to mitigate this reduction through structural and non-structural improvements, prescribed burning, juniper control, firewood cutting and type conversions with seeding projects.

Many private forest landowners have experienced Ponderosa Pine plantation success with considerable transitory range forage production. The M.N.F. can make up the projected downfall in A.U.M.'s by relying more heavily on this transitory range.

Recommendation: The M.N.F. should pursue the opportunities defined above for retaining A.U.M.'s at their current levels. The use of transitory range to alleviate this downfall should be reexamined.

- 7) Historical Sites - The M.N.F. has proposed eight historic sites totaling 29,630 acres and has proposed these for inclusion in the National Register of Historic Places. The size of these range from 320 to 19,760 acres. The Forest currently has seven sites registered. This area is less than 40 acres.

Recommendation: The M.N.F. reexamine the acreage designations for the proposed historical sites in an attempt to reduce the acreage impact. Only significant and unique areas should be this stringently protected.

8) Harvest Rates on Lower Productivity C.A.S. Lands

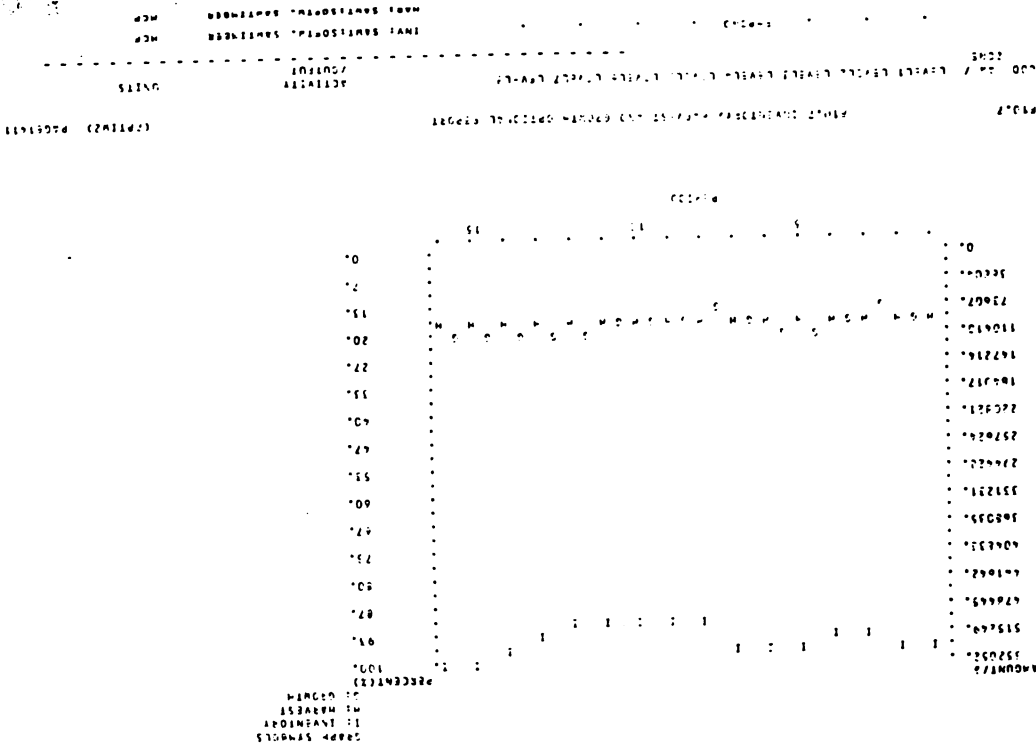
The draft plan proposes harvesting only 5% of the existing inventory on these lands over the period of the plan. If these lands are currently growing 10 cubic feet/acre/year, they will produce approximately 9 mmcf per year. The Forest plans on harvesting 2 mmcf/year from this component.

**Recommendation:** Since there is no Regional direction that prevents harvest on these lands, a cost-effective, extensive management program should be undertaken to at least harvest a substantial percentage of growth. This can alleviate part of the fall down in A.S.Q. caused by other legitimate constraints.

9) Rare, Endangered, or Sensitive Plants

The Draft Plan lists nine plants that are either rare and endangered or need more information on their status. There are others present on or near the Modoc that are deserving of special care. These are either rare and endangered in California or more information is needed about their current status. (See attachments for listing of these and a full listing of Modoc rare plants).

**Recommendation:** Staff Botanist should with support inventory the Forest for these plants. Management for protection should be incorporated in the Final Forest Plan.







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Department of Conservation  
Department of Fish and Game  
Department of Forestry  
Department of Parks and Recreation  
Department of Water Resources

**GEORGE DEUKMEJIAN**  
GOVERNOR OF  
CALIFORNIA



**THE RESOURCES AGENCY OF CALIFORNIA**  
SACRAMENTO, CALIFORNIA

**DATE:** February 25, 1988

**TO:** Mr. Douglas G. Smith  
Modoc National Forest  
441 N. Main Street  
Alturas, CA 96101

**FROM:** Office of Planning and Research  
State Clearinghouse

**RE:** SCH 87110602---Draft EIS/Land and Resource Management Plan,  
Modoc National Forest.

Mr. Douglas G. Smith  
Modoc National Forest  
441 N. Main Street  
Alturas, CA 96101

Dear Mr. Smith:

The State has reviewed the Draft EIS/Land and Resource Management Plan for Modoc National Forest, submitted through the Office of Planning and Research. We coordinated review with the North Coast Regional Water Quality Control Board and the Departments of Conservation, Fish and Game, Forestry and Fire Protection, Parks and Recreation, and Water Resources.

Attached for your consideration are comments prepared by the Departments of Conservation, Fish and Game, and Forestry and Fire Protection.

The North Coast Regional Water Quality Control Board sent a copy of its comments to you by letter of February 18, 1988.

As the designated California Single Point of Contact, pursuant to Executive Order 12372, the Office of Planning and Research transmits attached comments as the State Process Recommendation.

This recommendation is a consensus; no opposing comments have been received. Initiation of the "accommodate or explain" response by your agency is, therefore, in effect.

Sincerely,

Austin T. Carlyle, Jr.  
Director, Office of Planning and Research  
Attachment

cc: Applicant

1

February 25, 1988

The Department of Water Resources (DMR) comments that there is no significant difference in water yield and water quality impacts for the management alternatives, except for Alternative IND (Industry). DMR recommends deleting this alternative because of its potential for adverse water quality impacts.

DMR also notes that the documents express concern over the lack of water for new stockpounds and wetlands due to over-appropriation. Vegetation management should not have been dismissed as a source of water for these purposes. The State Water Resources Control Board has issued permits to appropriate water if an applicant could demonstrate that vegetation management would salvage enough water to offset the consumptive use.

Thank you for providing an opportunity to review this document.

Sincerely,

Gordon F. Snow, Ph.D.  
Assistant Secretary for Resources

Attachments (3)

cc: Office of Planning and Research  
(SCH 87110602)

Air Resources Board  
California Coastal Commission  
California Game Conservancy  
California Waste Management Board  
Colorado River Board  
Energy Resources Conservation  
And Development Commission  
San Francisco Bay Conservation  
And Development Commission  
State Coastal Conservancy  
State Lands Division  
State Reclamation Board  
State Water Resources Control Board  
Regional Water Quality Control Board

## Memorandum

To : Dr. Gordon F. Snow  
Assistant Secretary for Resources

Date : FEB 16 1988

Subject: DEIS and Forest  
Plan for Modoc  
National Forest  
SCH #87110602

From : Department of Conservation—Office of the Director

The Department's Division of Mines and Geology (DMG) has reviewed the Draft Environmental Impact Statement (DEIS) and Land and Resource Management Plan (Plan) for Modoc National Forest in the extreme northeast portion of California. The DMG review involves both documents and addresses geologic and mineral resource issues. Our specific comments are as follows.

DRAFT EIS

1. Although the document is well organized, clearly written, and easily understood, a summary comparison of resource data for each of the Alternatives would assist reviewers in the analysis of the DEIS.
2. The discussion of the geology of the Forest (page 3-52, et seq.) is much too brief to allow an accurate analysis or evaluation of geologic resources or geologic hazards. Areas within the Forest subject to particular geologic hazards should be shown on a map. Specifically, those areas identified as having a high probability for landsliding, mudflows, earthquake shaking and liquefaction, fault rupture, flooding, expansive soils, and accelerated erosion should be shown. Perhaps this will be done for the Forest Geologic Resource Inventory (GRI), but it should also be included here.
3. The geologic references listed in the bibliography are far too meager to assure that a sufficiently comprehensive literature review has been undertaken. In addition, all references should be accurately identified and completely cited.
4. The DEIS states (page 3-63) "The Modoc National Forest is primarily composed of volcanic material which has low potential for most mineral occurrences except for geothermal and building materials". This statement fails to consider the fact that a wide variety of mineral commodities are recovered from volcanic rocks. In some cases, a secondary alteration of volcanic rocks has produced rich deposits of

Dr. Gordon F. Snow  
Page 2

metals such as copper, gold, silver, beryllium, and mercury, and nonmetals such as clay, calcite, pyrite, and sulfur, in volcanic host rocks. Indeed, the very rich and extensive diatomite deposits of western Modoc County have a strong origin and depositional relationship to the prevalent volcanic materials of this region.

Secondary alteration and mineralization can occur in any rock material, and, therefore, we believe that it is wrong to state that volcanic materials have a low potential for mineral resources.

5. The DEIS identifies (page 3-65), three gold mining districts: Hayden Hill, Winters, and High Grade, as having mining activity. The Red Hawk district should also be cited because of the extensive exploration and development work being carried out there. Indeed, epithermal gold deposits are receiving a great deal of attention from mining companies today, and much of the Modoc National Forest and this portion of the State may have a high potential for favorable gold deposit environments. We recommend that the Final EIS include a more complete discussion of the prospecting exploration, development and potential for gold and diatomite resources in the forest.

Figures 3-14 and 3-15 (page 3-68) are very helpful, in that they include a category of "unknown" mineral potential. However, no definition or explanation of the categories is provided, or equally important the rationale and criteria for determining "high", "medium" and "low" potential. We recommend that comprehensive discussions of mineral resources in the forest and the categorization of lands based on their potential for containing mineral resources be included in the Final EIS. In addition, figures 3-14 and 3-15 are much too generalized to be meaningful in precise land use decisions or mineral resource analysis. We recommend that more detailed information be incorporated into the construction of these illustrations.

6. The DEIS identifies (page 3-109) three Geological Special Interest Areas that have been approved by the Regional Forester; however, no data is provided on how these areas are designated or what the specific criteria for designation are. We recommend, therefore, that the Final EIS contain a complete explanation of how such areas are selected and the rationale behind the designation of Burnt Lava Flow, Medicine Lake Glass Flow, and Glass Mountain Glass Flow.
7. The DEIS states (page 4-43), "The remaining lands (85% of the Forest) have a low potential for mass wasting." A rating of "high" is assigned to 15%, and no land assigned to a moderate

or intermediate value. The lack of any land in the intermediate category seems unlikely, but no explanation of the rating (category) system is provided. We recommend, therefore, that a full explanation of the mass wasting potential scheme employed here be included in the Final EIS. In addition, the Final EIS should indicate whether or not mass wasting, as used here, includes the process of creep and whether or not the low potential for mass wasting would still apply to 85% of the forest.

8. The DEIS states (page 4-50), "In all alternatives, mining is conducted in accordance with federal and state laws and regulations..." We recommend that a specific reference to the State Surface Mining and Reclamation Act (1975) be made in this section, in order to ensure recognition and compliance with the stipulations and standards contained therein.

#### DRAFT PLAN

1. The Plan states (page 3-13), "The Forest Geologic Resource Inventory, (GRI), scheduled for completion in FY 1989, will precisely identify these high-risk (landslide hazard) areas." Because this report will presumably identify precisely those areas of greatest concern and explain how these areas were identified, we recommend that the GRI be incorporated by reference or in total, if feasible, into the final Forest Management Plan.
2. The Plan states (page 3-16), "...a low to moderate potential for epithermal base metal deposits exists in some areas, without consideration of the extensive exploration and development activities at the High Grade, Red Hawk, Hayden Hill, and the Winters Districts. We suggest that these districts, and perhaps other areas in the Forest, may have a high potential for precious metals, especially gold; and should be the subject of a comprehensive investigation and evaluation to be incorporated into the Final Plan. In addition, because two very significant commodities, diatomite and peat, were not mentioned anywhere in the Plan, it is recommended that a modern inventory of all mineral resources in the forest be commissioned and completed as soon as reasonably feasible, in order that the Mineral Lands Management Plan be implemented with realistic policies and based on a factual data base.

3. Chapter 3, Summary of the Analysis of the Management Situation: Minerals (page 3-16, at 884), mentions only briefly the policies, regulations, laws, directions, and guidelines that may influence the prospecting, development and production of mineral resources on Forest lands. In addition, to the federal regulations cited, the California Surface Mining and Reclamation Act (SMARA) should also be listed among the laws controlling the administration and reclamation of mined land in California.
  4. Within Section F of Chapter 4, Management Direction, we recommend that North Adin, Fitzhugh, South Adin, and Mt. Dome Management Areas contain specific standards and guidelines for mineral resource development.
- If you have any questions regarding these comments, please contact Zoe McCrea, Division of Mines and Geology Environmental Review Officer, at (916) 322-2562.

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0569H

cc: Zoe McCrea, Division of Mines and Geology  
Trinda L. Bedrossian, Division of Mines and Geology  
Robert Streitz, Division of Mines and Geology

  
Dennis J. O'Bryant  
Environmental Program Coordinator

# Memorandum

To : Honorable Gordon K. Van Vleck  
Resources Agency  
1416 Ninth Street  
Sacramento, CA 95814

Date : February 24, 1988

Attn: Projects Coordinator

From : Department of Fish and Game

Subject: SCH 87110602, Draft Environmental Impact Statement (DEIS) and Land and Resource Management Plan (Plan), Modoc National Forest (NF)

We have reviewed the subject documents and find that they are somewhat easier to analyze than most other forest plans we have reviewed. Our deer herd plans and population goals are incorporated into the Plan and antelope population goals are discussed. We are concerned that, although wildlife resources are discussed fairly well in these documents, considerations for maintaining and/or improving conditions for wildlife are very limited.

Despite resource value determinations which skew values to commodity products such as timber and grazing, recreation and particularly wildlife associated recreation is the product that provides the highest annual economic benefit from the forest. Despite this fact, the value of recreation as a forest benefit is given very little consideration in comparison to timber and livestock.

We are particularly concerned with the treatment of riparian habitat and water quality problems and the means by which these problems are to be corrected. The problems are recognized but measures planned to correct them are wholly inadequate. Control of domestic grazing animals is a recognized need, but the proposed controls are limited; are phased in over a 50 year span; and are partially dependent on a substantial budget augmentation for the forest, which is unlikely, based on current economics.

Without major revisions we feel that this Plan/DEIS does not accurately or adequately deal with the resources of the Modoc NF and, therefore, does not comply with the requirements of the California Environmental Quality Act. Our general comments and specific comments (Appendices I, II, and III) are attached. If you have any questions, please contact Scott Clemons, Environmental Services Division, at (916) 322-5655.

Pete Bontadelli  
Director

Attachment

## GENERAL COMMENTS

It is apparent from the information presented that this planning effort is biased toward commodity production. The fact that regional planning direction requires the Modoc NF to include areas that produce less than 20 cubic feet of wood per acre per year as suitable (regenerable) sites for timber production tends to support this observation.

The utilization of FORPLAN and the objective function of the planning process further biases the process toward commodity production. An example of this bias is the use of demand cutoffs for valuing Wildlife and Fish User Days (WFUDs) and Recreation Visitor Days (RVDs) while no other outputs have benefit values removed at any point. The fact that timber is the only resource that is trended, tends to ensure this bias. Regardless of the statements made regarding the interaction of price and cost trends in calculating present net value (page 8-36), by failing to treat other outputs in an equal manner, a deliberate bias is built into the analysis. We disagree that "using trends for timber but not for other resources does not significantly affect economic efficiency comparisons between resources," because as is stated, those data from which to make trends for other resources are not available.

In the DEIS it is apparent that the number of deer hunters functions as the demand for big game WFUDs. In fact, the number of deer hunters is clearly a measure of supply under current management strategies while the number of applicants for the area is a measure of the demand. The failure to utilize this concept may have resulted in lower big game WFUDs demand, thereby producing a premature triggering of a demand cutoff, which resulted in an additional bias.

The DEIS also fails to provide a suitable array of alternatives. Minimum management requirements are held throughout each alternative with no alternative specific management proposed. For example, regardless of management prescription or alternative, snags are held at the minimum level of between 1.1 snags/acre and 1.5 snags per acre by the fifth decade. Regardless of alternative, other resources such as Bald eagles, Peregrine falcons, Bighorn Sheep and Goshawks have little or no changes in population. In most cases, the populations displayed are only for the minimum viable or minimum targets (numbers) that would be required to delist a species. The failure to provide a larger array (above minimums) severely reduces the adequacy of the Plan and is contradictory to NFMA direction and the intent of forest planning.

The dietary overlap and forage allocation for deer is apparently calculated only on grass, forb and bitterbrush areas. The dietary overlap is more extensive and should include other areas and vegetation types. Because of the failure to include other types, it may well be that capacity figures for grazing allotments are incorrect and should be reviewed.

The use of analysis areas (an aggregation of capability areas) rather than capability areas does not provide for adequate spatial accommodation of seral stages and diversity. In order to provide appropriate areas of habitat and diversity it is essential that the spatial arrangement, size and juxtaposition of these areas be a part of the modeling process. Because analysis areas do not treat contiguous parcels of land, the MMR for seral stages may be attained but due to the failure to assess arrangement and size, may provide little wildlife habitat value. For example, the retention of 5% old growth may be achieved on an acreage basis, but because the model does not deal with spatial or size parameters, the old growth provided may not be in large enough parcels to provide adequate habitat for those species dependent upon old growth.

In the DEIS there is no apparent differentiation between standards and guidelines; however, the glossary defines one as mandatory (standard) and one which is not (guideline). Because of the difference in the required application of standards and guidelines it is essential that they be differentiated and identified. Additionally, standards and guidelines unique to each alternative should be developed and displayed.

We are greatly concerned about the treatment of riparian areas in the DEIS and Plan. Both documents discuss the degraded riparian and aquatic habitat that has lowered carrying capacity for wildlife, created water quality problems and reduced fishery production. We believe this part of the plan needs substantial re-evaluation along with plans for fisheries, particularly in view of the inadequacies of the riparian and fishery sections.

Because livestock concentrate in riparian areas, the slight variations in livestock animal use months (AUMs) among alternatives and the low proposed expenditures to manage and exclude livestock appear to be grossly inadequate to cause degraded riparian areas to recover. Without substantial increases in fencing to better manage allotments with a much greater emphasis on exclusion, or without substantial decreases in livestock AUMs, we believe that riparian habitat will continue to decline along with the fish and wildlife resources that are dependent upon this habitat. If a major flood event (a 200+ year flood) occurred while streams and riparian zones are in a degraded condition, extreme watershed damage could occur that may take 500 to 1,000 years or more to repair, without artificial construction (examples of such cases are available from other USFS lands). The Modoc NF should, therefore, evaluate alternatives that involve a lower livestock use in riparian areas along with all of the associated costs and benefits including impacts to fish and wildlife, grazing revenue and administrative costs; the revenue from grazing should be compared to market value, administrative costs and costs required to fully mitigate grazing impacts on fish and wildlife.

The basis for the evaluation of grazing impacts must be changed. Both the DEIS and the Plan quite correctly state that the riparian

areas are degraded and have not improved because of present grazing practices (e.g., Plan, page 3-26). However, the documents ambiguously state that it will take two or five decades to rehabilitate the deteriorated riparian habitat (emphasis added):

"Treat all degraded watershed areas affecting water quality in a cost-effective manner on a priority basis according to beneficial uses . . . . Completion target is two decades" (DEIS, 2-46). The document declares in a later section that rehabilitation of deteriorated riparian areas will be accomplished in the fifth decade (DEIS, 5-13, 5-15 and 5-29).

Since the DEIS also states that "... complete recovery may take more than 20 years. . . ." (DEIS, 3-95), the economic benefits to fish and wildlife are claimed to occur far in the future. When these fish and wildlife benefits are brought back to present net value (DEIS, 2-153), they have relatively little value compared to the more immediate benefits of continued livestock grazing, the primary cause of the deteriorated habitat and fish and wildlife values in the first place. This analysis approach, therefore, perpetuates the present degraded and unsatisfactory habitat. An objective analysis requires that the habitat and wildlife values be modeled as fully recovered in year one; then if grazing is superimposed on this model, the economic impacts of grazing on fish and wildlife can be more fairly assessed and the real value of correcting past grazing abuses can be seen.

The DEIS and Plan contain numerous statements that, by themselves, suggest that riparian, fish and wildlife values will be protected, e.g.:

"All riparian areas will be protected through Modoc NF-wide Standards and Guidelines" (DEIS, 5-13).

"Restore degraded riparian areas through structural and nonstructural improvements" (DEIS, 2-43).

"The primary emphasis is to protect and enhance streamside dependent resources (water, fish, wildlife) while utilizing the habitat for nondependent resources (timber, range, recreation) when possible . . . . Resource uses and activities in riparian areas will occur to the extent that they do not adversely affect the maintenance of the riparian area-dependent resources (DEIS, 2-56).

"Where uses conflict, favor protection of riparian-dependent resources (water, fish, vegetation, wildlife, and aesthetics) over other resources" (DEIS, 2-43) (Plan 4-33).

"Manage riparian areas to optimize fish habitat or populations" (Plan, 4-9).

"Manage allotments to improve water quality, fisheries habitat and riparian areas" (Plan 4-29).

However, the documents also indicate that the preceding laudable goals have little prospect of implementation:

"Because of limited funds since 1980, most allotment management plan revisions and improvement and monitoring projects have been deferred . . . . Range in poor condition is still poor except on a few specific sites where small-scale riparian enhancement projects are improving the area" (DEIS, 3-76).

In view of the preceding, we have to ask: What are the real chances of this situation changing in the foreseeable future? Is it realistic to develop a plan that requires a 20% increase in funding? These questions should be addressed.

The document claims two methods are used extensively on the Modoc NF to improve riparian condition by controlling grazing: Creating riparian pastures that are grazed in the fall and excluding cattle through fencing: (DEIS, 3-95). How can these methods be used "extensively" when it was previously stated that most projects have been deferred?

"Generally, strategies that sustain grazing are better than exclusion. However, the Modoc NF will use exclusion where necessary" (DEIS, 3-97). This statement is in conflict with a prior statement: "Excluding cattle from riparian areas is the most successful strategy for improving these areas. However, complete recovery may take more than 20 years, and fence construction and maintenance are costly and burdensome" (DEIS, 3-95).

"Rangeland improvements are low on the funding priority list." (DEIS, 3-143).

The preceding quotations seem to indicate that the Modoc NF does not want to be "successful" and is not able or willing to fund a successful rangeland improvement program.

"Implement cost-effective range improvements" (Plan, 4-29). What are "cost effective" improvements? Since it appears that costs to exclude cattle from the riparian zone exceed grazing revenues, how much improvement will actually be accomplished?

"Poor and fair range condition is caused by overstocking (of livestock, wild horses and wildlife); . . . ." (DEIS, 3-75). Inclusion of wildlife in this statement suggests overstocking of wildlife. However, since the primary wildlife grazers, antelope and deer, are not generally exceeding department of Fish and Game (DFG) plan goals for these species, it appears that wildlife should be excluded from this statement.

The definition of riparian areas is inconsistent between the DEIS and Plan. The DEIS definition of riparian areas includes only "perennial stream channels" (DEIS, 2-35) where the Plan definition

includes "ephemerals and intermittents". We believe that all three elements must be included in the definitions of riparian area and streamside management zones in both documents.

DFG is of the opinion that the riparian prescription should be more restrictive in the types of allowable activities. The existing plan allows for the removal of firewood, the development of oil and gas resources, selective timber harvest, and grazing activities (we have already addressed grazing). These are some of the most damaging to the riparian corridor. The riparian area would be better protected if all oil and gas development was done by slant drilling so that no activities would occur within the riparian zone; this, of course, would require that the operator complies with all other aspects of riparian protection. Timber harvest in riparian areas should be limited to the removal of trees that have a negative impact upon fish and wildlife resources.

The Plan does not set management priorities if the funding required for implementation (Plan 4-2) is not fully available (a very likely problem in the reality of today's federal budget), or if more funds should be available (unlikely). The Plan should set such priorities and discuss their impacts. We are concerned that with underfunding, grazing and logging will go ahead without adequate planning, control and evaluation to ensure mitigation of impacts on fish and wildlife resources - a continuation of past adverse impacts. For example, without the "moderate budget increase (20%) above the current level" (DEIS, Summary-4), grazing allotments will continue, but without the personnel and capital outlay necessary for proper management and mitigation. Therefore, unless substantial decreases in AUMs are required with underfunding, the primary impact will be continuing adverse impacts on riparian, water quality and range values while grazing for livestock will continue (at least temporarily) largely in accordance with the Plan.

## APPENDIX I

## Page Specific Comments, DEIS

The following comments are specific to the pages cited in the DEIS:

2-60. Theme - The last emphasis statement should be "restoring degraded riparian habitat." The phrase "... in high priority areas ..." should be deleted. We believe that all degraded riparian areas should be restored.

2-62. Riparian Areas - Change the first word in the paragraph from "Enhance" to "Restore."

2-63. Soil and Water - Additional structural improvements and an accelerated stream restoration program should be developed to enable the Modoc NF to meet the State Water Resources Control Board's clean water standards sooner than in the fourth decade. A reduction in the grazing allotment would also be beneficial in accelerating this time table. Four decades to correct problems caused by past abuses is too long.

2-69. The basis for the fish production and resident fish WFDs should be re-evaluated based on less or no improvement attributable to riparian and water quality improvement and based on less benefit attributable to fish habitat structures (see our comments on riparian Best Management Practices (BMPs) and proposed fishery habitat improvements).

The DEIS and Plan seem to assume that BMPs along with limited habitat improvements (e.g., 1.5 miles of stream improvements per year) will result in increased fisheries potential. Our experience indicates that fish and wildlife resources usually lose to budget cost considerations, inadequate consideration of fish and wildlife relative to other forest uses and inadequate implementation of BMPs. For example, fishery resources have not received adequate consideration in the past because the Modoc NF has not had a single fishery biologist on its staff. In order for fishery resources to be protected, qualified fishery biologists must be on the staff to participate in the planning and evaluation process. If fish and wildlife mitigation had been adequately implemented in the past and if habitat improvement projects had been adequately funded by the federal government in the past, the large recent state expenditures for habitat improvement on U. S. Modoc NF Service (USFS) lands in California would not have been necessary. For the Plan and DEIS to be believable the documents should provide some assurance that these problems will be corrected.

3-14. The economic analysis is seriously biased because it shows only direct returns to the counties based on 25% of receipts. An adequate DEIS would show indirect receipts

based on estimates of recreationists expenditures in the three counties involved for goods and services acquired in pursuit of this recreation.

3-138. The section on water mentions that water is used for dust abatement on roads. The subject needs to be specifically addressed so that fish and wildlife are not adversely impacted. We suggest that the following prescription be developed:

When water points are on streams, pumping for road use should not, even temporarily, dewater the stream or otherwise make conditions unsuitable for fish life. This approach is necessary to actually give fish and wildlife priority over road watering. For any pond that may be used for road watering, a prescription should be established for that individual pond specifying how much water can be taken during each summer month without adversely affecting the fish and wildlife values (monthly criteria are necessary on many waters so that evaporation during the rest of the year does not deplete the water to a point where fish and wildlife are adversely affected).

3-160. The section on opportunities for the Modoc sucker should note that a chemical treatment of Rush Creek may be required to eliminate hybridized suckers if the fish ladder is eliminated to create a barrier. Obtaining approval of private landowners for these activities will be difficult.

This section should also provide for the potential acquisition of private lands to secure at least two new streams where "pure" populations can be established.

3-167. We believe that the shortnose and Lost River suckers should remain on the sensitive or endangered species lists until the question of hybridization is resolved. Even if hybridization of present populations is established sometime in the future, restoration of "pure" stocks to historic habitat should be a goal. Therefore, the Plan should attempt to protect and restore habitat within the historic range of these species. Restoration of habitat may require restoration of water to the streams as an integral part of restoration of riparian and instream habitat.

3-187. Diversion, storage, and consumptive uses of water are the primary causes of the low flows and water levels that limit the habitat capability for trout in streams and reservoirs.

Other factors that affect habitat capability in lakes and reservoirs include (1) populations of competitive and

predatory gamefish such as largemouth bass, bluegill, etc., and (2) poor water quality. We are unaware of any lakes or reservoirs on the Modoc NF where trout are limited by "low levels of aquatic vegetation" or "poor stocking and coldwater species composition;" we would appreciate being informed of such problems.

The Modoc NF should supply more detail on what they will do to improve habitat in lakes and reservoirs to increase high capability habitat from 24% to 66%. We note that in-lake habitat structures are not an accepted method of improving trout habitat.

3-188. The estimates of increased trout production attributable to habitat improvement should be re-evaluated (see previous and subsequent comments on habitat improvement and riparian restoration). Note that fishery management activities are the responsibility of the DFG and habitat management is that of USFS. The plan should primarily address the costs and benefits of habitat management funded by USFS; habitat management funded by other agencies and management by the DFG (such as increased stocking of trout) should not be attributed to the Modoc NF whereas such things as the benefits of improved survival of planted trout attributable to USFS habitat improvement are appropriate.

In addition to the factors listed, the short growing season and low water temperatures also limit trout growth.

3-191 and 192. There are numerous problems in the section on largemouth bass. (1) Largemouth bass require relatively warmwaters; "clear water" is not a requirement. (2) Vegetation and structure that provides cover for young fish is detrimental in most Modoc NF waters because it increases recruitment and exacerbates the slow growth and stunting problems that typify the area. (3) Largemouth bass are not a good stream fish; they are more suited to lakes and ponds. (4) Largemouth bass do conflict with other resource uses, particularly trout management since they are both predators and competitors in trout lakes and reservoirs; there is also more demand for trout than for bass fishing (note that most bass populations on the Modoc NF are under-harvested whereas trout are harvested at relatively high rates). (5) Habitat improvement opportunities should not include provision of hiding cover, development of spawning sites and structural improvements. (6) Largemouth bass should not be stocked in reservoirs by the Modoc NF and "multiple species fish management" of trout and bass is not advisable. Bass management would benefit from improved access, promotion of more fishing use in waters that are managed for bass and public information programs that discourage the illegal stocking of bass (and other species of fish).

4-116. Fire management. Wildfire can also be detrimental to early successional wildlife species, depending on the type of habitat burned. Burning bitterbrush, mahogany and sage, for example, can be very detrimental to wildlife.

4-120. Pronghorn. The Likely Tables pronghorn herd population is below plan goal. Very low kid survival in the Devil's Garden Ranger Unit is the primary reason for this.

4-122. Improvement of only 1.5 miles of trout stream habitat per year is inadequate even if it is only referring to the structural and direct fish habitat improvements. It also seems to say that the 1.5 miles of improvement is a result of the "Riparian Area Prescription" and reducing livestock AUMs; we hope that the riparian prescription and reduced AUMs occur on more than 1.5 miles of stream per year.

4-122. Goshawk. Does the minimum viable population allow for a catastrophic loss of habitat, i.e., wildfire?

4-122. Pronghorn. The Likely Table pronghorn herd is below the planned population goal.

4-131. Spotted owl is not included as a species occurring on the Modoc NF. Our records include an observation made in 1986, by Whisler, in T40N, R15E, NW1/4, Section 16.

L-3. Dietary overlap. Sage and juniper are very important in the diet of several wildlife species. Sage is important forage to livestock.

Relative to the discussion of largemouth bass, see our comments on pages 3-191 and 3-192.

K-2. We cannot confirm established populations of arctic grayling, (arctic grayling were stocked in Bulleye and Little Medicine lakes in the 1970s but have not established reproducing populations) fathead minnow or rough sculpin on Modoc NF. We would appreciate any documentation of these species on the Modoc NF.

The fish section contains some misspellings and incorrect genera: The Sacramento sucker should be Catostomus not Catostomus. The Lost River sucker should be in the genus Catostomus not Chasmistes. The shortnose sucker is Chasmistes brevirostris not Chamistes Breverostris.



Page Specific Comments, Land and Resource Management Plan (Plan)

These comments do not generally re-address issues already commented upon relative to the DEIS. We assume that our DEIS comments will result in substantial changes to the Plan.

1-2. Add the Adin Deer Herd Management to those plans "incorporated by reference."

The DFG's Pronghorn Antelope Management Plan should also be added to the list of plans "incorporated by reference," since pronghorn herd goals from this plan are discussed.

2-2. Minimum viable populations is wording used in response to the question on diversity. If this wording remains in the Plan its meaning should be explained.

2-2. Diversity - Guidelines do not ensure anything except the opportunity for selective discretion in the decision-making process by administrators. (See the additional discussion of this subject in Appendix III)

Facilities. The Modoc NF is now overroaded. No new roads should be constructed without eliminating old road mileage at least equal to the new mileage being constructed.

Fire Management. What were the criteria used for determining the direction for each management area? Particularly, what are the acceptable numbers of acres to be burned per fire?

Range. Because guidelines are discretionary the protection of other resources will be at the whim of the administrator.

2-3. Firewood. Juniper is also a valuable component of wildlife habitats. The Modoc NF should prepare a management plan for juniper which addresses the needs for fuel wood and wildlife habitat.

2-4. Pests. Standards and Guidelines (Standards and Guidelines) provide no information on methods or constraints to be used in pest control. More information is needed, especially regarding the use of pesticides.

Range. Standards and Guidelines are too permissive to provide the protection needed for wildlife. See comments for page 2-2 Diversity. Why are "term permits" necessary?

2-4. Recreation. Dispersed Recreation. The present ORV Plan is too permissive of ORV use in critical wildlife areas such as deer winter ranges and antelope kidding areas, etc. (Refer to our recommendation for the original ORV Plan).

2-5. Timber. Second paragraph. Even-aged management will be detrimental to wildlife for years to come. Modoc NF Standards and Guidelines are not specifically provided for wildlife in even-aged timber.

2-6. Visual Resource. No specific standards and guidelines are provided for wildlife.

2-7. Wildlife and Fish - second paragraph - This paragraph is unclear. Are deer and pronghorn forage needs to be met on a seasonal basis? The second sentence needs clarification. Present practice on reforestation and clear cuts is to eliminate browse and forage. These are even-aged timber areas and no specific standards and guidelines are provided. Where is the 50% browse and forage to be maintained? The Even-Aged Timber Management Prescription description does not provide for the maintenance of browse and forage.

2-7. Pronghorn should be added to the second paragraph under wildlife and fish as follows: "by allocating forage needed to meet deer and pronghorn herd plan goals."

3-6, 3-7. Item 3. Diversity - Current Management. This section provides little information regarding management for vegetative diversity. This section only discusses timber management. No mention is made of current management for any of the other 16 vegetative types such as wet meadows, wetlands, riparian, mountain mahogany, black oak, juniper and etc. What are "recruitment acres in the next lower successional stage?" Are there trees or other plants?

3-9. Item Facilities - roads - second paragraph. Roads constructed in the Happy Burn appear to exceed minimum levels.

3-11. Item 6 - Fire and Fuels - Current Management. The second paragraph, first sentence, is not true. The Modoc NF has a "let burn" area on the Devil's Garden Area known as the Big Sage Fire Management area.

3-12. Second paragraph - Encroaching juniper and sagebrush. While this is true, it presents an over simplification of management needs. Juniper and sage brush are both valuable plants for deer as well as other wildlife. Juniper is valuable as cover for deer. Sagebrush is a valuable forage plant for deer, antelope and sage grouse. The juniper and sage lands should be managed with wildlife needs in mind.

3-15. Rights-of-Way. This section is vague and needs further explanation. What is a "right-of-way acquisition?" Why is it needed for timber sales or other projects if the transportation system is complete? It appears that there is public concern for roads noted in the last paragraph under Road on page 3-9. What is the potential for resource impacts from "right-of-way acquisitions?" The Modoc County Fish, Game and Recreation Commission is asking for road closures.

3-19. Range Introduction. The fourth paragraph needs a better explanation of transitory range and its value to wildlife. Transitory ranges support some of the highest densities of deer and provide important deer fawning areas.

3-19. Current Management. The first paragraph, last sentence. The phrase "term permittees" needs explanation. The public needs to know what a term permit is, how it is used, why it is issued and what are the shortcomings of issuing such permits.

3-19. Current Management. The third and fourth paragraphs. These two paragraphs are an oversimplification of range condition statements. Range conditions for wildlife and livestock should be evaluated separately. In many instances ranges have to be related to various species of wildlife and to season of use by the various species of wildlife and livestock. Good condition (heavy grasses) for livestock may be poor for some species of wildlife. Juniper encroachment may benefit deer on winter range but suppresses grasses for summer livestock use.

3-20. First paragraph. Up to this point this section on range continues to downplay juniper. Juniper is a valuable range plant and is part of the ecosystems which make up the range lands. Allotment management plans should recognize the value of juniper as a resource and not downgrade the species to a noxious plant. Juniper should be managed for its benefits.

Recent findings indicate that the development of stock ponds may be a factor in the proliferation of Blue Tongue Disease which has serious consequences for wildlife.

3-20. Transitory Range - This is where some of the greatest conflicts with wildlife use of the Modoc NF occur. The Transitory Ranges are some of the highest value deer habitats on the Modoc NF. This section fails completely to mention the wildlife or the value of Transitory Range to wildlife, or the impacts of forest management practices to wildlife which use these areas.

3-21. Supply and Demand - first paragraph. This section is vague and weak from the wildlife standpoint. The last sentence of the first paragraph needs to be more specific on the assessments for wildlife. What is available for wildlife? Are "current forage needs" for wildlife being fulfilled in AUMs considerations? If not, why not?

Third paragraph - What is the demand analysis for wildlife?

3-21. We question the reasoning for the forage allowances for livestock and wildlife. Because a very limited number of livestock operators have obtained a vested interest in grazing on the Modoc NF is not sufficient justification to continue this preferred treatment. Wildlife associated recreation provides much more benefit to the user public than livestock but does not receive commensurate forage allotments. Such statements as ranchers have "always been dependent on public ranges," "reducing forage would force

ranchers to move livestock to lands that currently are producing hay" and "forage reduction would also place increased demands on other forage sources, thus bidding up the price of these feed supplies" indicate the Plan's bias toward livestock and against wildlife. Is catering to a limited number of livestock owners at the expense of an important wildlife resource in the best public interest?

3-21. Opportunities. The rationale in this section appears to be directed toward improvements for livestock at the expense of wildlife. This is especially true of the discussions on juniper removal and transitory range treatments. The second sentence of the third paragraph is vague in that it discusses "poorly stocked stands" of something unidentified and 100-200 pounds of something also unidentified. What are the opportunities for wildlife?

3-23. Dispersed Recreation - First paragraph. The average number of pronghorn hunters using the Modoc NF should be included in the first paragraph along with the numbers for deer hunters.

3-24. Opportunities. There is no mention made of the opportunity to increase recreational use of wildlife. Due to the remoteness from large population centers relatively little nonappropriative use occurs.

3-27. Sensitive Plants - Current Management. The plants may be classified as Sensitive because of 100 years of grazing without changes in management practices it is unlikely that the plants status will change for the better. The effect of grazing on each sensitive plant species should be determined on a case-by-case basis rather than glossed over with a broad brush approach.

The Plan has omitted any mention of opportunities to upgrade the status of sensitive plant species.

3-29. Mass Movement. The Plan is very vague as to what is meant in the second sentence, i.e., basal area refers to what? What is full suspension and lateral yarding?

3-29. Fertility. This section should address selenium levels in the Modoc NF soils and the potential impacts to wildlife. Low selenium may have been a contributing factor to the Big Horn sheep die-off at the Lava Beds National Monument.

3-30. Geologic Special Interest Areas. This section needs a glossary. What is dacite?

3-31. Timber Introduction. Based on the information provided it appears that more than 70% of the commercial forests are in a poorly stocked condition. Why has this been allowed to occur? What are the present and future impacts to

other resources? What are the trade-offs with other resources to restore the commercial forest lands to proper stocking levels. Present practice is to clear cut and replant to timber plantations at the expense of livestock and wildlife. What is the effect on snag retention and recruitment? It appears that it will be many years before snag objectives will be met.

3-32. Silvicultural Practices. The practices which promote even-aged single species management are not conducive to good wildlife management. These practices include: clear cuts, brush conversion, site preparation and reforestation.

3-40. Sixth paragraph - Four Big Horn sheep from Lava Beds National Monument and 10 Big Horn sheep from the Mount Baxter herd, in the Sierra-Nevada were transferred to the Raider Canyon area.

3-41. Wildlife and Fish - Introduction. First paragraph. The riparian areas section page 3-26 gives a total of 470 terrestrial and avian species using riparian habitat. This section states that the Modoc NF supports 354 species. Which is correct?

While northeastern California provides habitat for about half of the bald eagles wintering in the state, the Modoc NF does not provide half of the habitat. The Modoc NF receives relatively little use by immigrating waterfowl. The Tulelake Basin (not forest land) is the largest concentration point for waterfowl. The Modoc NF is only partially responsible for the support of the individual mule deer and pronghorn herds. These herds are also partially dependent upon other public and private lands.

This wildlife and fish section is surprisingly inadequate, considering that wildlife and fish provide the greatest recreational attraction on the Modoc NF, and considering the impact these users have in the local and statewide economies. For example, public demand for deer and antelope tags far exceeds the supply.

The Plan identifies only one significant problem with respect to special habitats and the species which depend on them. That problem is a shortage of snags. We believe there are a number of other problems that are associated with timber and range management. The Plan should evaluate the existing conditions in each special habitat type, and discuss the expected range of conditions that would occur under the available management alternatives.

3-42. Demand. This section is vague and provides very little information. What is ecological demand? Does this section mean that the Modoc NF applies minimum management requirements to furbearers or all wildlife? This section should contain information on demand for the next 10-15 years.

There are a number of uses which will conflict with wildlife such as timber production and range use. This Plan should attempt to identify these conflicts and should also include a section on opportunities for wildlife habitat improvements.

3-42. Woodlands - Introduction. This section on juniper is oversimplified. How do large clear cuts contribute to thermal stress? How do small clear cuts provide "excellent forage?" This section should give an example of judicious juniper removal benefiting wildlife diversity.

The Plan clearly identifies conflicts between juniper and grass but it does not articulate similar problems that occur between juniper and shrubs. Juniper is a valuable resource and should be managed as such and not as something that is in the way of grass production. Juniper use as firewood has been increasing. Juniper is also valuable to wildlife. A management plan for juniper should be prepared. This plan should provide for legitimate harvest of juniper and for wildlife needs.

#### Management Direction - Chapter 4

4-1. Third paragraph - How much and how specific was the management direction generated at the higher levels of the USFS administration? Was the management direction from higher levels "unique" to the Modoc NF's Goals and Objectives?

4-1. Fourth paragraph - Were Standards and Guidelines developed to meet the specific needs of the Modoc NF, or were they developed on a nationwide or regionwide basis?

4-1. Fifth paragraph - What were the overriding considerations in the development of the management prescriptions?

4-1. Sixth paragraph - How were Standards and Guidelines developed? What were the overriding considerations and from where was input derived in developing the Standards and Guidelines?

4-2. First paragraph. This section is unclear. How do Standards and Guidelines describe how resources are managed? A more appropriate statement would be that the Standards and Guidelines guide the land management decision process and put constraints on single purpose management.

4-3. Modoc NF Mission and Goals. The first section sounds like "pie in the sky" - what are the trade-offs? The first three items are generally detrimental to wildlife. It is doubtful if all of the fifth item will be achieved.

Is it the Modoc NF goal to maintain only "viable populations" of harvest species. There should be stated goals for harvest species and threatened and endangered species.

4-5. Facilities - Item 1. This item needs to be reworked. The transportation system on the Modoc NF needs to be evaluated. Before new roads are planned the existing road system should be evaluated for management needs. Roads not needed should be obliterated. It is doubtful if the Modoc NF needs to build new high standard roads or improved roads which will take more land out of production. The Modoc NF goal should be to reduce the overall road mileage and to put more acres back into production.

4-7. Range - Item 2. Standards and Guidelines may not be designed to accomplish this. It appears that Standards and Guidelines have been prepared for the opposite effect, i.e., other resources will be managed to complement permitted grazing.

Item 5 - What is the ecosystem classification program?

4-7. Recreation - Item 5. This approach could be applied to livestock and timber uses.

4-8. Sensitive Plants. The Plan should require an evaluation of intensive land uses, such as livestock grazing, logging, etc., where sensitive species occur. The rationale that is stated in the last sentence on page 3-27 (sensitive plants probably existed and survived under 100 years of grazing; therefore, no changes in grazing strategy are necessary) should be avoided. (See Appendix III for additional comments)

4-8. Timber - Item 1. What are the trade-offs if an additional 5.9 MMBF per year are offered? Will wildlife goals be met? It does not appear that the Modoc NF has fully identified impacts of the timber program and trade-offs for wildlife.

Most of these items if implemented would be detrimental to wildlife. Item 5 - What are Tree Measurement Sales?

4-9. Watershed - Item 2. What are second and third order watersheds? Item 4 - What are the downstream impacts if the Modoc NF acquires water rights? This could adversely affect many wildlife and fish species as well as Ash Creek Wildlife Area.

4-9. Wilderness. This requires some explanation of the Modoc NF's rationale for livestock grazing in the wilderness. Although existing laws allow grazing, they do not require it, and grazing does not appear to be necessary to "maintain or enhance wilderness qualities".

4-9. Wildlife and Fish - Item 5. This item should state that habitat quality and quantity will be provided as needed on a seasonal or year-round basis.

Item 6. What are suitable wetlands?

Item 9. Where are habitat and population objectives identified for Management Indicator Species?

4-14. Table 4-2 - Wildlife and Fish - Deer population estimates. How were they determined? (Base year populations should be recalculated using the change in ratio program). What percentage of populations is the Modoc NF claiming?

- Snag (per acre). The Modoc NF goal is 1.5 at the end of Decade 2, not 1.3.

- Total WFUDs. How were WFUDs and Dispersed Recreation Days calculated?

- (b). Upland Game, Waterfowl and Nongame appears to be out of line with Big Game. What is this based on? What are the Habitat Improvement figures?

4-16. Table 4-3 (timber outputs) - Total Regeneration Harvest. Does this mean that 38,000 acres of timber will be clear cut and reforested every 10 years. How will the Modoc NF meet deer population goals?

4-17. Table 4-4 (other resource objectives) Facilities - Where is the need for new roads identified? All timber areas have been cut over and are now well roaded. What are the recreation, range and wildlife needs for roads?

- Pests. How are pests defined? Does this include vertebrate species?

- Range. What are the 6,800 acres of nonstructural range improvements to be? Burning may be detrimental to deer habitats. How will the 22,000 acres of seedlings be maintained? By reseeding or by livestock adjustments?

4-18. Recreation - Dispersed Recreation - Significant recommendations were provided to the Modoc NF by the DRG at the time of the ORV plan development. These recommendations should be implemented with this LMP.

4-18. Table 4-4, continued - Soil and Water - Second paragraph. What does all this mean? (SRI Order 2, noninterchangeable areas, SRI 3 map units, etc.).

- Visual Resources. We could find no "medium" in Appendix Q.

4-19. Table 4-4, cont. - Wilderness. The paragraph regarding wilderness contains the wording "manage the south Warner wilderness at the standard level" and "manage the primitive recreation experience to the extent possible." What is the standard level? To the extent possible, is a term that really means nothing to the reviewer. Who determines what is possible?

- Wildlife and Fish - Fourth statement. What is the "timber forage prescription?"

D. Modoc NF Standards and Guidelines

4-23. Item e.1. Have utility corridors been designated? The Plan should state that forest lands will not be used when private lands are available.

4-23. Fire and Fuels - Item 5.a. This item should also define the terms confine, contain or control. What is "Fire Management Effectiveness Index 3.72?"

4-29. 12. Range a. What does "(1) Implement cost-effective range improvements" mean? Since it often costs more to fence riparian areas than can be realized from the current revenue from grazing allotments, what will be considered cost-effective? No fencing? No grazing?

4-38. Timber - c. Delete "Generally" in first sentence. Change "will generally" to "shall" in second sentence.

4-41. a.(1)(b). "The Modoc NF will attempt to manage for recovery of the species." The wording attempt to should be deleted.

4-42. (5). All streams in the historical range of the Lost River and shortnose suckers should be managed (1) as directed in the Riparian Area Management Prescription, (2) to improve flow and water quality conditions and (3) in accordance with the sucker management or recovery plans that may be developed in the future.

The Goose Lake redband trout should be added and managed as a sensitive species.

4-45. (12). For warmwater species (not just largemouth bass) add the following guideline: "Publicize angling opportunities for largemouth bass, sunfish and catfish in those waters managed for these species with underutilized populations."

4-48. (5)(a). What does the word "representations" mean?

4-57 through 4-157. Management Prescriptions. Standards and Guidelines. There is no apparent system of selecting when a practice is a guideline or a standard. Some standards often contain permissive terms: 4-61 7a.(1), 4-72, 7.c., 4-106, a.4., 4-106 b. 4., 4-129 TIMBER a., etc.

4-90 e.3. This "Standard and Guideline" indicates a minimum of 10 years notice will be given to "permittees" if a higher public need is identified. Does "permittee" include livestock permittees and who decides if a higher public need is identified?

4-149. 2.b. Beaver should also be controlled where they block spawning runs, particularly those from a downstream lake or reservoir.

4-149. 2.c.1. the standard (a) to not allow silt to "cover" more than 15% of the spawning "substrate" is unacceptable. The standard should relate to the amount of fines allowed in the gravel, the composition of the substrate throughout the gravel depths used for spawning.

The most important standards to protect stream habitat are those that specify how activities will be conducted. We, therefore, recommend that the USFS incorporate some of the approaches outlined in the DFG 1601-1603 syllabus for acceptable techniques for instream construction into the USFS BMPs for further guidance.

Bank stabilization, flow maintenance dams, deflectors, weirs and vegetative planting should be added to the list of stream habitat improvements because they are among the most important practices.

The stream management section should include a guideline that says "establish minimum flow releases from reservoirs that are adequate to sustain good fish populations in the downstream areas as well as the reservoir."

The wording in Standards and Guidelines should be changed: "Large wood debris providing habitat to coldwater fish and not creating barriers to fish migration will be maintained . . . ."

Standards and Guidelines should be changed to: "In cooperation with the California Department of Fish and Game, establish adequate minimum pools for all reservoirs." The minimum pools must be adequate; many of the reservoirs "where fisheries occur" have inadequate minimum pools.

For lakes, reservoirs on Modoc NF (and ponds), structural habitat improvements including spawning bed construction, cover development and aquatic weed control are inappropriate for bass (see our comments on DEIS pp. 3-191 and 3-192) and trout. Combinations of cold and warmwater species are undesirable. Management promoting these activities should, therefore, be deleted. Guidelines that would be appropriate to add include (1) riparian protection, (2) prevention of siltation and turbidity from shoreline and upstream areas, (3) development of boat and shoreline access and fishing opportunities including handicapped fishing access, (4) promotion of angling opportunity for underutilized fish populations (primarily warmwater species) (5) discouraging the illegal use of live bait fish, and (6) discouraging any transplanting of fish except with a written permit from the DFG (this applies to USFS employees as well as the public).

Conducting "surveys to establish forage/prey ratios for reservoirs is not a Modoc NF responsibility in managing habitat; surveying and managing forage/prey ratios is a DFG responsibility for fish management."

Standards and Guidelines-C. should be modified: "Modify land management activities on adjacent lands in the drainage to maintain acceptable water quality levels and limit siltation."

4-151. Standards and Guidelines-C should be modified: "Where possible, 100% of the streambank will be maintained in a stable condition."

4-152. Standards and Guidelines-G. (Also 4-154. Standards and Guidelines-G). "Better allotment management and livestock exclusion" should be listed as the first acceptable practice to remedy stream channel degradation.

4-152, 4-154. (1) Stream flow deflectors, (2) weirs, (3) exclusion and control of livestock and (4) low head check dams to raise stream grade and water table should be added to the acceptable practices to remedy channel degradation as long as such structures do not create fish passage problems.

4-154, Element E, Item 5. Add revegetation as a preferred method to remedy stream channel degradation.

4-155, Element L, Standards and Guidelines-2. We recommend the following be added: All temporary earthen roads, which are not outslipped, shall be water-barred during the period 1 November to 1 June of each year. Water bars shall be installed every 100 lineal feet or 10 foot change in elevation, whichever is less. Energy shall be dissipated from the diverted water and bedload decanted prior to entry into stream channels.

4-156, Element L, Standards and Guidelines-11. This item should be a standard and modified to read "No excavated material shall be allowed to enter the live stream" change "b" by deleting, "whenever possible."

4-156, Element L, Item 12. The following should be substituted: "No streamside gravel borrow shall be allowed. All quarried gravel shall be taken from outside the riparian protection zone and all borrow pits shall be restored to native vegetative cover immediately upon completion of excavation activities."

F. Management Area Direction (Plan pages 4-158 to 4-268). The number of acres allowed per fire in management areas is generally too large. For example, in the Hackamore area the acreages allowed per fire "range" type and "eastside pine" is too large. Wildfire of this magnitude can have a significant

adverse effect on wildlife habitat. Key deer habitat would be affected. In the Devil's Garden area pronghorn could be seriously affected by fire under this criteria.

4-168. Pandango Management Area (MA). Willow Creek and tributaries should be included in those now and potentially providing spawning for Goose Lake redband trout. Much more intensive management of the cattle allotments including cattle exclusion in the riparian areas of the Lassen and Willow creeks drainages should be specifically emphasized as a very important part of the effort to rehabilitate these streams. The DFG is very appreciative of the USFS stream improvement work in the Lassen Creek drainage (including Cold Creek); this complements the DFG's ongoing program for Goose Lake redband in this stream. However, we believe that a complete livestock exclusion is necessary in much of the drainage to restore the fishery potential of this stream and to obtain maximum benefits from the riparian zone habitat improvement program.

Beaver control to prevent fish migration barriers is another important activity that should be specifically listed. The Modoc NF should also attempt to acquire private inholdings in Lassen and Willow creeks so that these drainages can be managed more effectively.

4-190. Patterson MA. Last paragraph. Pronghorn do not "frequent" this area. Few pronghorn occur here.

4-196. The Long Bell MA includes summer deer range which is productive deer habitat.

4-221. Wetlands developments in the Devil's Garden MA have been accompanied by declines in both sage grouse and pronghorn production. Pronghorn kid survival has averaged 12 per 100 does there in the past 10 years compared to 39 kids per 100 does in the Likely Tables herd. It can be hypothesized that inundation of pronghorn kidding areas and early summer foraging sites has been detrimental to pronghorn there. Sage grouse, formerly common there, are rarely observed now.

4-224. Crowder MA. The area is important summer habitat for pronghorn.

4-238. Medicine Lake MA. Third paragraph. Blanche Lake is not stocked with trout.

4-263. Clearlake MA. Riparian improvements in upstream areas of Boles and Willow creeks in other management areas may be necessary to improve flow and water quality conditions sufficiently to allow recovery of populations of Lost River and shortnose suckers. This should be noted in all other and upstream management units that contain these drainages.

5-18 and E-2. Monitoring and reporting frequency for Modoc suckers should be every three to five years and/or project-induced.

5-20. Fisheries monitoring techniques should include habitat surveys. The DFG would like to participate in selecting monitoring sites.

A-2. An updated Lost River shortnose sucker recovery plan is also needed.

Plan Page E-3. For Lost River and shortnose suckers, water quantity as well as quality should be evaluated.

E-6. For fisheries, water quantity should be monitored along with quality. Substrate sediment sampling should also be considered. Because of the great amount of time required to sample and evaluate invertebrate samples, invertebrate sampling may not be practical.

5-1 and 5-2. We recommend that Willow Creek and tributaries (Management Area 32) be added to the list of streams requiring riparian improvement with high priority (see comments on Pandango MA).

## APPENDIX III

### Comments Relative to Nongame Fish and Wildlife Habitat and Species Diversity, Fisheries, and Threatened/Endangered Species Issues

#### 1. DIVERSITY

Since the maintenance of natural diversity, especially where it concerns the species most in danger of extirpation, is an important mission of the DFG, we have devoted a good deal of time and effort to analyzing the treatment of this subject.

Before discussing the substance of these comments, two important points should be emphasized. First, the Natural Diversity Data Base (NDDB), which the DFG has assembled over the past 5 years, contains much of the information upon which we are basing our comments regarding natural diversity. We urge you to make use of it in preparing the final documents. The staff of the NDDB would also appreciate receiving copies of rate plant and animal survey reports, forms, and other documentation.

Second, the DFG believes that for the Modoc NF to comply adequately with the letter and intent of the National Forest Management Act of 1976, and in particular Section 1604 (g)(3)(b), the Plan must demonstrate the ability and intention of the USFS to manage and preserve all of the rare animals and plant taxa presently found in the Modoc NF. Absent proper management, these taxa are the most likely to be adversely affected by forest management activities.

As a rule, the conservation and monitoring of "management indicator species" and other management tools employed in the development of the Plan may help to protect rare species, but only in part. In point of fact, the indicator species chosen in the Plan do not adequately represent all rare animal species and most certainly do not represent all rare plants. All rare species must be accounted for in the Plan in a straightforward and positive manner. To do this, the DFG recommends that the Plan address at least all species that are known to exist in the Modoc NF that are T & E (i.e., listed as rare, threatened, or endangered by the Federal Government or the State of California), are T & E candidate species, are listed as sensitive by the Regional Forester, or are de facto rare species (e.g., species listed in the California Native Plant Society's Inventory of Rare and Endangered Vascular Plants of California, and not included in any of the above categories, etc.). By "address" we mean that specific quantified objectives designed to achieve viable populations of these species should be set forth in the Plan in accordance with FS Manual 2672.31 and 2672.32.

Furthermore, specific means for attaining these objectives, including, but not limited to, the dedication of Research Natural Areas (RNAs) and Special Interest Areas (SIAs), should be described. It is not sufficient to address the diversity issue merely by formulating plans to retain a certain percentage of major vegetation types in described seral stages. At the least, the direction should contain a minimum percentage of the total forest acreage that will be maintained in each vegetative type and seral stage based on an ecological analysis of the Modoc NF, the actual acreage of uncommon types and their stages to be retained, and direction regarding how to actively manage the Modoc NF to attain these objectives. Moreover, neither the DEIS nor the Plan provides a comparison of baseline diversity, i.e., the current relationships between vegetative types and seral stages and estimated "natural" diversity, i.e., the presettlement relationships, and whether this represents an ecologically sustainable situation. With respect to pattern diversity, the mosaic of successional stages (see page 4-21, DEIS), especially if some are reduced to the 5% level, could result in increased fragmentation, forming isolated islands of the habitat types that many species depend upon. This can result in increased local extinction of species, especially if they are already uncommon. The Plan should maintain and preserve certain successional stages in large blocks, especially those that are already in short supply such as old growth forests.

Our remaining comments elaborate on how the Plan and DEIS should be improved to more adequately address diversity through rare species management.

## 2. ANIMALS

In this section of comments, we are concerned primarily with forest management direction and other management requirements as they pertain to rare animals. Many of these requirements are addressed in Chapter 4 of the Plan, a portion of which describes fish and wildlife goals and objectives and forestwide standards and guidelines. The major deficiency of this most critical chapter is its comprehensiveness with respect to rare species. These comments are explained in greater detail below.

**Goals and Objectives.** Regarding the Plan's wildlife and fish goals listed on page 4-9, the goals pertaining to threatened, endangered and sensitive species (3 and 4) provide that recovery goals shall be attained for T & E species and viable populations of sensitive species shall be maintained through maintenance of habitat quality and quantity. These goals should, first, make clear that State of California T & E species are included, and second, that critical habitat will be identified where it is not set forth in a recovery plan.

Regarding wildlife and fish objectives described on page 4-19, the DFG recommends that the Plan should include objectives for all T & E candidates, sensitive, and de facto rare species of animals and plants that exist in the Modoc NF, or describe the manner in which they will be developed [as required in CRF Section 219.19(7) and RS Manual 2672.32]. In addition, to make sense to those interpreting the Plan, such objectives should be described in the Plan in relation to the goals and standards and guidelines.

**Standards and Guidelines.** On page 4-41 of the Plan, goshawk guideline (a) provides for the protection of 100 nest stands. The DFG recommends that this number be increased to at least 120 to account for the uncertainty in estimating minimum viable population. Guideline (b) should provide for the establishment of 120 acres per 10 square miles rather than 50 acres per 18 square miles of protected nesting territories. Regarding guidelines for T & E fish, a separate guideline should be established for the Modoc sucker. (This species, in that proposed for the Lost River sucker, should be listed under the heading of "Threatened and Endangered Species" because listing is expected prior to publication of the final Plan.) Finally, specific guidelines should be established for management of greater sandhill crane territories and the additional Management Indicator Species (MIS) which the DFG recommends below.

**Management Areas.** On pages 4-161 through 4-268, the Plan provides directions for 22 "Management Areas," in which 1 or more of 17 management prescriptions will apply. The DFG recommends that in addition to the prescription for raptor management, other species-specific management prescriptions should be devised to treat management areas when an area dedication is inappropriate (i.e., a habitat patch is too small, etc.) but rare or sensitive species are known or believed to exist. These species should include the greater sandhill crane, willow flycatcher, Lost River and shortnosed sucker, and redband trout.

On page 4-168 of the Plan, Management Area 32 - Pandango - is discussed. The DFG recommends adding the following: Goose Lake redband trout also spawn in Willow Creek and most importantly in Buck Creek, where the best spawning habitat exists. Goose Lake spawners which were prevented by a series of concrete structures from ascending Willow Creek for many years, are currently able to use this system again now that a fish ladder has been completed.

In addition, the DFG recommends that livestock should be excluded from the riparian corridor along Lassen and Cold creeks particularly where structures occur. The DEIS (page 3-191) states that fall grazing is "preventing both streambank recovery and establishment of willows." Of equal



significance, studies by the Intermountain Region Forest and Range Experiment Station have shown that livestock grazing along streams frequently negates any benefits accruing from habitat structures and that fencing should occur concurrently with structure development.

On page 4-208 of the Plan, Management Area 44 - North Adin - is discussed. The DFG recommends that this section note that the area contains Dutch Flat, Rush, and Johnson creeks, all critical streams for the Modoc sucker. Dutch Flat Creek has been identified by the Interagency Modoc Sucker Working Group as the highest-priority stream for restoration.

On page 4-232 of the Plan, Management Area 59 - Happy Camp - is discussed. As noted in the Plan, Hulbert, Washington, and Turner creeks are important habitat for the Modoc sucker, and should be enhanced. The Plan should also specifically provide for enhancement of two important Modoc sucker spawning areas - Cottonwood Flat (tributary to Hulbert Creek) and Coffee Mill Gulch (tributary to Washington Creek.)

On page 4-256 of the Plan, Management Area 65 - Steele Swamp - is discussed. The Plan fails to note that Willow and Boles creeks are important spawning streams for the Lost River and shortnose suckers.

**Indicator Species.** On pages 3-155 through 3-156, the DEIS discusses "management indicator species" and thus identifies the species chosen for management emphasis. Three comments are in order. First, the list of species chosen as MIS should include all rare plants and animals in addition to those listed. The DFG believes that there are additional species needing special management to prevent Federal listing as T & E. Such species include the greater sandhill crane, great gray owl, and Swainson's hawk. (Also, see below Section 3 of these comments pertaining to plants.) Second, on page 4-121, the DEIS indicates that if the Preferred Alternative is chosen, there will be a decrease in habitat for pileated woodpecker and pine martin and presumably for other old growth conifer-related species. This is not only undesirable from a wildlife standpoint by itself, but it violates CFR 219.19, which in part requires the maintenance and improvement of habitat of all MIS. The DFG recommends that timber, grazing, and recreation management and practices be adjusted to permit the plan to comply with CFR 219.19. Third, because the Plan appears not to address the issue of other potentially declining species or their status on the Modoc NF, the DFG recommends that the Modoc NF be surveyed to detect the presence of certain "species of special concern", and be monitored if populations occur and are potentially affected by management. Among these are Townsend's big-eared bat, snowshoe hare, white-tailed jack rabbit, badger, fisher, pygmy rabbit, sharp-shinned hawk, Cooper's hawk, white pelican, double-crested cormorant, white-faced ibis, snowy plover,

California gull, northern harrier, short-eared owl, long-eared owl, burrowing owl, black swift, purple martin, yellow-breasted chat, and bank swallow. Many of these species have completely different habitat requirements than those listed as MIS, and thus may not benefit from management plans formulated for MIS alone.

#### Viability. CFR Section 219.19 states:

Fish and wildlife habitat shall be managed to maintain viable populations of existing native and desired non-native vertebrate species in the planning area. For planning purposes, a viable population shall be regarded as one which has the estimated numbers and distribution of reproductive individuals to ensure its continued existence is well distributed in the planning area . . . .  
(emphasis added)

In order to manage habitat to maintain viable populations, the above-quoted regulation very clearly indicates that specific quantities of reproductive individuals must be distributed in a manner appropriate to ensure the continued existence of each taxon. For most species in which viability is a concern (i.e., all T & E, candidate, sensitive, and de facto rare species), neither the Plan nor the DEIS describe exactly what a viable population is considered to be in terms of estimated numbers and distribution of reproductive individuals. In no case is there a description provided of how viable population levels are actually calculated or the assumptions, probabilities, and risks associated with that level. For example, on page 3-160 the DEIS unequivocally states that "73 pairs (of goshawks) would ensure population viability with each district supporting enough birds for adequate distribution." There is no documentation of that figure's origin nor any analysis of territory distribution sufficient to believe that 73 pairs would be adequate. The Plan should contain such information.

**Monitoring.** On page 5-19, the Plan indicates that Lost River and shortnose suckers will be monitored every five years. The DFG recommends that the frequency be increased to annual. On page 5-20, the Plan provides for monitoring of "fisheries". Goose Lake redband should be listed separately instead of being combined with trout and largemouth bass. Because only 20% of the habitats are monitored annually, it would appear that, on average, habitats will be monitored every five years. This is not sufficient for a subspecies teetering on the brink of extinction. The DFG suggests that, at a minimum, the spawning runs in Lassen and Willow creeks and subsequent fry production as well as riparian habitat be monitored annually.

**Individual Species Comments.** With respect to bald eagles, on page 2-69 of the DEIS (Table 2-5) "annual outputs" are

expressed in terms of number of "active nests" or "potential nests". These are inadequate for monitoring population trends, because one breeding pair may have one or many alternate nests within their territory. The management unit should be the "active territory" or "potential territory." (The same is true regarding peregrine falcons.) In addition, for Base Year 1987, DFG files indicate that Modoc NF supported one possible and five known active territories. In 1986 and 1987, this had increased to seven active territories. On page 3-157, the DEIS states that the number of pairs of bald eagles in Northern California is 51 pairs; rather, in 1987, it was 66 occupied breeding territories.

With respect to peregrine falcons, on page 3-158, the DEIS discusses recent breeding success. To supplement that discussion, it might be added that the number of known breeding pairs of peregrine falcons in California in 1987 was 80, with 146 fledged young from natural production and managed sites (Jurek, per. com.)

With respect to ospreys, page 3-170 of the DEIS should indicate that this species is on the DFG's list of Bird Species of Special Concern.

With respect to greater sandhill cranes, on page 3-156 the DEIS lists six MIS-sensitive species. The greater sandhill crane is an important declining species that the DFG is trying to recover through greater management effort on public lands including national forest lands. Cooperation is needed to reach that goal and a start would include designation of greater sandhill crane as a USFS sensitive species. Livestock grazing has a negative impact on this species and should be controlled where it is causing severe habitat degradation and interruption of reproductive activities.

With respect to willow flycatchers, page 3-163 of the DEIS should indicate that this species is on the DFG's list of Bird Species of Special Concern.

With respect to redband trout, page 3-190 of the DEIS states that redband trout are a distinctive group of fish that inhabit isolated headwaters of the McCloud, Pit, Klamath, and Columbia rivers and that experts disagree with respect to the genetic purity of the remaining population. The DEIS cites Moyle (1976) as the source of the above information. 1987, a great deal more information has been obtained regarding the so-called "redband" trout. The DFG has contracted with Dr. Graham Galt at the University of California at Davis (UCD) to conduct a genetic study of the endemic rainbow-redband trout complex including populations inhabiting Goose Lake and tributaries. Electrophoretic analysis of these populations indicates that the rainbow-like trout in the upper Pit River and Goose Lake drainages are very different from those occurring in the McCloud, Klamath, or

Columbia river systems, in fact, different enough to warrant sub-specific status. Although these fish remain to be formally described, the name "Goose Lake redband trout" has been informally accepted. The DFG also recommends that they be accorded sensitive status because of their uniqueness and relative scarcity. The UCD genetic studies also show that the Goose Lake trout does not possess the genetic characteristics diagnostic for rainbow trout of hatchery ancestry, thus indicating that little or no hybridization has occurred with planted rainbow trout.

The UCD genetic studies also confirmed the existence of resident or non-migratory populations of Goose Lake redband trout in a number of tributaries to Goose Lake, the upper Pit River, and Alkalai Lake. These include Davis Creek, Johnson Creek, Parker Creek, East Creek, Turner Creek, Rush Creek, Hall's Canyon Creek, Ash Creek, Eight-Mile Creek, and Twelve-Mile Creek. Presumably, the rainbow-like trout in the unsampled adjacent streams are also Goose Lake redbands.

The UCD genetic study findings are detailed in a 1987 doctoral dissertation entitled "Evolutionary Genetics of Rainbow Trout, *Parasalmo gairdnerii* (Richardson)" and authored by Dr. William J. Berg. For your information, a copy of the dissertation has been sent to the Warner Mountain Ranger District.

Since only two Goose Lake tributaries on the Modoc NF are available to spawning Goose Lake trout (Lassen Creek and tributary Cold Creek, and Willow Creek and tributary Buck Creek) greater efforts should be made to maintain and improve this limited stream habitat if extirpation is to be averted. Extirpation nearly occurred when several years of low water followed by obstruction of spawning runs in Lassen and Willow creeks reduced the adult population in Goose Lake to a few fish. Removal of obstructions to migrating spawners several years ago has improved conditions for natural reproduction to the extent that the population of adults now number in the hundreds.

With respect to Lost River and shortnosed suckers, on page 3-167 of the DEIS Table 3-22 lists streams inhabited by these species. Novitz Creek should be added.

### 3. PLANTS

In Chapter 3 of the DEIS, nine plant taxa are listed as forest sensitive species. The following taxa should be added to the Table on 3-98 and 3-99 as potential sensitive species pending further evaluation. Recent field surveys have strongly indicated that these taxa should be considered sensitive.

Astragalus inversus  
Carex halliana  
Cryptantha subretusa

Cupressus bakeri ssp. bakeri  
Dimeris howellii  
Erigeron acris var. debilis  
Iliamna bakeri  
Penstemon cinnereus  
Phacelia inundata  
Pogogyne sp. nov. (Jokerst in prep.)  
Polygonum polygaloides ssp. esotericum  
Rorippa columbiae

In addition, the following lists plants that should be on the Modoc NF watch-list of potential sensitive plant taxa that may occur on the Modoc NF:

Camissonia minor  
Carex sheldonii  
Chenopodium gigantospermum  
Corydalis caseana var. caseana  
Epilobium organum  
Gratiola heterosepala  
Hackelia cusickii  
Navarretia subuligera  
Orcuttia tenulis  
Penstemon shastensis  
Poa rhizomata  
Polygonum bidwelliae  
Polystichum kruckbergii  
Spartina gracilis  
Thelypodium brachycarpum  
Thermopsis macrophylla var. argentina

Despite the repeated assertions throughout the planning documents that the Modoc NF will manage their sensitive plants to ensure that they do not become threatened or endangered (DEIS, page 2-37, 2-44, etc.) there are no specific indications of the intent to complete the Modoc NF inventory and survey such species to determine their locations, status, trend and management sensitivity to various USFS projects. The DEIS and Plan need to provide for the completion of such inventories and surveys. We strongly agree with Modoc NF's emphasis on project-related surveys to determine the possible impacts on sensitive species by various Modoc NF activities, but feel that this case-by-case approach should be supplemented by a forest inventory effort.

The Minimum Management Requirements should address the need to ensure that viable populations of plant species are maintained so as not to lose plant species diversity. The DEIS (page 2-34) only addresses the need to protect habitat for the listed species. There are no listed plant species on the Modoc NF. Sensitive species' habitat should also receive protection from destruction or adverse modification. Also, in order to maintain plant diversity at levels currently found on the Modoc NF, it will be necessary to ensure that viable

populations of all species are maintained. Maintaining 5% of each timber type/seral stage combination (DEIS, page 2-35) will not be adequate to guarantee the continued existence for current species diversity.

The Minimum Implementation Requirements (MIRs) described in the DEIS, page 2-37, state that sensitive plants are managed to ensure that they are not threatened or endangered by Modoc NF activities. The DEIS should be more specific regarding what actions will be taken to make this management policy become reality. The following statements should be added to the MIRs in the DEIS:

1. Sensitive plant species, although not subject to the provisions of the Endangered Species Act, will receive special management to prevent their placement on federal lists as discussed in FSM 2670.3.
2. The Modoc NF will develop species management guides for all of their sensitive plants. These guides will function as "recovery plans", defining activity constraints in essential habitat, and the need for monitoring land allocation and habitat manipulation.
3. The Modoc NF inventory of sensitive plants will be completed before the next round of forest planning.
4. Monitoring programs for all sensitive, State-listed rare, threatened and endangered, and Federally-listed threatened and endangered species shall be implemented to determine baseline population sizes, population trends and habitat requirements before the next round of forest planning. Without such specific and clear direction regarding this rare and important resource applied to all alternatives, it is not possible to visualize how the Modoc NF will "manage sensitive plants to ensure that they do not become threatened and endangered by Modoc NF activities."

On page 3-156, the DEIS lists MIS for the Modoc NF. No sensitive plant species are so identified. This is a major omission. All rare plants, including sensitive, threatened, endangered, etc., should be designated MIS to help avoid conflicts with management activities.

On page 3-30 to 3-35, the DEIS discusses diversity, but includes no discussion of rare plant species. This should have been included as part of the discussion on richness, one component of diversity. The number of plant taxa and the numbers of rare plant taxa contribute to the diversity on the Modoc NF just as do the number of vegetation types present.

On page 4-34 of the Plan, the Standards and Guidelines for Sensitive Plants indicates that the Modoc NF will "protect and conserve (sensitive plants) through direct and cooperative

programs." This is insufficient as a description of what the Modoc NF intends to do regarding the task of keeping the sensitive plant species off the official Federal lists. The Plan should include specific guidelines (see suggested MIRS) regarding Modoc NF inventory efforts for sensitive plants, monitoring plans and a schedule for completing the species management guides on all sensitive plants on the Modoc NF. Further, botanical surveys in proposed project areas should be specified to occur at the appropriate season when the plants in question can be identified.

Under Management Area Direction (Plan, pages 4-158 to 4-268) there should be a discussion about the sensitive plant populations of each area. Details about each population may not be known, but these gaps in knowledge should be acknowledged and used as references for future surveys.

#### 4. COMMUNITIES

The DFG is concerned that the plan dedicates the vast majority of acreage of grassland and shrubland communities to cattle and sheep grazing while the condition of 87% of these rangelands are listed by the Modoc NF as fair or poor. According to the DEIS (page 3-96, Figure 3-22), nearly half the acreage of riparian habitat currently is managed by "continuous, season-long" grazing. Although it will remain necessary to provide rangeland to cattle and sheep ranchers, a more balanced use of native grassland, shrubland and woodland habitats would result from an aggressive restoration and protection program set forth in the plan. This would also increase the viability of any rare plant population growing in these habitats. Some rangeland should be taken out of production and allowed or helped to recover to a less disturbed state. The DFG recommends that such a program, including a timetable, be included in the final plan.

Riparian and Meadow Communities. On page 4-29 of the Plan range guideline a(2) requires that satisfactory ecological condition be maintained or enhanced on suitable rangeland. Ecological condition is based on degree of displacement from climax - climax stands are in good condition; very early seral stands are in poor condition. This is standard SCS method, and it generally works well for upland sites. A problem arises in riparian settings. Because streamside zones are physically disturbed by flooding, mature soils cannot develop nor can a "climax" condition be attained. The problem is virtually intractable. There is no agreement on what the potential vegetation should be; therefore, no one can assess how far a site is from its potential and thus, its condition. Therefore, this guideline is meaningless in riparian settings.

On page 3-80, the DEIS discusses the opportunities of using fire for range improvement. Use of fires in management of meadows on the Modoc NF will be detrimental to species that

depend on willow clumps for nest sites. Removal of shrubby vegetation has been especially detrimental to willow flycatchers elsewhere in its range. The DFG recommends that meadows be surveyed for existing and potential willow flycatcher populations and that shrub growth be protected and enhanced in areas where the vegetation support species that are dependent on this habitat.

Old Growth Forests. On page 2-65, the DEIS indicates that implementation of the plan will result in the retention of 30,800 acres of old growth out of the total of 640,000 forested acres on the Modoc NF. This is close to, but below, the MHR of 5% for each seral stage (30800/64000 = 4.8%). Twelve hundred more acres of old growth must be retained to meet the minimum level required by the MHR.

In another portion of the DEIS (Summary -26), it states, "Under all alternatives except Reduced Budget (RBU), old-growth stands in eastside pine are reduced below the minimum 5% in the second decade, and remain so until the seventh decade . . . ." On page 3-31 the graph shows that eastside pine comprises over 24% of the forest vegetation, almost 40% of the forest trees and over 2/3 of the conifers. No alternative should permit old growth eastside pine to fall below the minimum 5% during any period.

#### 5. SPECIAL INTEREST AREAS AND RESEARCH NATURAL AREAS

The DFG supports protection of sensitive plants and animals through the use of special designated areas whenever practical. The DFG encourages designation of these sensitive sites as protected areas to help avoid conflict with development and to prevent the eventual listing of many of the sensitive species. The establishment of key areas on the Modoc NF provides the best long-range conservation and management of these sensitive species and their habitats. Without such direction, sensitive habitats could be further impacted to the point that both State and Federal listing become necessary. We, therefore, stress the need for identification and establishment of areas for sensitive or species-rich areas. The final plan should contain documentation of the analysis procedures and criteria used to select SIAs.

There are no indications in the Plan (pages 4-33 and 4-36) to establish any SIAs or RNAs for sensitive plants. Areas in the Devil's Garden region with high concentrations of vernal pools and seasonal lakes and meadows should be reviewed for SIA/RNA status. These habitats contain many rare endemic plants. The Rimrock Valley region also probably qualifies for SIA or RNA status because it contains rare plant populations, vernal pools and seasonal lakes. The DFG supports the recommendation of Raider Basin as a candidate RNA.

The DEIS (3-90) states that the existing Devil's Garden RNA does not exclude cattle and horses. The DFG recommends that there be a schedule in the final Plan outlining plans to fence and sign this RNA on the Modoc NF.

In conclusion, the DFG recognizes that the Modoc NF has expended a great deal of effort in the preparation of these draft planning documents. While this is laudable, we feel the natural diversity issue, especially the treatment of rare plants, animals, and natural communities, requires considerably more attention than it has received to ensure that the minimum legal requirements will be satisfied. The DFG stands ready to assist the Modoc NF in reviewing our concerns and responding to the comments provided above.

## Memorandum

To : Honorable Gordon K. Van Vleck  
Secretary for Resources  
The Resources Agency  
1416 Ninth Street, Room 1311  
Sacramento, CA 95814

Date : February 11, 1988  
R8

Telephone: ATSS ( 8 ) 492-0163  
(916) 322-0163

Attention: Mr. Gordon Snow  
Assistant Secretary  
From : Department of Forestry and Fire Protection

Subject: 0600 EXTERNAL RELATIONS  
0660 Federal Agencies

U.S. Forest Service -  
Modoc National Forest Draft Management Plan

Enclosed are the Department of Forestry and Fire Protection's recommendations on the Modoc National Forest Draft Management Plan.

st

Enclosure

*Jerry Partain*  
JERRY PARTAIN  
Director

REVIEW OF THE MODOC NATIONAL FOREST DRAFT  
ENVIRONMENTAL IMPACT STATEMENT AND PROPOSED MANAGEMENT PLAN

The California Department of Forestry and Fire Protection (Department) has completed the review of the Modoc National Forest Draft Management Plan. Several areas of concern were identified during this review process. Based on these concerns, the Department has several recommendations which we believe need to be addressed in the final management plan.

The Draft Plan and Draft Environmental Statement (DEIS) were compared with the five issue areas developed at the Board of Forestry's Centennial Conferences of March and December of 1985. The issues identified are: 1) rural economic stability and development; 2) protection and maintenance of the biological base; 3) social pressures in the rural land base; 4) rights and responsibilities of public and private ownership; and 5) coordination and planning.

As a result, areas of concern were identified for this region of the state. These areas are: 1) fire protection; 2) herbicides; 3) budget restrictions, 4) even-aged vs. uneven-aged silviculture; and 5) aggregate review.

Recommendations

1. The Alternative

The Preferred Alternative (PRF) was developed to provide the best balance between commodity outputs, resource protection, recreational opportunities, protection of Native American and amenity values, and response to public issues and management concerns. The Department is interested in an alternative that maintains a dependable and steady flow of outputs and services to benefit the dependent counties and local economies. The Department has a corresponding interest that the chosen alternative protects the biological base of the forest. The alternative must reflect budget reality. For these reasons we can reasonably support the Preferred Alternative (PRF). Several concerns have been identified and, as a result, we have proposed recommendations which should be incorporated into the final selected alternative. The result of incorporation of these recommendations into the final alternative would be to stabilize the rural economy dependent on the forest.

Recommendation: It is recommended that the Preferred Alternative be amended by incorporating the following recommendations into the final management plan for the Modoc National Forest.

2. Fire Protection

The Modoc National Forest (MNF) provides fire protection on 237,000 acres of State Responsibility Area (SRA) lands through contract (coop-agreement) with the California Department of Forestry and Fire Protection (CDF). Under this agreement, the Forest Service agrees to protect SRA lands at a level equal to that which CDF would provide if they were protecting them directly. The suppression strategies presented in the MNF plan do not address the protection of SRA lands as agreed to in the coop-agreement.

Recommendation: The final MNF plan should make it clear that a strong initial attack, with control as the objective, will be the suppression strategy for all fires on or near SRA lands.

3. Herbicides

The MNF analysis of the outputs for the various alternatives assumes full use of herbicides for vegetation control. We could not find a discussion of the forest's no herbicide alternative. Prohibition or restriction of herbicide use could result in loss in timber yield and increased cost in vegetation management.

Recommendation: The Forest Service should develop a no herbicide strategy which specifically addresses the maintenance of the allowable sale quantity (ASQ).

4. Budget Restrictions

Funding is probably the most critical issue in the national forest planning process. Each forest has indicated that the proposed plans present only targets that the forest believes could be attained if funding were available.

Further, most planners appear to be in agreement that forests do not have any obligation to maintain production at the proposed levels if there is insufficient funding. We compliment Modoc NF planners for recognizing this possibility in their reduced budget alternative.

Even-Aged vs. Uneven-Aged Silviculture

The DEIS and Draft Management Plan make it clear that even-aged silviculture will be dominant in management of the MNF suitable timberlands. Even-aged management may suit the eastside pine and understocked mixed conifer stands very well, but there is a large acreage of well-stocked, mixed conifer which should respond favorably to uneven-aged management. We believe the well-stocked, mixed conifer stands managed under an uneven-aged regime would help in maintaining diversity, provide good growth and yield, and avoid the stark visual contrasts that disrupt the visual quality.

Recommendation: We recommend the Forest Service reevaluate its position on uneven-aged timber management on the MNF. Timber stands that exhibit characteristics conducive to uneven-aged management should be considered for inclusion in this type of management regime.

Aggregate Review

The forest must satisfy the interests of the impact counties and their publics. Nevertheless, the impact of the forest has a much larger horizon. Its commodity outputs, when added to the other national forests in California, are in demand and used throughout the state and beyond. Demand for forest products alone will continue to increase to the planning horizon. The impact counties contain other national forests. The inability to review these plans simultaneously is a significant limitation because aggregate effects of the final plans could be significant. This is a major shortcoming of the present forest-by-forest planning process.

Recommendation: We suggest that in order to resolve this concern, aggregates of plans by economic region be reviewed publicly before final decisions on preferred alternatives are made for individual national forests.

**CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—  
NORTH COAST REGION**

1440 GUERNEVILLE ROAD  
SANTA ROSA, CA 95403  
Phone (707) 576-2220

February 18, 1968

Nadell Gayou  
Resources Agency  
1416 Ninth Street  
Sacramento, CA 95814

Dear Ms. Gayou:

Subject: SCH No. 87110602 - Draft Environmental Impact Statement/Land and Resource Management Plan for Modoc National Forest.

The North Coast Regional Board staff has reviewed the above-referenced documents and submits the following comments for your consideration:

- 1) These documents both recognize and support the requirement to meet Basin Plan water quality objectives, and that this is best accomplished using Section 208 approved Best Management Practices (BMPs). This is as specified in the 1981 Management Agency Agreement between the State Water Resources Control Board and the U.S. Forest Service.
- 2) We view with concern the Plan's statement (Page 3-37) that "approximately 37 percent (208,700 acre-feet) of the water produced on the Forest does not meet established water quality standards, and may be adversely affecting beneficial uses". We realize however that one of the goals of this planning process and Forest Plan is to apply future management practices that will result in attainment of water quality objectives.
- 3) The plan's recommended 40 year time period (Page 2-6) to achieve 100 percent compliance with water quality objectives is arguably a very long time frame. We understand funding constraints and the sensitivities of dealing with certain management practices, but it would appear to us that a more realistic time frame should be established. A long time frame could conceivably result in avenues for inaction during the 10 to 15 year life of this plan. If the Forest ultimately decides that the 40 year time frame is most appropriate, the plan and draft EIS should better develop both the rationale for the time period, and the actual commitments to be met during the life of this Plan.
- 4) The projected watershed and fisheries habitat improvement projects are "based on priority needs and cost effectiveness" (Page 2-7). We know that watershed improvement funds on other Forests have in the past been restricted for a variety of reasons.

Nadell Gayou  
February 18, 1988  
Page 2

To what degree will the Forest be able to realistically meet watershed rehabilitation objectives given any foreseeable budget constraints? What emphasis or priority will be placed on using these funds under the Forest Plan? If funds do not come available to meet final Forest Plan goals for watershed improvement, will the plan and EIS need to be amended? How would this affect other management programs on the Forest?

- 5) We support the recommended water quality monitoring program (Page 5-16) as the basis for a sound self-monitoring and compliance evaluation. We have one question regarding the column labeled "variation from standard requiring further action". The part of the plan, under the headings "Water" and "Riparian Areas", refer to 10 percent reductions in short-term water quality and stream channel conditions. It should be made clear that such variations must still result in compliance with water quality objectives. The Forest Plan recommendation of a 10 percent variation does however provide reasonable general guidelines for BWP application during specific project level reviews.
- 6) We find that Modoc National Forest has done a good job in addressing water quality issues in this draft Plan and EIS. The recommended Plan provides the appropriate framework for a good water quality management program on the Forest.

Sincerely,



William D. Winchester  
Environmental Specialist

cc: Gordon Snow, Resources Agency  
Douglas Smith, Modoc National Forest  
Debra Caidon, EPA  
USFS, San Francisco, Attn: Andy Levin



CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD—  
CENTRAL VALLEY REGION

SHASTA CASCADE WATER RESOURCES BRANCH OFFICE:  
100 E. CYPRESS AVENUE  
REDDING, CALIFORNIA 96002  
PHONE: (916) 225-2046

GEORGE DEUKOMEJIAN, Governor

CALIFORNIA NATIONAL FOREST



JAN 25 1988

21 January 1988

Mr. Douglas G. Smith, Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

## COMMENTS ON DRAFT MODOC FOREST PLAN

Our staff appreciated the opportunity to review the draft Modoc Forest Plan/EIS and to discuss those documents with your staff representatives.

The Plan is well written, concise, and understandable. Our concerns or suggestions relative to water quality are as follows:

1. Although all alternatives are structured to ultimately meet water quality objectives, all alternatives fail to meet objectives until thirty to forty years in the future. We believe the importance of renovating riparian areas and improving water quality justifies a much shorter time frame, e.g., within the first ten-year implementation period. To be equitable for tax payers, these improvements should be funded not only through the normal Forest budgeting process, but augmented as necessary by the industry that primarily caused riparian and water quality degradation. With such an augmentation, the improvements could be made in the first decade of the Plan. We find considerable inconsistency in the fact that livestock permit fees have remained constant for many years while riparian areas have been allowed to degrade. It appears in all other cases of resource utilization on National Forests (i.e., timber harvest, mining, recreation, etc.) the user pays for the required environmental protection and restoration.
2. Maintenance of the approximate present number of wild horses appears inconsistent with the goals and objectives of the Plan. As stated at p. 3-20 of the Plan, "allotments within horse territories are in the worst ecological condition of any on the Forest". How can ecological conditions be improved in those allotments if horse numbers are not reduced? With such a

Mr. Douglas G. Smith

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22 January 1988

limited number of affected users when compared with the number of other Forest users, this Plan should revise the 1985 Wild Horse Management Plan to reverse the trend of environmental degradation from wild horses. For example, the Plan would allow wild horses to use 9 percent of the total wildlife/wild horse animal unit months annually. We believe the allocated wild horse use is indefensible considering the minor benefits and the extensive damage associated with these animals.

3. Under water monitoring (p. 4-39 of the Plan), benthic invertebrate diversity and stream channel substrate condition should be included parameters at least on Class I streams that have been degraded.
  4. Appendix I-2, Special Stipulation #5, p. I-2 should be expanded to note that geothermal, oil, and gas operations may require a waste discharge permit from the appropriate Regional Water Quality Control Board.
  5. The riparian discussion on pp. 3-95 through 3-97 of the draft EIS leaves confusion on why fencing is not the best and most preferred management tactic for protecting riparian areas. Contradictions appear between exclusion or grazing strategy as the preferred tactic.
  6. On p. 3-146 and elsewhere the draft EIS refers to "cumulative impacts not being realized". To avoid a false interpretation by readers, we suggest a different word such as "addressed" replace the word "realized".
  7. We firmly support Standard and Guideline 15.a. stated on p. 4-33 of the Plan, i.e., "Where (riparian area) uses conflict, favor protection of riparian-dependent resources...over other resources".
  8. We firmly support the continued use of best management practices as the primary approach for protecting riparian values from timber and grazing activities.
- In conclusion, we wish to commend you and your staff for the efforts being made to identify and correct problems of stream quality degradation from unrestricted livestock grazing. We feel that this problem is not

Mr. Douglas G. Smith

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22 January 1988

being fully addressed on other National Forest and BLM lands. It would be helpful if your staff could develop a report on the information collected to date and make this available to the appropriate agencies and user groups.



JAMES C. PEDRI  
Supervising Engineer

RIL:jdg

cc: U.S. Environmental Protection Agency, Region 9, San Francisco  
Mr. Andrew Levin, U.S. Forest Service, San Francisco  
Mr. Gary Stacey, Department of Fish and Game, Region 1, Redding  
California Regional Water Quality Control Board, Lahontan Region,  
South Lake Tahoe  
California Regional Water Quality Control Board, North Coast  
Region, Santa Rosa

## MODOC COUNTY PLANNING DEPARTMENT

302 WEST 4th STREET  
PHOENIX (916) 233-3839 ext. 423 or 404  
ALTURA, CALIFORNIA 95101

February 6, 1966

### COMMENTS ON DRAFT FOREST LAND AND RESOURCE MANAGEMENT PLAN MODOC NATIONAL FOREST: SEPTEMBER 1967

In response to the request for comments on the Draft Forest Land and Management Plan for the Modoc National Forest, September 1967, the Planning Department forwards the following. The preparation of the forest plan, at the time the County is nearing the completion of a new General Plan to guide development in the County, provides an opportunity to coordinate activities on private and public lands. These comments are directed to the potential to achieve mutual goals and consistency between the two plans, and thus private and public resource use.

Through other avenues the County is voicing its opinion on the treatment of various economic sectors in the plan. I would simply underscore those opinions by stating that the new Economic Development Element of the draft General Plan and the tone of the plan promotes a variety of recreational resources and our rural attributes, and the strengthening of the agricultural and forest economies.

In reviewing the draft Forest plan emphasis was on the Forest Standards and Guidelines section. The County Planning Department hopes to work with the Forest Service in developing more detailed standards to implement the provisions proposed below.

#### FACILITIES

Page 4-22: Address under (d) guidelines and standards pertaining to roads: Consult with local agencies including the County Planning and Road Departments in the identification of roads which are projected to be closed or downgraded, in order to determine the effect on existing development and projected development under the County General Plan and Transportation Plan. Special attention should be given to emergency access such

as fire access, and the effect on the existing integration of the USFS roads in the overall circulation patterns under use by the public, or in areas which are projected for development in the County General Plan. (NOTE: This may be duplicated in the Section on Special Use Permits.)

Add section: Develop definitive policies and practices for the upgrading, maintenance and revenue programs for roads which are transferred to another agency or jointly maintained for the benefit of private development, when required for the safe and efficient circulation patterns of existing or proposed subdivisions.

#### FIRE AND FUELS

Page 4-24: Add to section a(6): Identify existing subdivisions and projected subdivision areas for integration in the fire protection plan. The USFS should continue to comment on development projects, including general and specific plans, and subdivision projects, in terms of fire safety plans.

#### LANDS

Page 4-26: Modify section b: Special-Use and Rights of Way Permits, subsection (4), part (3): Under the evaluation of interior subdivisions, review the need for alternate access routes for proposed subdivisions and the cumulative total number of parcels resulting from existing and new land divisions based on the area-wide circulation patterns. For existing and proposed subdivisions which presently use, or will increasingly depend on, USFS roads as part of the overall circulation patterns, allow more than one access routes as needed to provide a circulation system to meet the needs of efficient traffic patterns and fire and emergency access.

#### RECREATION

Page 4-33: Add under section h: ... including dissemination of information to public and private organizations to encourage tourism.

#### VISUAL RESOURCES

Page 4-39: Add section e: Coordinate with the County General Plan scenic highways goals and actions in support of (d) above and other routes which may be designated.

#### WATERS

Page 4-40: Add section j: Provide review of and comment on development proposals which have the potential to impact watersheds through the County review process.

#### WILDLIFE AND FISH

Page 4-51: Add under section e, subsection (3): Coordinate with the County to protect wildlife and fish resources identified in the County General Plan which jointly depend on private and public land habitats and resources for their preservation.

**GENERAL**

Page 4-51: Add section c: Work with the County towards developing an environmental review team with expertise on a variety of technical issues.

Add section d: Work with the County and other agencies toward regular work sessions to identify mutual problems and solutions, and generally foster understanding and cooperation.

Thank-you for the opportunity to comment on the draft Forest Plan. I hope you will call on me to discuss these issues further.

Sincerely,

A handwritten signature in cursive script, appearing to read 'Pamela Townsend'.

Pamela Townsend, Director

# Siskiyou County

## OFFICE of EDUCATION

609 South Gold Street • Yreka, California 96097 • 916-842-5751



Frank Tallierico  
Superintendent

February 25, 1988

Douglas Smith, Forest Supervisor  
Modoc National Forest  
Alturas, CA. 96101

Dear Mr. Smith:

Enclosed is a summary of the importance of timber to Siskiyou County and its schools as well as some effects any National Forest and Resource Management Plan could have.

Your consideration of our concerns will be appreciated.

Sincerely,

*Frank Tallierico*

Frank Tallierico  
County Superintendent

*Vernon Smith*

Vernon Smith, President  
Siskiyou County Board of Education

Roger Ellis  
Siskiyou County Board of Education

*Roger Ellis*

Max Layton  
Siskiyou County Board of Education

*Max Layton*

Madge Robbins  
Siskiyou County Board of Education

*Madge Robbins*

cc: Siskiyou County Board of Supervisors  
Siskiyou County Grand Jury

Sherry Crawford  
Siskiyou County Board of Education

Joe Allen  
Siskiyou County Board of Education

*Sherry Crawford*

*Phil Gutzler*

Phil Gutzler  
Siskiyou County Board of Education

### COMMENTS ON MODOC LAND MANAGEMENT PLAN

A goodly percentage of the families in our Northern California region is represented in one way or another by someone involved with public schools and timber or the manufacturing of lumber and lumber products or in agriculture.

Any factor, such as a National Forest and Resources Management Plan, which touches the lives of such a large percentage of a region's population must not be taken lightly. In our Northern California region the forests play an important role in the economic and recreational life of its citizens. The forest is the most common denominator in our region and its effect on its people.

The most immediate and direct effect of a National Forest and Resources Management Plan on this Northern California region is economic. The timber industry provides a sizable number of jobs in the woods, transporting logs, in the mills and manufacturing processes. Wages received from timber harvesting and processing go toward the purchase of food, clothing, household items, automobiles, etc. These demands for goods in turn create jobs for others which in turn keeps the economy afloat and stable. Without timber the region's economic base shrinks in all areas, thus affecting all.

The impact of the timber industry in our region is great. While roads and schools receive a portion of their income from Forest Reserve funds, the impact of the overall timber harvest has a number of direct and indirect impacts on schools and roads.

When the timber harvest is low a variety of economic and social costs impact the community. Generally this means an increase in social welfare costs and the need for resources from governmental and private charitable sources to help the unemployed. Schools have a variety of costs under these circumstances: the number of free and reduced cost meals which must be provided by law increases; some people move from the community leaving schools which must be staffed on the assumption of a fairly stable population at least for that particular year; because of unsettled family conditions a variety of special services in counseling, health and related areas are in heavy demand. These are but some of the effects of a plan that calls for a decline in the timber harvest.

Schools in our region receive a significant amount of income from Forest Reserve Funds. These funds are generated by the sale of timber on National Forest Lands. These funds traditionally have made a significant variety of resources available to students and those who teach them. The loss or reduction of Forest Reserve Receipts for a single year could result in a dramatic reduction in services, materials and equipment.

A comparison between public and private lands in our region shows us that a little over 50% of the lands are public lands. More importantly, a considerable number of school districts have more than one third of their area in public lands. This ownership restricts income from other sources, therefore, placing additional burdens on the taxpayers of these areas. Not only do the school districts have to reduce staff because of reduced Forest Reserve Receipts, but they do not have any means to raise additional revenue. Ultimately, the children suffer and so does society as a whole.

Forest Reserve Receipts go into school districts' general fund and local decisions control and determine how these funds should be spent. In most situations, the funds go for a variety of services to children. In a typical county in our region you will find that approximately one-half of the school nursing services provided to schools are paid for by Forest Reserve Funds. In this day and age of the AIDS virus, our nurses are the best qualified and most logical professionals to provide the instructional services to our children on the dreadful affects of this feared virus. The Forest Reserve Fund provides about one-half of the operation, including materials acquisitions of any county-wide instructional media and library services.

In some counties, if there is a reduction of these funds, you will see a 50%-75% reduction of the general curriculum support services provided to all schools in these counties. If the Forest Reserve Funds are lost in one county in our region, the class sizes in this county would go from an average of 22 to 35 pupils per teacher. This is truly unacceptable when S.B. 813 has aimed at excellence and class size reductions! At many school sites the impacts are even greater because it requires layoffs, increased class sizes, fewer services to children with special needs, the elimination of music and art programs, and classes for gifted and talented youngsters. If this happens, all of us are losers.

The schools of our region have developed curriculum that recognizes the importance of conservation and at various grade levels offer activities that instill in the children an appreciation for conservation.

It is this educator's opinion, and shared by many others in the educational community; that there must be a balance in the use of the national forest lands. Timber harvest, fisheries, wildlife, recreation, watershed and visual factors must all be considered. We believe that the Forest lands should be managed as a continuing renewable resource so that a sustained yield and use may be made without a deleterious impact on the land and the ecological systems. We support an approach to timber harvest which insures an ongoing and sustainable timber harvest level.

We support the SOC (Save our Community) alternative with a timber harvest of 75 MMBF and maintain current AMU for the Modoc National Forest.

*City of Alturas*  
*Office of the City Clerk*  
*Incorporated September 16, 1911*  
*Modoc County*

9th 5585 5529

200 North St.  
Alturas, Cal. 96101

RESOLUTION NO. 88-18

A RESOLUTION OF THE CITY COUNCIL OF THE CITY  
OF ALTURAS OPPOSING THE MODOC DRAFT FOREST LAND AND  
RESOURCE MANAGEMENT PLAN AND ENDORSING THE  
"SAVE OUR COMMUNITIES" ALTERNATIVE

February 18, 1988

Modoc National Forest  
Douglas Smith, Supervisor  
411 No. Main St.  
Alturas, CA 96101

Dear Mr. Smith:

Enclosed please find a certified copy of Resolution No. 88-18,  
from the City Council of the City of Alturas, which opposes the  
Modoc Draft Forest Land and Resource Management Plan.

Sincerely,

*Denise Utter*  
Denise Utter  
City Clerk

Enc.

WHEREAS, much of the population of the County of Modoc is dependent  
upon the ranching and timber industries, and

WHEREAS, 72 percent of the county's commercial timberland is in  
the Modoc National Forest, and

WHEREAS, a substantial portion of the funds for Modoc County  
schools and county roads are derived from forest receipts payment, and

WHEREAS, a major portion of the ranching community is dependent  
on the Modoc National Forest for summer grazing, and

WHEREAS, the City Council and the citizens of this City are as  
vitaly concerned with the protection of this valuable national and  
local resource upon which we are so dependent as is the United States  
Forest Service, and

WHEREAS, none of the alternatives in the Draft Environmental  
Impact Statement adequately acknowledge and honor the dependence of  
the economy of Modoc County on the resources of the Modoc National  
Forest and the policies by which the forest is administered.

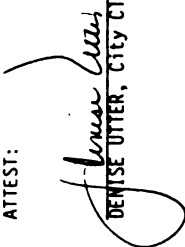
NOW, THEREFORE, BE IT RESOLVED that the City Council of the City  
of Alturas go on record as opposing the preferred plan alternative in  
the Draft Forest Land and Resource Management Plan and as opposing all  
of the alternative set forth in the Draft Environmental Impact Statement,  
and


BE IT FURTHER RESOLVED that the City Council of the City of Alturas go on record in support of the alternative plan presented by local citizens known as the "Save our Communities" (SOC) Alternative which best meets the needs of the local community while fulfilling the goals of sound forest management practices.


PASSED AND ADOPTED by the City Council of the City of Alturas at an adjourned regular meeting of the City Council held on the 16th day of February, 1988, by the following vote:

AYES:	Councilmembers Beth Swift, James Porter, Danny Parker, Roger Dorris
NOES:	None
ABSENT:	None
ABSTAIN:	Councilmember Charles Johnson

ATTEST:

  
DENISE UTTER, City Clerk

  
ROGER DORRIS, Mayor, City of Alturas

STATE OF CALIFORNIA      SS  
COUNTY OF MODOC  
CITY OF ALTURAS  
I, DENISE UTTER, CITY CLERK, DO HEREBY  
CERTIFY THAT THIS IS A TRUE AND  
CORRECT COPY OF THE ORIGINAL DOCUMENT  
FILED IN MY OFFICE.  
WITNESSED BY HAND AND OFFICIAL SEAL THIS  
16th DAY OF February 1988  
DENISE UTTER, CITY CLERK  
BY 



**COOPERATIVE EXTENSION SERVICE**  
**University of California**

Modoc County

202 West 4th Street  
Alturas, CA 96101  
233-3939 Ext. 400  
or 233-3734

March 4, 1988

TO: Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

RE: Draft Forest Land and Resource Management Plan

Dear Doug:

In my capacity as a Range and Natural Resource Advisor for the University of California Cooperative Extension Service in Modoc County since 1977, I have enjoyed the opportunity to work with many of your staff on range and natural resource related projects. I have found your staff to be professionally competent and dedicated to quality resource management.

The Draft Forest Land and Resource Management Plan that your staff has prepared is comprehensive and represents a monumental effort on their part. It is well written for such a voluminous document. In the development of such a plan, I realize that there are many viewpoints to be considered and that each of us has our own unique preferences and perspectives.

I would like to offer my comments on the draft plan with the hope that you will consider them to be sincere and expressed in support of quality land and resource management.

The Modoc National Forest is unique among Region V forests. The geology, topography, and climate in this part of California have influenced the development of vegetation, soil, and wildlife complexes that are unique to the Modoc. The influence of man and domestic animals over the past 100+ years has also helped to shape the current soil, vegetation, and wildlife resources that we have to manage presently and in the future.

I would like to encourage the adoption of a plan alternative that would allow your professional timber, range, wildlife, and recreation staff to practice their skills and talents in modern creative resource management.

University of California and the United States Department of Agriculture Cooperating

Douglas G. Smith  
March 4, 1988  
Page 2

I would encourage the adoption of a Timber Management component which would allow appropriate modern silvicultural techniques to be practiced and which would result in optimizing timber harvest and regeneration on the most productive timber sites capable of producing >20 cu ft./ac./yr. It is a waste of time and resources to attempt to produce economic yields of timber on less productive sites that have a 150-200+ year rotation length.

I propose that your staff could meet present and future timber harvest goals by concentrating their efforts on the most productive timber sites. I also believe that an aggressive timber harvest-reforestation program would open up significant new wildlife (primarily deer) habitat and help to meet a goal of increased deer habitat and numbers. At present, there are far too many acres of decadent white fir and overstacked pine stands in the Warner Mountains for optimum timber production and deer habitat.

The present range conditions on most of the Modoc National Forest reflect the quality professional range management that the Modoc National Forest has practiced for the past 3-5 decades. When I look at before and after pictures from the 1930s and 1940s and the 1980s, it is very clear to me that you have significantly improved range conditions and productivity. I would encourage the adoption of a range management component that would continue to provide for long-term sustained forage production for utilization by domestic livestock and wildlife species.

I believe that the present wild horse population is excessive and is significantly damaging range resources in several areas. I would encourage the further reduction of wild horse numbers to limit their destructive impacts on sensitive areas. In allotments where wild horses are causing a significant negative impact on forage and resource productivity, the horse numbers should be reduced before any downward adjustment are made in permitted livestock numbers.

I recommend that managed grazing systems be developed for allotments where condition and trend data indicate that plant vigor and reproduction are declining and for allotments where riparian dependent resources are adversely impacted by season-long grazing. It is critical that water sources be developed in upland areas to insure uniform livestock distribution before restricting livestock access to riparian areas.

On allotments where existing forage productivity does not meet the needs of livestock and wildlife, I recommend that suitable sites be seeded to improved forage species that could meet both the quantity and quality needs of livestock and wildlife. The plant materials and technology currently exist to accomplish this type of vegetation manipulation and enhance the diversity of plant communities.

Douglas G. Smith  
March 4, 1988  
Page 3

I believe that present range condition and trend evaluations should be conducted on an allotment before any changes in permitted livestock numbers are made to "balance forage allocation" between livestock, wild horses, and wildlife.

In the past five years I have participated on several Technical Review Team efforts on both Bureau of Land Management and U.S.F.S. allotments. I believe that this process works and provides the opportunity for multi-disciplinary and multi-perspective inputs to management agencies. I would encourage you to continue the use of the TRT process in resolving conflicts on Modoc National Forest allotments.

It appears to me that the "preferred alternative" as outlined in the Modoc National Forest Draft Forest Land and Resource Management Plan is not acceptable to most of this region's residents and certainly not acceptable to the livestock and timber communities.

I recommend that you appoint a committee similar to a Technical Review Team that would include representatives of the timber, livestock, sportsmen, and other user groups, as well as representatives of the environmental community to meet with your staff and try to assist you with the formulation of a plan alternative that would be more widely supported by the public in general, and the forest users. We need to work toward consensus rather than confrontation.

I am convinced that you and your staff have done a very professional job of developing this draft management plan and that, with constructive public and user input, an acceptable alternative can be selected.

I would like to participate in the future development of this plan and assist you in any way that I can to achieve as much consensus as possible on the management of the Modoc National Forest for the next 10-15 years.

Sincerely,

*Don Lancaster*

Don Lancaster  
Range, Forage, and Natural Resources  
Farm Advisor

DL/cb

JOHN H. SCHREIBER  
to Director  
WILSON BUCK, ASSISTANT  
to Director  
LENEV J. CLUCE  
to Director  
MAY MAX JONES  
to Director  
JEROME LUCIFOR  
to Director

*Modoc County  
Board of Supervisors*

VALERIE HADEN  
to Director  
and  
Chair of the  
BOARD OF SUPERVISORS  
6-11-76  
ALTURAS, CALIFORNIA 96101  
(916) 233-7474 ext. 201

Doug Smith, Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, California 96101

RE: Modoc National Forest Management Plan

Dear Doug,

The Modoc National Forest is the most valuable single resource in Modoc County. Any decisions regarding the management of the Forest will have socio-economic consequences which will affect Modoc County for decades to come. The following factors must be considered when studying management alternatives for the Forest:

1. 53% of the land in Modoc is administered by the Modoc National Forest, and is therefore exempt from property taxes (a traditional source of financing for local government).
2. 72% of the commercial timberland in the county is on the Modoc National Forest.
3. A majority of the summer pasture for livestock is on the Modoc National Forest.
4. The 1976 to 1984 annual average timber harvest on the forest was 70 MMBF.
5. 19% of the populace in Modoc County derive their income directly from agriculture and forestry (6 times greater than the state average).
6. For the past seven years, the 25% Forest receipts payments to Modoc County schools and roads have constituted 51% of our road departments budget and have paid the salaries of approximately 26 teachers.

The Modoc County Board of Supervisors feel that the importance of the Modoc National Forest to our areas economy was not adequately addressed in the draft plan and EIS. Any economic analysis contained in the plan's cursory at best, and showed little regard for the plan's short and long term effects on our area's economy. Impacts to traditional forest users such as ranchers, the timber industry, and the local economy are important considerations, and must be analyzed much more thoroughly. We request that the economic analysis be expanded to evaluate sector by sector impacts of the proposed plan alternatives.

A letter from Peter C. Myers, Assistant Secretary, United States Department of Agriculture, to R. Max Peterson stated in part "It is imperative that the role and potential of National Forest timber supplies for sustaining local and regional economies during the next 10 to 15 years be fully understood. Decisions on final plans for individual National Forests should reflect thorough and careful consideration to this important economic relationship."

The Modoc National Forest Mission (4-3 draft plan) follows this philosophy by stating, in part "The Forest mission, is to:

- Contribute to the community economy.
- Provide for sustained outputs of forage and timber products.
- Maintain a level of resource protection commensurate with values.
- Involve and cooperate with federal, state and local agencies, industry and private landowners in planning resource use, protection and management of government and other land. Solicit viewpoints in developing the Forest Plan and programs. Provide assistance and research information and, implement useful results."

RESOLUTION OF THE BOARD OF SUPERVISORS  
OF THE COUNTY OF MODOC NO. 88-8

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE  
COUNTY OF MODOC OPPOSING THE MODOC DRAFT  
FOREST LAND AND RESOURCE MANAGEMENT PLAN AND  
ENDORSSING THE "SAVE OUR COMMUNITIES" ALTERNATIVE

Doug, we agree with your mission statement. However, we feel that adoption of the preferred alternative would be counter-productive to those goals stated above. It is for this reason that we adopted Board Resolution No. 88-8 (attached) opposing the preferred alternative in the draft plan, and supporting the Save Our Communities (SOC) alternative.

Sincerely,



Vice Chairman  
Modoc County Board of Supervisors

Attachments:

- 1) Letter from Sheriff Bruce Mix
- 2) Review by Resource Economics International, Inc.
- 3) Memorandum from Torell and Ward
- 4) Lassen County Board of Supervisors Resolution #88-25
- 5) Modoc County Board of Supervisors Resolution #88-8
- 6) Letter to Doug Smith from Daniel Steinhagen
- 7) Letter (Draft) to Doug Smith from RCI

WHEREAS, much of the population of the County of Modoc is dependent upon the ranching and timber industries, and

WHEREAS, 72 percent of the county's commercial timberland is in the Modoc National Forest, and

WHEREAS, a substantial portion of the funds for Modoc County schools and county roads are derived from forest receipts payments, and

WHEREAS, this Board and the citizens of the County of Modoc are as vitally concerned with the protection of this valuable national and local resource upon which we are so dependent as is the United States Forest Service, and

WHEREAS, none of the alternatives in the Draft Environmental Impact Statement adequately acknowledge and honor the dependence of the economy of Modoc County on the resources of the Modoc National Forest and the policies by which the forest is administered.

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of the County of Modoc go on record as opposing the preferred plan alternative in the Draft Forest Land and Resource Management Plan and as opposing all of the alternatives set forth in the Draft Environmental Impact Statement, and

BE IT FURTHER RESOLVED that the Board of Supervisors of the County of Modoc go on record in support of the alternative plan presented by local citizens known as the Save Our Communities (SOC) Alternative which best meets the needs of the local community while fulfilling the goals of sound forest management practices.

PASSED AND ADOPTED at a regular meeting of the Board of

Supervisors of the County of Modoc held on the 1st day of  
February, 1988, by the following vote:

AYES: Supervisors Anderson, Chace, Coulson,  
Jones and Schreiber

NOES: None

ABSTAIN: None

ABSENT: None



BOARD OF SUPERVISORS OF THE COUNTY OF MODOC

By: St. Lesley J. Chace  
Chairman

ATTEST:

Marian Anderson  
County Clerk and Ex-Officio Clerk  
of the Board of Supervisors

Douglas G. Smith, Forest Supervisor  
Sierra National Forest  
111 W. Main Street  
Mojave, CA 93701

March 21, 1980

The South California Resource Conservation and Development Council wants  
to thank you for the opportunity to review the Nevada National Forest  
Resource Management Plan and its environmental impact statement.

We are glad to have some comments and hope that these comments are  
valuable.

We are glad to comment on the plan and the impact of the Nevada  
National Forest.

I am glad to see that the plan is a good one. It is a good one  
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4) Woodland Management-EIS 3-205 to 207-We agree with the Forest that  
Juniper need to be removed and controlled. This removal will provide  
increased foodsource for wildlife and livestock. We are extremely  
concerned about 10 acre or less blocks. This makes management and  
removal very difficult. Controlled burning is removed as a management  
tool. Also, commercial removal becomes much more difficult. We  
suggest larger, irregular treatment areas with shelter belts, escape  
cover and travel lanes interspersed in control areas. Management by  
fire or cutting could be achieved. Also, larger trees could be left  
in shelter areas. In addition, firewood cutters could be reduced to  
remove Juniper where and how desired by issuing fire or reduced cost  
permits. This would be one method to achieve Juniper control in less  
accessible or remote areas.

5) Biomass Production-EIS 3-37, 4-30-Including Juniper removal, timber  
thinning and harvest slash. This FCO is committed to stimulating the  
local economy. We are, therefore, interested in Forest biomass uses.  
We would like to see the Forest plan and encourage the commercial use  
of the above mentioned biomass. This will be an excellent way to  
reduce dangerous fuel buildup in the Forest. It will also provide an  
outlet for less desirable or cull timber. We would like to see your  
support for commercial biomass use.

6) Livestock Grazing Allotment-EIS 3-2 to 35, 3-52 to 57, plus  
others. This RCD supports the plan to manage livestock grazing. We  
recognize that reductions in grazing allotments are one method of  
management. We want the Forest to realize that many of the allotments  
depend on the Forest allotments to remain viable. These USFS  
allotments provide part of the overall forage for the livestock  
operation. In many instances, these allotments can not be replaced  
and be economically useful to the producer. Therefore, reductions or  
closures of allotments need to be studied and carried out very  
carefully. Reductions in allotments should be phased in gradually, or  
range improvements could be used to offset allotment reduction,  
closures, etc. We recommend that the Experimental Stewardship Program  
be used to deal with all grazing plans.

7) Snag Recruitment-RMP 4-45 to 47-We applaud your efforts to insure  
habitat for snag-dependent species. We do, however, oppose your  
proposal to treat sound trees to produce snags. Snag recruitment must  
not include sound, marketable timber trees.

8) Roadside 3-6 and Appendix 3-We agree with your road closure and  
abandonment plan. In addition, we believe that a well publicized,  
seasonal road closure program could be an attribute for this Forest.  
We think this program could be of particular resource protection value  
during deer hunting season. The Nevada County Fish, Wildlife and  
Recreation Commission has discussed a road closure program. We  
encourage you to call with them to develop and implement a plan.

9) Wildlife-Deer and Antelope-We understand that the Forest coordinates management plans with FA. Dept. of Fish & Game. We applaud your efforts to improve habitat and possibly increase herd number's. You must be aware, however, that many of these animals winter on private land. Any herd increases will have an affect on local landowners. We suggest that any plans to increase herd numbers also include plans to address depredation to private landowners by the herd.

-Suckers-are 3-155 to 100-lb and this plan to be interesting and generally support the protection of viable populations of ISE species. This RCSD is willing to work with you to improve streams and riparian areas. We do believe, however, that the multiple-use concept can still apply in these areas with ISE species.

Again, we want to thank you for the plan review opportunity, and to commend you on your overall plan. We also encourage you to continue the difficult task of good, multiple-use of our Modoc National Forest. If the North Cal-neva RCSD can assist you, please feel free to contact us.

Sincerely,

*Otis Leonard*

Otis Leonard  
Chairman



## United States Department of the Interior

OFFICE OF ENVIRONMENTAL PROJECT REVIEW  
BOX 36998, 450 GOLDEN GATE AVENUE  
SAN FRANCISCO, CALIFORNIA 94102

March 8, 1988

LR87/1233

Mr. Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
111 North Main Street  
Alturas, California 96101

Dear Mr. Smith:

The Department of the Interior has reviewed the Draft Environmental Impact Statement (DEIS) and Forest Land and Resource Management Plan (Plan) for the Modoc National Forest, Modoc, Lassen and Siskiyou Counties, California and offers the following comments. We have grouped the comments by subject matter for ease of use.

### WATER RESOURCES

Modoc National Forest is in the watershed of the Bureau of Reclamation's Central Valley and Klamath Projects. We are, therefore, interested in land management practices that improve the quantity and quality of downstream water. We support the watershed and range improvements that improve the quality of water leaving the forest, and look forward to their timely implementation. You may wish to consider coordinating the timing and locations of these improvements with land-disturbing practices (timber harvests, road construction, etc.) to minimize sedimentation.

The Plan (page 3-37) states that water development in the forest is limited because of senior water rights held by the downstream users. The proposals for instream fish habitat structures and pool excavation; wetlands development or expansion; and additional stock-watering facilities appear to have a cumulative impact of increasing the over impoundment of water in the Clear Lake Watershed. The DEIS should quantify the effects of the proposed impoundments on downstream water rights users. If appropriate, the draft should address measures to offset downstream water reductions.

Water monitoring plans should include periodic testing of drinking water made available to the public and staff. Water quality standards and guidelines for use of groundwater supplies should be indicated. Disposal of sewage and solid wastes on forest lands, and associated impacts on natural resources should be addressed.

### LAVA BEDS NATIONAL MONUMENT

The National Park Service (NPS) strongly supports including lands adjoining the Monument's boundaries in the Semi-Primitive Non-Motorized Dispersed Recreation prescription as shown in the preferred alternative. The majority of these lands is primarily roadless and adjoins wilderness within Lava Beds National Monument. This prescription will not only help protect these wilderness areas from unlawful motorized entry but will protect the wilderness experience of visitors using these areas.

NPS recommends that the visual quality objective for Lava Beds National Monument's south entrance road (48N04) be reevaluated to determine if it might be more properly classified as retention for a large segment of its length. The road provides distinctive landscapes including views of the Medicine Lake Highlands, Glass Mountain, East and West San Buttes, and other topographic features. In the winter the obsidian which makes up Glass Mountain is often cloaked with snow giving it the appearance of a glacier which results in added visual beauty and interest. The road should therefore be classified as a Class A variety level. The road receives approximately 43,000 forest and monument visits each year and deserves designation as a level 1 travel route due to its heavy usage.

The preferred alternative designates an area south and east of Lava Beds National Monument for management under the Raptor Management prescription. NPS recommends that the area to be managed under this prescription be re-examined to insure that all areas indicated as daytime roosting area in Klester's work and referenced in the "CALDWELL - COUGAR BALD EAGLE WINTER ROOST MANAGEMENT AREA PLAN" prepared by Maurice S. Fasnacht and David A. Sinclair of the Doublehead Ranger District, dated November 1978, be included under the raptor prescription.

Although the scale of the maps makes it difficult to determine the exact boundaries of the prescription, it appears portions of sections 3, 4, 9, 14 and 15 in T44N, R4E may have been inadvertently excluded. In addition, the preferred alternative identifies portions of the NW corner of section 3 as prescription element 12-14. This area is very close to Lava Beds National Monument's Caldwell Butte nighttime communal roost and includes both heavy and light daytime roosting areas.

On pages 3-14 of the Plan, under 9. LANDS, the following statement is made: "The Lava Beds National Monument, administered by the National Park Service (NPS) but on national forest land, totals an additional 46,000 acres." We believe that this statement by itself with no further explanation may tend to confuse readers as to the management authority and uses permitted on these lands. We recommend that the statement either be eliminated or that the "With respect to management of the 46,000 acres occupied by the Monument, Presidential Proclamation No. 1775 of November 21, 1925 (44 Stat. 2591) which established the Monument, states the following:



'The reservation made by this proclamation is not intended to prevent the use of lands for National Forest purposes under the proclamation establishing the Modoc National Forest, and the Two Reservations shall both be effective on land withdrawn but the National Monument hereby established shall be the dominant reservation and any use of land which interferes with its preservation of protection as a National Monument is hereby forbidden.'

## CULTURAL RESOURCES

### Plan

The Management Summary of the Plan (pp. 3-5 and 30) acknowledges that there are many historic and prehistoric cultural resources located in the forest; however, only 16% of the forest has been inventoried for cultural resources. In addition, the inventory has been skewed to forested lands as a consequence of project-related studies with the result that little is known of the cultural resource based in the high country and unforested areas.

When cultural resources are located, each resource must be evaluated on a site-specific level, as there is no scientifically derived contextual overview and/or management document against which the resource may be evaluated. Although there are many trails, sites, and structures that are potentially eligible for inclusion in the National Register of Historic Places, only seven have been nominated to date. There are problems associated with protecting cultural resources from vandalism and degradation from recreationist, natural degradation and impacts associated with forest management practices. It is also noted (p. 3-30) that there are at present 15 archeological sites which, "...could be considered for designation as Cultural Resource SIA's.

The stated forest mission and goal of the Plan is to protect and manage cultural resources. A second goal proposes to complete the inventory and evaluation of the Forest's cultural resources by 2050. This date exceeds the life of the Plan. What are the goals for inventory and evaluation of the lifetime of the Plan? A third goal proposes to provide information for public education and enjoyment of the forest's cultural resources; however, there is no provision in the Plan for these activities. A fourth goal, to protect access and use of sites and locations important to traditional Native American religious and cultural practices, is inadequately addressed in the Plan.

The Forest Standards and Guidelines (pp. 4-21 and 22) also address these goals; however, there is no mention of specific objectives within the life of the Plan. Several important aspects of cultural resource management are not adequate: standards for evaluation of property types; monitoring schedule for known sites for natural degradation or vandalism; the lack of consistent procedures for project-related inventory/evaluation; the lack of a Comprehensive Cultural Resource Management Plan (CCRMP).

The objective for conducting inventories to expand the cultural resource base where deficiencies are identified (outside of project-specific inventory) cannot be met with the levels of effort for inventory proposed in the Plan. It will be difficult to assess the scientific, historic and ethnic significance of each cultural property before determining further treatment in the absence of a contextual overview document.

Further, the absence of a contextual document will make it extremely difficult to evaluate individual properties. As a result, many properties will have to be protected prior to evaluation, utilizing the personnel and dollar resources of the forest, whether they are ultimately determined eligible for the National Register of Historic Places or not. Such an approach is neither time nor cost effective. The ability of the forest to interpret the significant cultural properties to the public is adversely affected by the incomplete inventory of cultural properties and the lack of a contextual overview document (a CCRMP) for the forest.

### Standards and Guidelines for Management Areas

In general, the Cultural Resource Standards and Guidelines for Management Areas are not really standards and guidelines but specific performance objectives. As performance objectives, they completely lack any specific planning information of how or when they will be accomplished, and are not supported by the DEIS for the Preferred Alternative for the forest.

For example, portions of two historic trails, the Lassen/Applegate E i-r-rant Trails, are located within the Fandango, Stone Coal, North Adin, Devil's Garden, Crowder, Happy Camp, Steele Swamp, and Clear Lake Management Areas. Although there is a stated objective to inventory and nominate the trails to the National Register of Historic Places, there is nothing in the Plan to support the objective.

This is the same situation with the important obsidian sources in the Fandango, Lake City, Patterson, Medicine Lake, and Black Mountain Management Areas, the rock art sites in the Devil's Garden, Steele Swamp and Clear Lake Management Areas, the high elevation prehistoric resources in the South Warner Wilderness Management Area and the Modoc War resources in the Clear Lake Management Areas. Cultural resources are not addressed at all in the Fitzhugh, Long Ball, Portuguese Ridge, Hackmore, Tionesta, Mears, and Mount Dome Management Areas, presumably because no inventory has been made of the cultural resources in these areas.

The proposed field monitoring of cultural resources (p. 5-6) is too infrequent to assure an adequate, responsible protection program. An Implementation Plan for cultural resource management is needed (p. A-2) in the form of a CCRMP. Research and Technical Planning Needs (pp. B-1 and B-3) are insufficient to address the cultural resource management needs of the forest.

From the scant information which is available for the cultural resources within the management areas, it is reasonable to assume that the Modoc

National Forest contains a rich and complex record of the past which has not been adequately inventoried, evaluated, treated or interpreted to the public. Given the low level of effort and lack of specific goals in the Plan for cultural resource management, it is difficult to see how this situation will be improved. When cultural properties have not been inventoried or evaluated, impacts from vandalism and natural degradation cannot be accurately assessed nor can protection be assured.

We recommend that a CCRMP, to be completed within five years, be included as a specific objective in the Plan. The development of the CCRMP document should be elevated to a high priority as the attainment of the goals of the Plan would be best served as a result. The CCRMP should be closely coordinated with the State Historic Preservation Office (SHPO) comprehensive planning efforts which are currently in progress. The CCRMP should include, at a minimum: A detailed overview of known resources; and specific plans for inventory, evaluation, treatment and management of cultural resources.

Until the appropriate sections of the CCRMP have been completed, the objectives of the Plan should be specifically explicated in terms of attainable performance goals. Known cultural resources should be evaluated on a site-by-site basis, and, if they are found to satisfy the criteria (36 CFR 60.4), nominated to the National Register of Historic Places.

#### DEIS

The Preferred Alternative (PRF) places little emphasis on cultural resource management needs, restricting actions to a project basis. It is clear from comments made elsewhere in this comment (pp. 3-25 through 29) that project cultural resource management needs are not currently being met. It is therefore doubtful whether the backlog evaluation goal of 50 sites annually will be met, given the low level of effort committed to the cultural resource management program and the need for survey and evaluation of current project areas. While better than no sites with the Current Alternative (CUR), the signing of one site per year will result in little improvement in the interpretation of cultural resources for the public. Coupled with the inadequate monitoring schedule, it could even result in increased vandalism to the sites.

While the RPA Alternative with Departure (RPD) offers a completed forest inventory by 1995, the probable high increase in destruction of or damage to cultural resources associated with this alternative makes its selection undesirable in terms of cultural resource management.

The Amenities Alternative (AMN) provides the best overall cultural resource management program by including non-project inventory and an increase to three signed per year which retaining the backlog evaluation goal of 50 sites per year, and developing 8 interpretive sites.

Neither the Reduced Budget (RBU) nor the Industry ('ND) Alternatives addresses the inventory requirements of Section 110 of the National Historic

Preservation Act (P.L. 89-665) and are, therefore, unacceptable in terms of cultural resource management.

It is difficult to assess the Environmental Consequences of the various alternatives as so little is known of the cultural resource data base on the forest. It seems logical to suppose that AMN would have the lowest potential for conflict with cultural resources; however, it is less clear that PRF and CUR present only moderate conflicts, or fewer than RPD (given that all project work will provide full compliance with the Federal laws and regulations). As a result of failure to conduct non-project inventory/evaluation to evaluate backlog properties, and to adequately monitor cultural properties under PRF and CUR, conflicts cannot be adequately assessed.

In Section 2, "Cultural Resources" of Chapter 3, "The Affected Environment" (pp. 3-25 through 29), it is estimated that 13,400 cultural properties exist on the forest which have not been identified. Of the identified sites (2,600), none has been interpreted, and about 15% are not managed. Although the unmanaged sites are comprised of small surface lithic scatter, and are presumed to be of little research value, this judgment has been made in the absence of any assessment of the value of this type of property for research.

Again, the lack of a CCRMP, which identifies specific property types and their research value and appropriate management treatment, makes this management decision questionable. For example, if adequate studies had been made of the major obsidian sources on the forest, minimal study of small surface lithic scatters could contribute valuable information on the movement of lithic resources from their source to their eventual location. The obsidian sources could be nominated to the National Register of Historic Places as a discontinuous district under the theme, Lithic Procurement Resources on the Modoc National Forest.

The restriction of inventory of project areas biases the cultural record and overemphasizes those properties which are found in forested areas while excluding those property types found in other environments. The lack of major archeological excavation data makes the identification of cultural periods during evaluation of site significance difficult to impossible due to this deficiency in the data base.

On p. 3-29, it is noted that: "Inventories are usually conducted before the project begins...In some cases, inventory procedures are initiated only a short time before the project begins, resulting in project delays. Some projects are begun prior to completing inventories." It is clear that cultural resource inventory procedures are not consistently undertaken, nor are they completed prior to project initiation, placing unrecorded cultural resources at risk of damage or destruction. The Plan should recognize and correct this deficiency in compliance with Section 106 of the National Historic Preservation Act implemented early in the project planning process.

We recommend that the activities described under "Opportunities" (p. 3-29) be considered for inclusion in the Plan. Even their partial accomplishment would constitute a major contribution to cultural resource management in the forest.

The "Opportunities" are in fact, necessary for responsible management of the forest's cultural resources.

In summary, we find that while the forest undoubtedly contains a rich and complex record of the past as exemplified by the number and variety of the known cultural resources, the DEIS does not adequately address the inventory, evaluation, treatment or management of these resources. Consistent procedures are needed and should be based upon a comprehensive cultural resource management document which provides specific guidance for inventory, evaluation, treatment and management of the forest's known and unrecorded cultural resources.

#### FISH AND WILDLIFE RESOURCES

The Fish and Wildlife Service (Service) is concerned that the mitigation actions proposed in the Plan and DEIS to avoid or minimize the effects of resource use on wetlands and the species that depend upon them are inadequate. Further, the Plan clearly identifies the existing degraded status of many wetlands on the forest as well as the means by which restoration can occur. However, the proposed efforts for restoration of wetland areas appear to be insufficient to provide improvements within a reasonable period of time.

Habitat restoration also appears to be highly susceptible to changes in the forest budget and likely to be one of the first activities deleted when budget allocations are reduced. Protection and restoration of wetland habitats should be directly linked to forest resource use. We recommend that unless wetland habitat values on the forest can be maintained and improved that habitat degrading activities be curtailed accordingly.

#### Specific Comments

##### Plan

##### Forest Standards and Guidelines

The Plan does not identify whether each criterion is a standard or guideline. Since the status does make a difference as to how it is applied by the forest (p. 4-52) we recommend that the Plan do so. It also seems that the definitions of standards and guidelines should be included at the beginning of this section.

##### 15. Riparian Areas (pp. 4-33 to 4-34)

We recommend that criteria a, b, and c be elevated to the level of standards.

We further recommend that the Plan expand criterion c by setting mandatory target goals of improvement, by quantity and quality, for degraded riparian areas. If goals cannot be met because structural

improvements are not funded, then non-structural methods should be applied.

##### 21. Water (pp. 4-39 to 4-40)

We recommend that criteria a through f be elevated to the level of standard.

##### Management Prescription Standards and Guidelines

##### Management Prescription 17: Riparian Area (pp. 4-148 to 4-157)

##### Element D - Range:

Guideline b regarding control of livestock distribution should be raised to level of standard.

##### Element E - Timber:

Guidelines a through d under management direction 1, regarding timber harvest, should be elevated to standards.

##### Elements F and K - Water and Soils:

The watershed restoration standard responding to management direction 1 should be amended to identify the quantity of restoration work that is to be achieved in a given year. We recommend that restoration occur in direct proportion to the level of degradation.

##### Element G - Minerals:

Mineral development should be allowed only to the extent that important aquatic resources are not degraded. The forest should obtain water rights if necessary to protect aquatic resources.

##### Element L - Facilities:

Guidelines 3 and 11, regarding the winterization of roads and installation of bridges and culverts, should be elevated to the level of standards.

Guideline 14 should be amended to include a statement to the effect that passage at stream crossings will be maintained when necessary for the fish population. This criterion should also be raised to the level of standard.

##### Monitoring and Evaluation Requirements

#### Riparian Areas (p. 5-12)

We recommend that the "Variation from Standard Requiring Further Action" be amended. Variances requiring further action should be the failure to protect existing good quality habitats as well as the failure to see improvement in degraded habitats that require restoration.

#### Water (pp. 5-16 to 5-17)

##### Water Quality Management and Watershed Condition

As also recommended for riparian areas, the "Variation from Standard Requiring Further Action" for each of these resources should be amended to consider the failure of the forest management plan to improve existing degraded conditions as well as monitoring to determine if areas now meeting standards are also degrading unacceptably.

##### Streamside Management Zones (Appendix M)

Proposed widths of streamside management zones (SMZ) appear sufficient for some activities such as grazing but inadequate for timber harvest. We recommend that the proposed SMZ widths be doubled when timber harvest and associated activities are involved.

We also recommend that the historic condition and restoration potential of a stream, not just the existing conditions, be considered when stream class determinations are made. Degraded stream reaches which can and should be improved may only be damaged further if an SMZ width is selected based upon the existing condition of the stream.

#### DEIS

##### Cumulative Watershed Impacts

The DEIS (p. 3-145) outlines a cumulative impacts analysis technique whereby impacts caused by management activities such as timber harvest, grazing, and road construction within individual watersheds will be assigned "equivalent road acre" values and compared against a threshold level of ERA's that will be assigned for a given watershed. It appears that this technique holds promise as a means of identifying acceptable disturbance levels within individual watersheds, however, we envision shortcomings in the technique as described in the DEIS.

A more detailed description of the cumulative impacts methodology is warranted in the EIS so that the adequacy of the technique can be assessed. We recommend that the EIS list the watershed units that will be used for this analysis as well as their existing ERA's. We also recommend that the EIS list the ERA values that have been assigned to given management activities. All activities with significant land disturbing impacts should be rated.

The DEIS states (p. 3-145) that watershed thresholds were estimated from soil sensitivity information and water runoff potential. The EIS should detail the information that goes into assigning a threshold and list the thresholds assigned to each watershed.

In addition to the development of the rating values we are also concerned about the manner in which the analysis would be applied. The DEIS (App. B, Section 2, part E, page B-28) states that "The goal (of assessing cumulative watershed disturbance) is to prevent disturbance to a watershed beyond its threshold." Yet, in its application in the FORPLAN modeling process (App. B, section 3, page B-48) "cumulative watershed thresholds from 42 watersheds are used to proportionately weight thresholds for each management area."

We suggest that the impacts to a watershed are best evaluated against a threshold that is based upon the conditions in that individual watershed. By weighting all watershed thresholds within a management area, sensitive and highly disturbed watersheds may exceed their individual threshold rating, even though the weighted threshold for the management area has not been exceeded. Why evaluate the disturbance to a watershed based upon conditions in separate, and perhaps totally different watersheds, when individual watershed thresholds have been calculated?

Also for use in FORPLAN (p. B-4), the DEIS states that thresholds are adjusted for fixed disturbances such as roads. How are thresholds adjusted for fixed disturbances?

Finally, the DEIS states (p. B-48) that in FORPLAN only timberlands are constrained by watershed thresholds. Does this mean that activities on other forest lands, such as rangelands, are not constrained to meet watershed cumulative impact thresholds? Further, what are the alternatives if cumulative impacts within a watershed will exceed the threshold even though all activities on timberlands are constrained?

If the cumulative impacts analysis is applied in practice as described, and apparently applied in the FORPLAN model, then we have serious doubts about its ability to attain its stated goal of identifying and avoiding significant watershed disturbance.

#### ENDANGERED SPECIES

##### General Comments

The Plan includes several elements that will contribute to the recovery of threatened and endangered species. The Service commends the Modoc Forest for including such elements in the Plan and looks forward to working with Forest Service personnel on their implementation. Notwithstanding these positive features, however, the recommended alternative in the Plan presents problems for some threatened and endangered species. To overcome these problems, we recommend that the preferred alternative be amended to include the measures

suggested below for conserving listed, proposed, and candidate threatened or endangered species.

The Modoc Forest contains habitat for three listed species, two proposed species, and several candidates for Federal listing. The listed threatened or endangered species in the Modoc Forest are the Modoc sucker (*Catostomus commersoni*), American peregrine falcon (*Falco peregrinus anatum*), and bald eagle (*Haliaeetus leucocephalus*). The two proposed species are the shortnose sucker (*Catostomus brevirostris*) and the Lost River sucker (*Deltistes luxatus*). The candidate species in the Modoc Forest include nine candidate plants and several candidate vertebrates.

Generally, we believe that the resolution of issues affecting listed species is best achieved through the normal Section 7 consultation process on a project-by-project basis when site-specific information is available concerning potential project impacts. Therefore, we recommend that the Service initiate formal consultation on those components of the selected alternative that may adversely affect listed species at the time such projects appear on the planning horizon. With respect to recovery actions, we recommend that the Plan be made consistent with the recovery plans that have been developed for the listed species that now occur, or historically occurred, in the Modoc Forest.

One area of the Plan where we anticipate conflicts may develop with respect to threatened and endangered species management concerns the funding allocated for obtaining baseline information and monitoring population trends. The funding allocated in the Plan is grossly inadequate to implement a trend analysis program. The rarity of most listed or candidate species dictates that extensive and prolonged surveys be undertaken. Such surveys by their very nature are usually quite expensive to carry out. The information obtained from less intensive surveys may be unreliable and misleading.

We strongly recommend that significantly higher levels of funding be allocated in the final Plan for monitoring sensitive wildlife and plant populations. A high priority should be given to obtaining initial baseline data where such data are lacking, and for performing sustained long-term monitoring. The problems associated with gathering and analyzing data for endangered fishes in the Modoc Forest will continue to be complicated if, as is currently the case, the forest does not have a trained fishery biologist on its staff. We recommend that this deficiency be remedied.

Before the Service commits itself to a plan that has the potential to significantly alter habitat conditions for several listed, proposed, and candidate threatened or endangered species, we recommend that a commitment first be made to obtaining needed baseline data and validating the models that were used to evaluate fish and wildlife impacts. In situations where there is already good documentation to show that a listed, proposed, or candidate species is currently in a declining or depleted status, land uses that would exacerbate the situation should be avoided until recovery is well underway.

#### Specific Comments

Plan, p. 3-27. In the paragraph discussing management of sensitive plants, we support the stated requirement for floristic surveys prior to any land-disturbing or land exchange activity. However, such surveys should not be limited to sites where known populations occur. Pre-disturbance surveys should also be conducted in areas where potential habitat for any of the candidate plants may be affected. Little will be gained from surveying areas where the plants are already known to exist.

Plan, p. 3-27. The reasoning behind the assertion that no changes in the current grazing strategy are necessary because sensitive plants have survived 100 years of grazing on the Modoc Forest is unrigorous, at best. The presence of remnant plant populations in areas where grazing has occurred for many years does not necessarily indicate that such organisms are either unaffected by, or will continue to persist under, the current grazing regime. Enclosure studies would provide the data needed to substantiate such a claim. We therefore recommend that the final plan incorporate, at least on a limited basis, enclosure studies to measure the impacts that grazing is having on candidate plants.

Plan, p. 3-41. In analyzing the management situation for wildlife and fish, and throughout the Plan, it should be recognized that the shortnose sucker and the Lost River sucker, which both occur in the Modoc Forest, were recently proposed for addition to the List of Endangered and Threatened Wildlife (U.S. Fish and Wildlife Service 1987). Unlike candidate species, which are afforded no legal protection under the Endangered Species Act, species proposed for endangered or threatened status do receive special consideration during the interval between publication of the proposed rule and the final determination. The Service anticipates publication of the final determination for these two species by the summer of 1988.

Plan, p. 3-41. The plan should recognize, either in the discussion on threatened and endangered species or in the section on special habitats, that the Modoc Forest contains important spawning and nursery habitat for the dwindling run of Goose Lake redbank trout that annually migrate (or attempt to migrate) from Goose Lake into Lassen Creek and other Goose Lake tributaries. The Goose Lake redbank trout is a category 2 candidate species. The maintenance of suitable spawning habitat in Goose Lake tributaries, particularly Lassen Creek, is an essential component of the ongoing effort to preserve and restore this fish.

Plan, p. 4-14. Table 4-2 should include the shortnose sucker and the Lost River sucker among the species for which management prescriptions and objectives are established. These two species were recently proposed for addition to the List of Endangered and Threatened Wildlife. Habitat for these two fishes occurs in the Modoc Forest in Willow, Boles, and Mowitz Creeks (tributaries to Clear Lake Reservoir).

Plan, p. 4-33. In the section on riparian areas, recognition should be given to how important riparian habitats are to the survival and recovery of the Modoc sucker, shortnose sucker, Lost River sucker, and Goose Lake redband trout. In the past, and continuing in some areas, habitat conditions for these fishes have been severely degraded through removal of riparian vegetation and subsequent erosion and sedimentation.

These species are particularly vulnerable to riparian habitat degradation because they typically occur in streams that are intermittent or low-flowing. Loss of riparian habitat can cause stream temperatures to increase and adjacent waterways to become desiccated after dewatering occurs. Proper management prescriptions are needed to insure that riparian habitats are maintained, and restored where necessary alongside streams that support the Modoc sucker, shortnose sucker, Lost River sucker, and Goose Lake redband trout.

Plan, p. 4-33. The standards and guidelines and management prescriptions in the Plan for riparian areas (established in the Waters and Soils Element on pages 4-148 and 4-154) are the minimum necessary to maintain and recover the listed, proposed, and candidate fishes. No deviations below these standards and guidelines should be tolerated.

Plan, p. 4-41. In the section establishing forest standards and guidelines for wildlife and fish, the shortnose sucker and Lost River sucker should be included in the element on threatened and endangered species or discussed under a new heading entitled "Proposed Threatened and Endangered Species." Shortnose suckers and Lost River suckers occur within the Modoc Forest in Willow, Boles, and Mowitz Creeks (tributaries to Clear Lake Reservoir).

Plan, p. 4-41. In the section establishing forest standards and guidelines for wildlife and fish, the Goose Lake redband trout should be recognized as a vulnerable candidate species. Recent genetic analysis of the rainbow trout complex by Berg (1987) identifies three distinct groups of redband trout: an inland form, *Parasalmo gairdneri gibbsii*, that occurs in Oregon and Idaho; a McCloud River form, *P. g. newberryi*, that occurs in the McCloud River drainage, and a Goose Lake form, *P. g. ssp.*, that occurs in Goose Lake and some of its tributaries.

Other trout systematists consider the redband trout to be a distinct species (see, for example, Behnke 1979). Berg's taxonomic scheme for classifying redband trout has been submitted to the Journal of Systematic Zoology for consideration.

Plan, p. 4-168. Willow Creek and its tributary, Buck Creek, are important spawning areas for the Goose Lake redband trout. Lassen Creek and Cold Creek are also critical spawning streams, as noted in the Plan. Restoration of these streams, as well as maintenance of existing stream improvements, is badly needed. The existing grazing system should be revised to promote the growth of riparian vegetation and stream bank stability, or the stream corridors should be fenced to exclude livestock from sensitive riparian areas.

Plan, p. 4-208: As noted in the Plan, Dutch Flat, Rush, and Johnson Creeks are critical streams for the Modoc sucker. Dutch Flat Creek was identified by the Interagency Modoc Sucker Working Group as the highest-priority stream for restoration.

Plan, p. 4-232. As noted in the Plan, Washington, Turner, and Hulbert Creeks are critical habitat for the Modoc sucker. Coffee Mill Gulch (tributary to Washington Creek) and Cottonwood Flat (tributary to Hulbert Creek) also are important as spring spawning areas and water quality supply for the Modoc sucker.

Plan, p. 4-256. The Plan should note that Willow and Boles Creeks are important spawning streams for Lost River and shortnose suckers.

Plan, p. 4-260. The Plan should note that Willow, Boles, and Mowitz Creeks are important spawning and nursery habitats for the shortnose sucker and Lost River sucker.

Plan, p. 5-12. In the monitoring specifications for sensitive plants, we are not able to determine whether the monitoring described on page 5-12 of the draft plan includes pre-disturbance surveys. In any case, the projected \$500 annual cost seems to be a gross underestimation of the true cost of conducting the required pre-disturbance floristic surveys and long-term monitoring.

Plan, p. 5-12. In the monitoring and evaluation specifications for "Riparian Areas", we believe a 10% reduction in channel and riparian condition for streams that support the Modoc sucker, shortnose sucker, and Lost River sucker is too great a variation to allow before corrective action is called for. We recommend that the threshold for triggering remedial action be established at a reduction of 5% in channel and riparian conditions.

Plan, p. 5-12. In the monitoring and evaluation requirements for the Modoc sucker, the projected cost of only \$500 for the annual monitoring specified in this element does not appear adequate. We recommend that a more realistic allocation be provided for these important recovery actions.

Plan, p. 5-19. In the monitoring and evaluation requirements for wildlife and fish, the monitoring specified for Lost River and shortnose suckers (every 5 years) is too infrequent. Annual monitoring is necessary until baseline conditions have been accurately determined. The allocation of only \$2,000 annually for such monitoring is not adequate and should be increased to a more realistic level.

DEIS, pp. 3-98 and 3-99. Only three of the nine plant taxa described on these pages will remain candidates in the forthcoming update to the notice of review for plants. The are *Eryngium mathiasiae*, *Mimulus pygmaeus*, and *Poa fibrata*. However, two other candidate plants, the *Deschutes milk-vetch* (*Astragalus vegetarioides*) and Greene's mariposa (*Calochortus greenii*) may occur in the Modoc Forest. The former species is known from Ash Valley, while

including the cumulative impacts, of the expected mineral activities are not revealed.

Minerals are discussed in various sections of both documents but there is no continuity in how mineral resources are discussed. This method to handle the planning of mineral activities and the resultant environmental impacts leaves many questions unanswered. It also creates a situation where a separate environmental document may be required for mineral leasing decisions.

Comments concerning the Land Management Plan are as follows:

In the introduction to the Minerals section, on page 3-16, we suggest that the words "deep-seated" and "oil and gas" be deleted from the paragraph.

The Leasable Minerals section, on page 3-17, is confusing. The discussion of the capacity of the Glass Mountain KGRA is not clear. We would suggest that the two KGRAs be discussed separately to say:

Geothermal energy is the most actively sought leasable mineral in the forest. Two Known Geothermal Resources Areas (KGRA) occur in the forest. The Lake City-Surprise Valley KGRA covers about 72,900 acres, but fewer than 3,000 acres are actually in the forest. No activity has occurred in the KGRA. The potential for electric production from this area is very low. Only 1 lease for 2,500 acres (less than 4% of the KGRA) exists in the forest lands.

The Glass Mountain KGRA contains 133,000 acres of land classified as valuable for geothermal development. The KGRA was expanded in 1986, based on the increased knowledge obtained from studies in the area. Presently, 33,000 acres have been leased. Temperature gradient holes have been drilled within the KGRA, as well as two development wells. After the remaining available lands in the KGRA are leased, exploration and development activity will increase dramatically. The electrical generation potential of this KGRA is about 500 megawatts of power.

In addition to the geothermal interest, more than 300 oil and gas leases and applications have been filed on forest lands during the past 20 years. Only 2 leases are still in effect, but 68 lease applications for 238,000 acres are being processed by the FS and the BLM.

The name of the KGRA, identified on page 4-174, needs to be changed to the "Lake City-Surprise Valley" KGRA. Actually, all references to the Lake City KGRA in both documents should be changed to the Lake City-Surprise Valley KGRA. The KGRA has had this name since the 1970s.

The chart on page 4-11 is a helpful addition to the document. It does, however, raise several questions about the Land Allocation numbers. For instance, the chart indicates that 23,000 acres are allocated to the Semi-primitive non-motorized land planning category, but the narrative section, on page 4-18, indicates that the forest plans to manage "78,000 additional acres

the latter species has been reported from "Forestdale" (northeast of Taylor Mountain). Both of these plants are category 2 candidates.

DEIS, pl. 2-16. In Table 1, we note that riparian areas and threatened and endangered species habitat receive high priority in all alternatives considered. However, it is clear that the Amenity Alternative and the Preferred Alternative will result in the best habitat conditions for most fish and wildlife species. We seriously doubt whether the harvest of timber or livestock grazing can be increased without causing a decrease in water quality and quantity. In many parts of the forest, riparian areas are currently degraded and restoration work is needed.

DEIS, p. 3-159. In the discussion on the Modoc sucker, it should be noted that Dutch Flat Creek is likely to contain hybrid fish. Habitat improvement work and a fish barrier may therefore be needed for this stream.

DEIS, p. 3-16. In the discussion on Lost River and shortnose suckers, it should be noted that surveys are needed to determine the current distribution of these two fishes on the forest. Members of the Klamath Basin Suckers Interagency Working Groups are available to help survey and monitor these habitats (contact Service representatives Jack Williams and Mark Coleman for information or assistance). Habitat improvement work is needed along Willow, Boles, and Mowitz Creeks.

DEIS, p. K-2. The list of fish on the Modoc Forest should include the Goose Lake redband trout (*Salmo* sp. or *Salmo gairdneri* ssp.). The Lost River sucker is in the genus *Deltilistes* (see Miller 1981). The correct spelling to the scientific name for the shortnose sucker is *Chasmistes brevirostris*.

#### Klamath Basin National Wildlife Refuges

The protection of riparian zones in the forest and in the Clear Lake watershed in particular are of significant importance to the management of Clear Lake National Wildlife Refuge.

The Clear Lake Management Area (p. 4-259-264) is of special interest to Klamath Basin National Wildlife Refuges as it totally surrounds our Clear Lake NWR. We support all efforts to protect the streamside riparian zones in the Clear Lake drainage. In addition, the Plan should address the protection of the shorelines of Clear Lake from trespass livestock emanating from the Forest Service grazing allotments.

#### MINERAL RESOURCES

A basic problem in both the DEIS and the Plan is that minerals are not carried through in either of the documents. It is true that minerals management is listed as a concern in the scoping process, but the subject is handled by saying that Forestwide Standards and Guidelines will be applied. The types of mineral Plans of Operations are not discussed. The impacts,

for semi-primitive non-motorized qualities". Since the chart reflects the forest's future planned allocation, this chart should reflect the additional 78,000 acres.

The chart also indicates that no lands are planned for Developed Recreation (Low Standard), but the narrative has dedicated pp. 4-88 through 4-93 to outlining the Management Direction for this land category.

Appendix I needs an introductory paragraph, explaining who will make the land description decisions, concerning which lands are covered by the the stipulations and how the stipulations will be attached to the leases. The conditions will be determined on a site-specific basis and stipulations attached to the leases. The conditions will be determined on a site-specific basis and stipulations attached as relevant, instead of having all the different types of stipulations included on each lease.

Stipulation No. 2 contains both year-round No Surface Occupancy (NSO) and Seasonal NSO restrictions. We recommend that the protections be separated into the 2 types of restrictions, so that one stipulation is for total NSO and one stipulation is for seasonal NSO. This would be consistent with the recently completed oil and gas environmental document.

Stipulation No. 7 protects scenic values. The first paragraph of this section is an explanation of the stipulation, while the second paragraph contains the language of the stipulation. We would suggest that the specific language of the stipulation be indented, so that the reader can see which part will actually be attached on the lease.

The Monitoring and Evaluation section is an outstanding addition to this LMP. Table 5-1, "Monitoring Plan by Resource", (p. 5-9) indicates that the annual cost for monitoring Mineral Plans of Operations will only cost \$100. A more realistic figure for this cost is at least \$1000.

The DEIS is a very comprehensive document for timber and recreation planning, but the analysis for minerals leaves a lot to be desired. A mineral potential map of the forest should be included. The mineral potential in the Modoc National Forest is high, and the forest should take this opportunity to discuss the development of these resources. For instance, the geothermal potential of the Glass Mountain KGRA is the highest of any undeveloped area in the United States. The economic impact on the counties could be enormous; far outranking the hunting/recreation, timber, or grazing support to the counties. This is not reflected in the document.

#### Specific Comments

#### DEIS

The summary of Energy, on page 20, does not convey the significant potential of geothermal energy in the forest. The energy resources of the Modoc can

have statewide significance. The economic and social benefits of the possible electrical generation are not reflected in the discussion. Also, the narrative relates geothermal exploration to energy demands and environmental concerns. The narrative should indicate that increased exploration will be based on completion of the leasing process, the issuance of leases, and better economic conditions of the industry, as well as on environmental issues.

In the summary section on Minerals, on page 21, the geothermal section might include the number of past leases, the number of applications, and potential for electric generation in the paragraph.

Chapter 2 goes into valuable detail to establish some benchmarks for economic production within the forest. The Modoc has an opportunity here to establish some benchmarks for geothermal resources. Not only was this not done, but minerals are treated throughout Chapter 2 as a fixed influence on forest values. In the evaluation of the different alternatives, beginning page 2-33, the number of mining plans always remains the same. This is unrealistic, because if areas are closed to mining, or if no surface occupancy is allowed, then these areas would not be open to mining, so the areas that are available for new exploration would get fewer and fewer. For those alternatives which have specific opportunities for forest production, the narratives should include the opportunities for mineral development.

In the LMP section titled, Management Prescriptions for Special Areas, it is indicated that "No Surface Occupancy" (NSO) stipulations will be applied. This may come from statements made in the DEIS. For example, in the Environmental Consequences Section, on page 4052, the narrative indicates that "Special Areas and Recreation Prescriptions require NSO". This NSO stipulation needs to be justified.

The EIS should discuss any conflicts between energy development and recreation and the cumulative impacts that could result, then develop a management prescription based on the economic, environmental, and public interest values involved. One of the Special Areas is at Medicine Lake, where the geothermal exploration potential is the highest in the nation. As it is, there are no discussions of the possible cumulative impacts from drilling and development in the Special Area around the lake.

The Management Area Direction for the Medicine Lake Area (No. 61) indicates that other management activities should not preclude geothermal development, but this contradicts the statements in the Recreation and Wildlife Section. At least there is enough of a perceived conflict to justify a discussion of the cumulative impacts somewhere in the document.

The discussion, on pp. 3-37/38, of Geothermal and Oil and Gas Energy resources, does not reflect the multiple-use concerns that are evident in Chapter 4. Also, the discussion needs to highlight the outstanding potential for geothermal development.



Page 3-61 indicates that 50,600 acres of land have been withdrawn for KGRAs. This is misleading, because KGRA lands are not withdrawn. References to the Lake City KGRA, made throughout the document, need to be changed to the Lake City-Surprise Valley KGRA.

The Affected Environment for Leasable Minerals Section, page 3-65, needs to be replaced by the suggested write-up comment No. 2 of the LMP section above. A shale formation is discussed in the minerals section (p. 3-6). The reason for this is not clear from the narrative.

The Environmental Consequences to Recreation from Minerals, Geothermal, and Utilities Management, on page 4-66, is very confusing and misleading. The discussion of long-term impacts from fluid minerals indicates that surface disturbance and vegetation removal are major. But the Management Prescriptions indicate that most of these areas will have No Surface Occupancy stipulations on them. So surface disturbance will not be a major impact. Actually, since the previous chapter identifies that these areas will have No Surface Occupancy, there will be no ground disturbance or other impacts.

The section also incites that open-pit mining is a point source that can be mitigated. For anyone familiar with open-pit mining, this is not realistic. However, the point should be moot, since the previous section indicates that the recreation sites are closed to mining, so there should not be any mines to mitigate.

The Environmental Consequences Section for Visual Resources, page 4-94, indicates that minerals and utilities will have exactly the same impacts to the visual resources as are expected from recreation. This does not seem realistic. For instance, the visual impacts from a mining plan for locatable minerals would have completely different types of impacts than the impacts from an oil and gas Plan of Operations. This section should be rewritten.

The section concerning Energy, within the Table: Summary Treatment of Issues, on page 2-167, indicates that the forest will encourage energy development. This commitment is vague, since all indications are that energy, specifically geothermal steam, is not even a management goal in any of the alternatives. On the other hand, this statement indicates that geothermal development will take place, but there is no environmental impact discussion, including cumulative impacts, relating to this anticipated development.

For instance, if geothermal development is allowed to occur at Medicine Lake, the economic impacts of the expected geothermal development will not be insignificant. The economic impacts would result in significant social impacts, because the counties, mainly Siskiyou, will benefit and the retirees, businesses, and general public may receive many outstanding benefits through new or improved services. The reason that the chart on page 4-8 does not reflect any of these possible benefits is probably because of the lack of minerals discussion in any of the alternatives.

The Minerals Section, beginning on page 4-48, does point out some of the issues, which we have identified, but page 4-48 is part of Chapter 4, Environmental Consequences. The issues concerning minerals should be identified and developed in Chapters 1, 2, and 3. Besides, the conflicts are not highlighted in Chapter 4. Each resource indicates that it will preclude mineral development where there is a conflict. If this is the decision, the narrative needs to develop the justification.

The discussion of leasable minerals, on page 4-52, indicates that Special Areas recreation prescriptions require NSO. This statement is not supported by any discussion of how the NSO stipulations were developed or what impacts are being precluded. The Conditional NSO is also "required". There is no discussion to justify this statement. The BLM/FS MOU for fluid leasing requires stipulations to be justified. This LMP/EIS is an excellent place to document this required justification.

The discussion of the acres which are closed to mineral activities, beginning on page 4-52, does not follow from any previous chapter. The discussion of the effects under each alternative does not show any advantage or disadvantage for minerals. The sections on page 4-53 indicate that certain areas will always be closed to mineral development, no matter what the potential. The IND and RBU alternatives indicate lower Semi-Primitive constraints, but no justification is given for why the mineral development is precluded. The mineral restriction by acres, in Table 4-11 on page 4-52, does not show how many acres are open to development. This table also indicates that 22.9 acres are always closed to Surface Occupancy, but no previous chapter had a map that indicated where these places are.

The Water and Riparian areas section, beginning on page 4-103, indicates that major effects on water quality and quantity do not include mineral development. It is unrealistic not to discuss minerals as one of the possible effects. In fact, this would be one of the places to discuss how standard procedures during drilling allow both the BLM and the FS to mitigate these impacts. There is no discussion of mitigation on page 4-133, Means to Mitigate, either, although mitigation is a significant part of fluid mineral development.

#### Other Specific Comments on Minerals

The Mineral Potential Map on page 3-68 is too small. It should be at the same scale as the alternative maps, so the reader can see how minerals will be affected by each alternative.

Comparing the present small minerals map to the Preferred Alternative Map, it can be roughly estimated that half or more of three of the areas having high potential for mineral development are managed for visual retention. Thus, it appears that most mineral development may have severe restrictions imposed upon it, thereby limiting mining activity. In only one management area is specific minerals management direction given that would appear to override the

visual retention objective. For the Highgrade District, page 4-163 of the RMP states that "...other management activities should not preclude future mining..." For other high potential locatable mineral areas on Figure 3-15 of the DEIS, the minerals management question isn't addressed. We suggest that these areas of past and potential mineral development be managed primarily for mineral development and other compatible management objectives.

#### Roadless Areas

Each roadless area located in Appendix E should have a discussion on the mineral potential of that area. In addition, the map of each area should display the locations of the areas of mineral potential and the commodities involved. This is commonly done in BLM resource area plans and some forest plans.

#### Comparison of Mineral Potential and Land Use Restraints

Table 4-10, on page 4-51 of the DEIS, is incomplete. It fails to show how many acres are in the forest and how many of those acres with high or medium potential are available without restrictions.

We find that the Modoc Forest compare Table 4-10 with the classification system shown in Table 2-11, pages 11-71 and 11-72, from the Beaverhead National Forest (MT) DEIS (attachment 1).

The criteria for mineral potential classification used in Table 4-10 and defined on page 3-67 of the DEIS is very vague. We suggest that the forest reassign the potential using well defined criteria such as that from the Mallova-Whitman National Forest (attachment 2). Also, the availability (access) classification could be better defined. A copy of the Beaverhead National Forest classification (attachment 3) is enclosed for comparison study.

Comparing a well defined mineral potential with well defined availability allows the reader to better visualize the statistical representation of minerals availability. Also, a visual aid or summary table such as page IV-81 (attachment 4) from the Wenatchee National Forest DEIS can be very helpful to the reader.

#### Minerals vs. Alternatives

It is important to include a discussion which summarizes how mineral development may fare under each alternative. This section is contained in most forest DEISs, and we strongly recommend that it be included in the final Modoc DEIS.

#### Point-Counterpoint Discussions

We feel the point-counterpoint discussion used by the Wenatchee National Forest is a very important technique in exploring how minerals affect other

resources and how decisions affecting other resources will, in turn, affect minerals. It is important that the forest consider including discussions of this kind in future documents.

#### Withdrawals

Each of the current mineral areas given on page H-1 of Appendix H should include statements assessing mineral potential for locatable and leasable minerals.

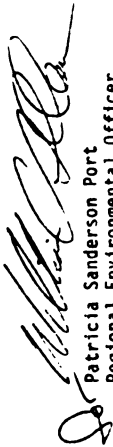
#### Mining Definitions and Terms

The DEIS should contain a narrative section on definitions of mining exploration and development terms, what the operations involve, and the expected effects these activities will have on the forest. This is designed as an informative section for the public to dispel confusion about mining activities. The Beaverhead National Forest EIS is an excellent example.

We request that the Modoc National Forest give serious consideration to the above revisions before the FEIS is released.

Thank you for the opportunity to review and comment on these documents.

Sincerely,

  
Patricia Sanderson Port  
Regional Environmental Officer

ccs: Director, OEPF (w/orig. incoming)

State Dir., BLM  
Reg. Dir., NPS  
Reg. Dir., BR  
Reg. Hydrologist, GS  
Reg. Dir., FWS  
Chief, BM

Table 11 - 11 cont.

## Alternative I

Access Category	Priority			Non-Priority		
	Low	Mod	High	Low	Mod	High
A	112,520	376,993	40,857	125,976	A	0 43,889 96,997 73,460
B	5,277	112,218	29,458	12,822	B	0 46,025 23,517 90,233
C	38,375	560,449	151,220	36,396	C	0 370,867 180,352 235,431
D	16,666	405,538	123,090	49,458	D	0 291,919 122,166 180,665

## Alternative C

Access Category	Priority			Non-Priority		
	Low	Mod	High	Low	Mod	High
A	101,081	85,511	40,857	0	A	0 225,309 2,140 0
B	3,004	139,404	0	0	B	0 18,517 12,720 111,161
C	33,572	499,851	108,380	97,431	C	0 446,052 178,442 154,740
D	35,379	697,507	147,083	118,461	D	0 454,037 231,720 312,673

## Alternative E

Access Category	Priority			Non-Priority		
	Low	Mod	High	Low	Mod	High
A	101,081	152,261	12,907	0	A	0 126,769 68,868 70,612
B	95	185,669	13,068	0	B	0 42,368 63,272 93,192
C	27,092	646,101	226,368	132,792	C	0 503,529 197,358 151,466
D	64,768	566,754	135,220	83,345	D	0 397,550 154,971 277,586

## Alternative I

Access Category	Priority			Non-Priority		
	Low	Mod	High	Low	Mod	High
A	128,405	809,421	330,757	168,615	A	0 848,419 329,759 259,020
B	1,750	66,923	636	943	B	0 6,126 1,462 62,664
C	9,885	116,556	3,679	9,090	C	0 80,952 11,709 46,549
D	32,996	388,998	41,248	37,609	D	0 207,193 82,102 211,556

## Alternative V

Access Category	Priority			Non-Priority		
	Low	Mod	High	Low	Mod	High
A	118,629	355,544	32,039	0	A	0 304,971 106,567 94,674
B	1,561	91,450	1,966	3,225	B	0 21,094 8,748 68,360
C	38,655	506,842	170,956	119,536	C	0 437,432 176,320 222,237
D	14,191	428,072	171,359	93,496	D	0 379,203 133,397 194,518

Table 11-11

## Mineral Evaluation Report

## Alternative A

Access Category	Priority			Non-Priority		
	Low	Mod	High	Low	Mod	High
A	101,081	230,311	0	0	A	0 197,812 66,868 70,612
B	12,765	172,068	16,648	2,395	B	0 42,167 6,927 154,782
C	972	104,542	1,858	722	C	0 50,639 10,238 47,217
D	58,218	875,119	357,782	213,140	D	0 856,082 340,999 307,178

## Alternative B

Access Category	Priority			Non-Priority		
	Low	Mod	High	Low	Mod	High
A	101,081	76,532	0	0	A	0 177,613 0 0
B	2,421	116,094	19,317	3,269	B	0 35,877 10,914 94,460
C	29,666	467,929	220,241	115,770	C	0 474,729 191,967 166,910
D	39,818	721,428	136,762	97,043	D	0 455,906 221,941 317,204

## Alternative C

Access Category	Priority			Non-Priority		
	Low	Mod	High	Low	Mod	High
A	128,066	441,154	329,998	165,242	A	0 704,850 267,623 131,987
B	3,835	105,873	223	110,690	B	0 27,091 7,832 75,767
C	10,889	169,277	8,569	11,283	C	0 95,162 29,873 75,463
D	30,746	625,104	37,550	36,993	D	0 315,597 119,704 296,572

## Alternative D

Access Category	Priority			Non-Priority		
	Low	Mod	High	Low	Mod	High
A	127,970	402,124	201,970	125,976	A	0 564,337 193,224 100,399
B	4,072	207,232	44,863	14,872	B	0 83,286 49,076 138,657
C	22,309	302,479	50,680	24,115	C	0 190,031 64,515 141,037
D	18,665	470,073	78,877	51,294	D	0 305,026 114,207 199,696

Attachment 1

Table J-3  
EVALUATION CRITERIA FOR DOMESTIC MINERALS

CATEGORY	1	II	III	IV	V
1. Potential for Substantial Development/Production Within Ten Years	High	Moderately High	Moderate	Low	Very low based on current knowledge.
2. Current Activity	Production or development pending investment or intent to produce or develop.	Comprehensive exploration likely. May include some small scale production.	Exploration programs which are limited to geologic mapping, geophysical and geochemical sampling, reconnaissance drilling, and may include some hobby-estate production.	Spindle exploration with occasional interest by prospectors.	Occasional interest by prospectors.
3. Land Position	Long-term easements of claim by established mineral companies/individuals.	Long-term.	Intermittent by established mineral companies/individuals, long-term by prospectors.	Short-term by established companies/individuals, later prospectors.	Spindle
4. Geology	Known and favorable for development of significant ore deposits.	Known and considered favorable from comparison with other producing districts.	Not well known, but appears to have favorable characteristics.	Not well known, some favorable characteristics.	Either unknown or unfavorable.
5. Resources/Reserves	One resource established. Will include significant production.	Presence of, or strong potential for, substantial resources. May include small resources.	Potential for large amounts of resources, but only some very small resources.	Some mineral resources, but not enough information to establish resources.	Unknown.

Table J-3  
EVALUATION CRITERIA FOR DOMESTIC MINERALS

Attachment 3

Category A	Withdrawn or proposed for withdrawal from mineral entry.  1. Wilderness areas. 2. Wild and scenic rivers 3. Sites for facilities 4. Historic and cultural sites 5. Developed recreation sites.
Category B	Statutes or executive orders require specific protection or mitigation measures.  1. Proposed wilderness areas. 2. Congressionally mandated wilderness study areas. 3. RARE II Further Planning areas. 4. T & E Species. 5. Roadless (Type I) dispersed recreation areas. 6. Culturally significant areas.
Category C	Special conditions exist on lands which require special lease stipulations or plan of operation conditions.  1. Big game winter range. 2. Elk calving area. 3. Riparian area.
Category D	Standard lease stipulations and plan of operation conditions apply.  1. Timber production areas. 2. Existing mineral processing areas.

Figure IV-35  
**CONSEQUENCES ON LOCATABLE MINERAL RESOURCES**  
 ACRES DESIGNATED AS EITHER A "MODERATE" TO "HIGH" LOCATABLE MINERAL RESOURCE POTENTIAL  
 AREALY AFFECTED BY RESTRICTIVE MANAGEMENT PRESCRIPTIONS

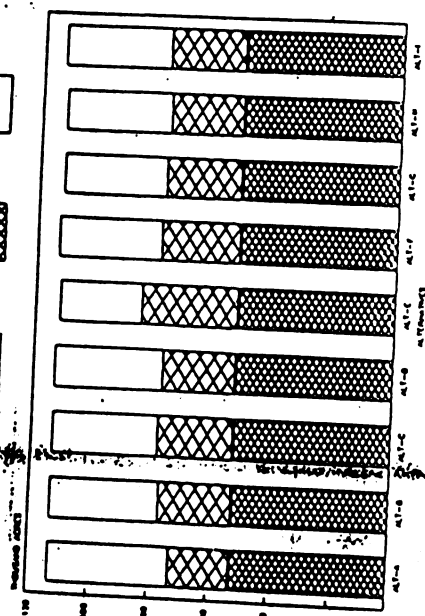


TABLE IV-36  
**ACRES AND PERCENTAGES OF LOCATABLE MINERAL POTENTIAL AREA  
 WITHDRAWN OR HIGHLY RESTRICTED**

Alternative	Acres	% of Total Area Classified	Portion of the "High" and "Moderate" Locatable Mineral Potential Area Withdrawn or Highly Restricted by Management Prescriptions	Portion of the "High" and "Moderate" Locatable Mineral Potential Area Withdrawn or Highly Restricted by Management Prescriptions	% of the Total "High" and "Moderate" Potential Area Withdrawn or Restricted
A	20,426	18	18	51,899	48
B	24,715	23	23	51,899	48
C	25,652	23	23	51,899	48
D	24,715	23	23	51,899	48
E	32,839	30	30	51,899	48
F	28,521	26	26	51,899	48
G	26,182	24	24	51,899	48
H	24,446	23	23	51,899	48
I	25,652	23	23	51,899	48

U This plan does not change the area designated as wilderness.



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT  
CALIFORNIA STATE OFFICE

2800 Cottage Way  
Sacramento, California 95821

BY AIR MAIL REFER TO:  
1782  
3100  
CA-930.12

FEB 29 1989

Paul Barker, Regional Forester  
U.S. Forest Service  
630 Sansome Street  
San Francisco, CA 94111

Dear Mr. Barker:

We have reviewed the draft Modoc National Forest (MNF) Land and Resource Management Plan (LRMP), and the supporting Environmental Impact Statement (EIS). We find the documents comprehensive and easy to read.

The basic problem in both the EIS and the LRMP, however, is that minerals is not carried through in either of the documents. It is true that minerals management is listed as a concern in the scoping process, but the subject is handled by saying that Forest-wide Standards and Guidelines will be applied. The types of mineral Plans of Operations and Guidelines are not discussed. The impacts, including the cumulative impacts, of the expected mineral activities are not revealed. Minerals are discussed in various sections of both documents, but there is no continuity in how mineral resources are discussed. This attempt to handle the planning of mineral activities and the resultant environmental impacts leaves many questions unanswered. It also creates a situation where a separate environmental document will be required for mineral leasing decisions.

Our specific comments concerning the Land Management Plan are as follows:

1. In the introduction to the Minerals section, on page 3-16, we suggest that the words "deep-seated" and "oil and gas" be deleted from the paragraph.
2. The Leasable Minerals section, on page 3-17, is confusing. The discussion of the capacity of the Glass Mountain KGRA is not clear. We would suggest that the two KGRAs be discussed separately to say:

Geothermal energy is the most actively sought leasable mineral on the Forest. Two Known Geothermal Resources Areas (KGRA) occur on the Forest. The Lake City-Surprise Valley KGRA covers about

72,900 acres, but less than 3,000 acres is actually on the Forest. No activity has been done in the KGRA. The potential for electric production from this area is very low. Only 1 lease for 2500 acres (less than 4% of the KGRA) exists on the Forest lands.

The Glass Mountain KGRA contains 133,000 acres of lands classified as valuable for geothermal development. The KGRA was expanded in 1986, based on the increased knowledge obtained from studies in the area. Presently, 33,000 acres have been leased. Temperature gradient holes have been drilled within the KGRA, as well as two development wells. After the remaining available lands in the KGRA are leased, exploration and development activity will increase dramatically. The electrical generation potential of this KGRA is about 500 megawatts of power.

In addition to the geothermal interest, more than 300 oil and gas leases and applications have been filed on Forest lands during the past 20 years. Only 2 leases are still in effect, but 68 lease applications for 238,300 acres are being processed by the FS and the BLM.

3. The name of the KGRA, identified on page 4-174, needs to be changed to the "Lake City-Surprise Valley" KGRA. Actually, all references to the Lake City KGRA in both documents, should be changed to the Lake City-Surprise Valley KGRA. The KGRA has had this name since the 1970s.

4. The chart on page 4-11 is a helpful addition to the document. It does, however, raise several questions about the Land Allocation numbers. For instance, the chart indicates that 23,000 acres are allocated to the Semi-primitive non-motorized land planning category, but the narrative section, on page 4-18, indicates that the Forest plans to manage 78,000 additional acres for semi-primitive non-motorized qualities. Since the chart reflects the Forest's future planned allocation, this chart should reflect the additional 78,000 acres.

The chart also indicates that no lands are planned for Developed Recreation (Low Standard), but the narrative has dedicated pp 4-88 through 4-93 to outlining the Management Direction for this land category.

5. Appendix I needs an introductory paragraph, explaining who will make the land description decisions, concerning which lands are covered by the stipulations and how the stipulations will be attached to the leases. The conditions will be determined on a site-specific basis and stipulations attached as relevant, instead of having all the different types of stipulations included on each lease.

Stipulation No. 2 contains both year-round No Surface Occupancy (NSO) and Seasonal NSO restrictions. We recommend that the protection be separated into the two types of restrictions, so that one stipulation

is for total RSO and one stipulation is for seasonal RSO. This would be consistent with the recently completed oil and gas environmental document.

Stipulation No. 7 protects scenic values. The first paragraph of this section is an explanation of the stipulation, while the second paragraph contains the language of the stipulation. We would suggest that the specific language of the stipulation be indented, so that everyone can see which part will actually be attached to the lease.

6. The Monitoring and Evaluation section is an outstanding addition to this LMP. Table 5-1, "Monitoring Plan by Resource" (p. 5-9), indicates that the annual cost for monitoring Mineral Plans of Operations will only cost \$100. A more realistic figure for this cost is at least \$1,000.

The draft Environmental Impact Statement is a very comprehensive document for timber and recreation planning, but the analysis for minerals leaves a lot to be desired. A mineral potential map of the Forest should be included. The mineral potential in the Modoc NF is high, and the Forest should take this opportunity to discuss the development of these resources. For instance, the geothermal potential of the Glass Mountain KGRA is the highest of any undeveloped area in the United States. The economic impact on the counties could be enormous; far outweighing the hunting/recreation, timber, or grazing support to the counties. This is not reflected in the document.

Our specific comments on the EIS are as follows:

1. The summary of Energy, on page 20, does not convey the significant potential of geothermal energy in the Forest. The energy resources of the Modoc can have statewide significance. The economic and social benefits of the possible electrical generation are not reflected in the discussion. Also, the narrative relates geothermal exploration to energy demands and environmental concerns. The narrative should indicate that increased exploration will be based on completion of the leasing process, the issuance of leases, and better economic conditions of the industry, rather than on environmental issues.

In the summary section on Minerals, on page 21, the geothermal section might include the number of past leases, the number of applications, and the potential for electric generation in the paragraph.

2. Chapter 2 goes into valuable detail to establish some benchmarks for economic production within the Forest. The Modoc has an opportunity here to establish some benchmarks for geothermal resources. Not only was this not done, but minerals is treated throughout Chapter 2 as a fixed influence on Forest values. In the evaluation of the different alternatives, beginning on page 2-33, the number of mining plans always remains the same. This is unrealistic, because if areas are closed to mining, or if no surface occupancy is allowed, then these areas would

not be open to mining, so the areas that are available for new exploration would get fewer and fewer. For these alternatives which have specific opportunities for Forest production, the narratives should include the opportunities for mineral development.

3. In the LMP section titled, Management Prescriptions for Special Areas, it is indicated that "No Surface Occupancy" (NSO) stipulations will be applied. This may come from statements made in the EIS. For example, in the Environmental Consequences section, on page 4-52, the narrative indicates that "Special Areas and recreation prescriptions require NSO." This NSO stipulation needs to be justified. The EIS should discuss any conflicts between energy development and recreation and the cumulative impacts that could result, then develop a management prescription based on the economic, environmental, and public interest values involved. One of the Special Areas is at Medicine Lake, where the geothermal exploration potential is the highest in the nation. As it is, there are no discussions of the possible cumulative impacts from drilling and development in the Special Area around the lake.

The Management Area Direction for the Medicine Lake area (461) indicates that other management activities should not preclude geothermal development, but this contradicts the statements in the Recreation and Wildlife sections. At least there is enough of a perceived conflict to justify a discussion of the cumulative impacts somewhere in the document.

4. The discussion, on pp. 3-37/38, of Geothermal and Oil and Gas energy resources, does not reflect the multiple-use concerns that become evident in chapter 4. Also, the discussion needs to highlight the outstanding potential for geothermal development.

5. Page 3-61 indicates that 50,600 acres of land have been withdrawn for KGRAs. This is misleading, because KGRA lands are not withdrawn. References to the Lake City KGRA, made throughout the document, need to be changed to the Lake City-Surprise Valley KGRA.

6. The Affected Environment for Leasable Minerals section, on page 3-65, needs to be replaced by the suggested write-up in comment #2 of the LMP section above. A shale formation is discussed in the minerals section (p. 3-6). The reason for this is not clear from the narrative.

7. The Environmental Consequences to Recreation from Minerals, Geothermal, and Utilities Management, on page 4-66, is very confusing and misleading. The discussion of long-term impacts from fluid minerals indicates that surface disturbance and vegetation removal are major. But the Management Prescriptions indicate that most of these areas will have No Surface Occupancy stipulations on them. So surface disturbance will not be a major impact. Actually, since the previous chapter identifies that these areas will have No Surface Occupancy, there will be no ground disturbance or other impacts.

The BLM/FS NOW far fluid leasing requires stipulations to be justified. This LMP/EIS is an excellent place to document this required justification.

11. The discussion of the acres which are closed to mineral activities, beginning on page 4-52, does not follow from any previous chapter. The discussion of the effects under each alternative does not show any advantage or disadvantage for minerals. The sections on page 4-53 indicate that certain areas will always be closed to mineral development, no matter what the potential. The IMD and RBY alternatives indicate lower Seal-Primitive constraints, but no justification is given for why the mineral development is precluded. The mineral restriction by acres, in Table 4-11 on page 4-52, does not show how many acres are open to development. This table also indicates that 22.9 acres are always closed to Surface Occupancy, but no previous chapter had a map that indicated where these places are.
12. The Water and Riparian areas section, beginning on page 4-103, indicates that major effects on water quality and quantity do not include mineral development. It is unrealistic not to discuss minerals as one of the possible effects. In fact, this would be one of the great places to discuss how standard procedures during drilling allow both the BLM and the FS to mitigate these impacts. There is no discussion of mitigation on page 4-133. Means to Mitigate, either, although mitigation is a significant part of fluid mineral development.

Sincerely,

*Ed Mastey*  
Ed Mastey  
State Director

cc: DW, Susanville  
Denny Carlson (USFS) ✓





Department of Energy  
Western Area Power Administration  
Sacramento Area Office  
1825 Hill Street, Suite 105  
Sacramento, California 95811

For reply, refer to:

Mr. Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

Dear Mr. Smith:

The Western Area Power Administration (Western) has obtained a copy of the Draft Modoc National Forest Plan (Plan) and Draft Environmental Impact Statement (EIS). The purpose of this letter is to present our comments on the Draft Plan and Draft EIS, which we wish to be considered and responded to in the development of the Final Plan and Final EIS for the Modoc National Forest (Forest).

Our main concern is the lack of discussion and consideration in the Plan and EIS of utility corridors in general and the California-Oregon Transmission Project (COTP) in particular. The Final EIS/Environmental Impact Report (EIS/EIR) for the COTP has been issued and a record of decision is planned to be issued by May 1988. The Forest is a cooperating agency on the COTP EIS/EIR and extensive coordination has taken place between the COTP staff and Forest representatives in the past two years. We therefore believe the COTP and the utility corridor issues should be considered in detail in the Plan and EIS.

We offer the following comments on the Draft Plan and EIS:

#### GENERAL

1. The management direction discussed in the Forest Plan for energy is to encourage development of resources such as small hydroelectric and geothermal generation. In contrast, the management direction for utility corridors is to limit allocations of single-purpose corridors, consolidate corridors, and encourage the use of private land for new corridors. These two directions appear to be contradictory since extensive development of small hydroelectric and geothermal resources in the Forest will result in a proliferation of needs for utility corridors.
2. In contrast to the management direction for resource development, the strategic importance of the location of the Forest to regional transmission planning is ignored in the Plan. One of the issues discussed in the Plan is how the Forest management will contribute to the federal policy of achieving national energy self-sufficiency. While encouraging

conservation and the development of generation are two worthwhile goals, regional energy transmission networks are also important. These networks allow for power exchanges which can result in the substitution of hydrogeneration for gas and oil generation, and defer the need for construction of new generators. The Plan should discuss the opportunities available for future corridors, and corridor planning efforts which have involved the Forest, such as the Northern California Corridor Study.

3. The COTP, for which planning has been ongoing for three years, is not even mentioned in the Plan and is referred to only briefly in the EIS as "an additional line from Malin to the Central Valley." The statement is made that the COTP and other proposals are not detailed enough at this time to identify location, corridor width, or time of completion. While the Final EIS/EIR for the COTP has just recently been released, a Draft EIS/EIR on the COTP was released in November 1986, and a supplement to the draft issued in July 1987, both of which covered proposed routes and construction plans for the COTP. The current status and proposed routing for the COTP should be recognized in the Plan.

#### SPECIFIC COMMENTS ON THE FOREST PLAN

1. Page 3-10. The COTP should be mentioned in the section on Utility Transmission Lines.
  2. Page 3-15. The proposal for the COTP has been extensively discussed with Forest staff and its location, corridor width, and time of completion were extensively treated in the Draft and Supplement to the Draft EIS/EIR.
  3. Pages 4-23 and 4-26. While we support the direction to consolidate transmission corridors where possible and feasible, there are situations, such as the COTP, where the reliability of regional transmission networks may be compromised by this practice. This is recognized in Section 503 of the Federal Land Policy and Management Act. The section states that the Secretary shall take into consideration national security and good engineering and technological practices when determining whether to require the rights-of-way be confined to existing or designated corridors. The management direction for utility corridors should be rewritten to recognize this regulation.
- In order to support the management direction in the Plan to limit single-purpose corridors, we recommend that consideration be given to reinserting wheeling stipulations in utility corridor special use permits.
- We disagree with the statement that the use of private lands, rather than Forest Service lands, should be encouraged for corridor siting. Siting decisions should be made based on environmental, technical feasibility, and economic considerations. Land ownership should be a secondary consideration. In contrast to the management direction, public input on the COTP was strongly in favor of the use of public lands over private lands.

SPECIFIC COMMENTS ON THE DRAFT EIS

1. Pages 1-10 and 1-11. The extensive meetings and contacts with Forest Staff regarding the COTP which have taken place over the past three years is not mentioned. In fact, Western was not even included on the mailing list and did not receive notice of the availability of the Draft Plan and EIS.
  2. Page 3-42. The section on Utility Transmission Lines is cut off in mid-sentence. The COTP should be mentioned.
  4. Pages 3-59 and 3-60. We disagree with the statement that utility rights-of-way require large acreages and the maintenance of cleared rights-of-way. Table 3-4 shows that the acres of agricultural, transportation, and water special uses all exceed utility and communications uses by several thousand acres. Also, we have discussed with Forest staff our plans for minimal clearing of the right-of-way. With planned, selective clearing of the right-of-way, even fewer acres of land will be affected.

The current status of the COTP should be discussed on page 3-60.
  5. Page 4-46. The status of the COTP corridor should be discussed. Current plans call for approval and permitting of the corridor to be completed by May 1988.
- We hope these comments are helpful to you in finalizing your Forest Plan and EIS. If you have any questions or wish to further discuss the comments, please contact Nancy Weintraub at (916) 978-4460 or FTS 460-4460.

Sincerely,



John D. Anderson  
Assistant to the Area Manager  
for Special Projects

NORMAN D. SHUMWAY  
19th DISTRICT, CALIFORNIA

COMMITTEES  
SARANG, FRANCE, AND  
CHARTER, LAMAR, AND  
SHERIDAN, LAMAR, AND  
FRANKS  
SELECT COMMITTEE ON ADAMS

# Congress of the United States House of Representatives Washington, DC 20515

March 15, 1988

Mr. Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, California 96101

Dear Supervisor Smith:

I appreciate having the opportunity to comment on the Draft Forest Land and Resource Management Plan which was released last fall. This planning document is pivotal not only for the future of the Modoc National Forest and the general public-- but also for determining the social and economic future of the rural communities in Modoc County and surrounding areas.

Inasmuch as the Modoc National Forest is in one of the most remote regions of the state and not conveniently accessible to the larger population centers in California and Oregon, I believe the Modoc National Forest plan should be most responsive to the public which uses the forest and relies on it most-- northeastern Californians. With this in mind, the following observations are central to the Forest Service expressing the required sensitivity to the needs of the general public.

An adequate annual allowable timber sale quantity is essential to the stability of the region. Notwithstanding potential deficiencies in the 1975 Timber Management Plan, I am not persuaded that the proposed long term sustained yield of approximately 58-60 mmbf annually is sufficient to meet the future needs of the public. Portions of the draft text I find particularly troublesome include: a an unjustified drop in the present acreage (435,100) classified as suitable for full and/or modified timber management; an unexplained reduction in sale quantity on the Big Valley Federal Sustained-Yield Unit from 13.3 mmbf to 11.0 mmbf; utilization of 1982 as a base year for projecting allowable sale quantity; and the establishment of special habitat, outlined on pages 4-45 to 4-48 of the draft plan, which propose snag requirement targets and timber sale management requirements for establishing snags that are unprecedented and unreasonable to include in the forest plan given the unsubstantiated need for specific habitat infrastructure.

1305 LAMARSHOUSE HOUSE OFFICE BUILDING  
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CONSTITUTION C. 800000

ADMINISTRATIVE ASSISTANT

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TOTAL FEE NUMBER

PAGE 01-1176

JACK BELLUCK

DIRECTOR, COMMISSIONER

1100 BOWENWOOD DR., SUITE 8

ALBUQUERQUE, NM 87102

910 966-3727

Mr. Douglas G. Smith  
Page Two

The draft plan accurately points out that Modoc residents have a long and rich history in livestock production in northeastern California which is heavily dependent on access to rangelands on the Modoc National Forest. Opportunities to improve the quality of rangelands which are consistent with traditional grazing allotment structures should be vigorously pursued. Prudent distribution of water resources can provide an environment where there is a improved balance in forage consumption as well as diminished damage to existing riparian zones. Given the present difficulty in using herbicides, I believe that the Forest Service should actively seek to initiate its proposal to provide for firewood cutting in grazing areas where there has been juniper encroachment.

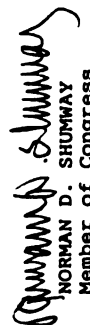
At this juncture, the information provided to show the desirability of expanding forage allotments for wildlife is not persuasive. While the draft states that the present acreage allotment only suffices for 67% of the current forage needs, no supplementary facts are offered. Is there unreasonably large deer and pronghorn mortality due to lack of forage? Since wildlife populations are uncontrolled, what measures, if any, are implemented to keep wildlife from using forage allotments of other animals? Thus, I can not support expanded wildlife allotments as outlined in the draft plan.

With regard to fish and wildlife management, I support the Forest Service plans for managing the recovery of endangered species such as the bald eagle and peregrine falcon. By the same token, I am less certain that expanding dedicated acreage to species which are not threatened or endangered, for example, the proposal to protect 29 more potential goshawk nest stands, is necessary at this time.

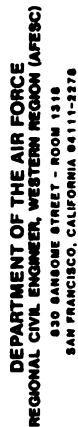
In closing, I appreciate the Modoc National Forest's willingness to give the public the opportunity to actively participate in the forest planning process. I am certain that the forest will work in concert with the local communities to develop a final forest plan which is responsive to the public's future needs.

Thank you for your thorough consideration of the aforementioned comments and observations.

Sincerely,

  
NORMAN D. SHUMWAY  
Member of Congress

NDS/cmt  
cc: Mr. Paul Barker, Regional Forester



ROVP (Tye/556-0557)

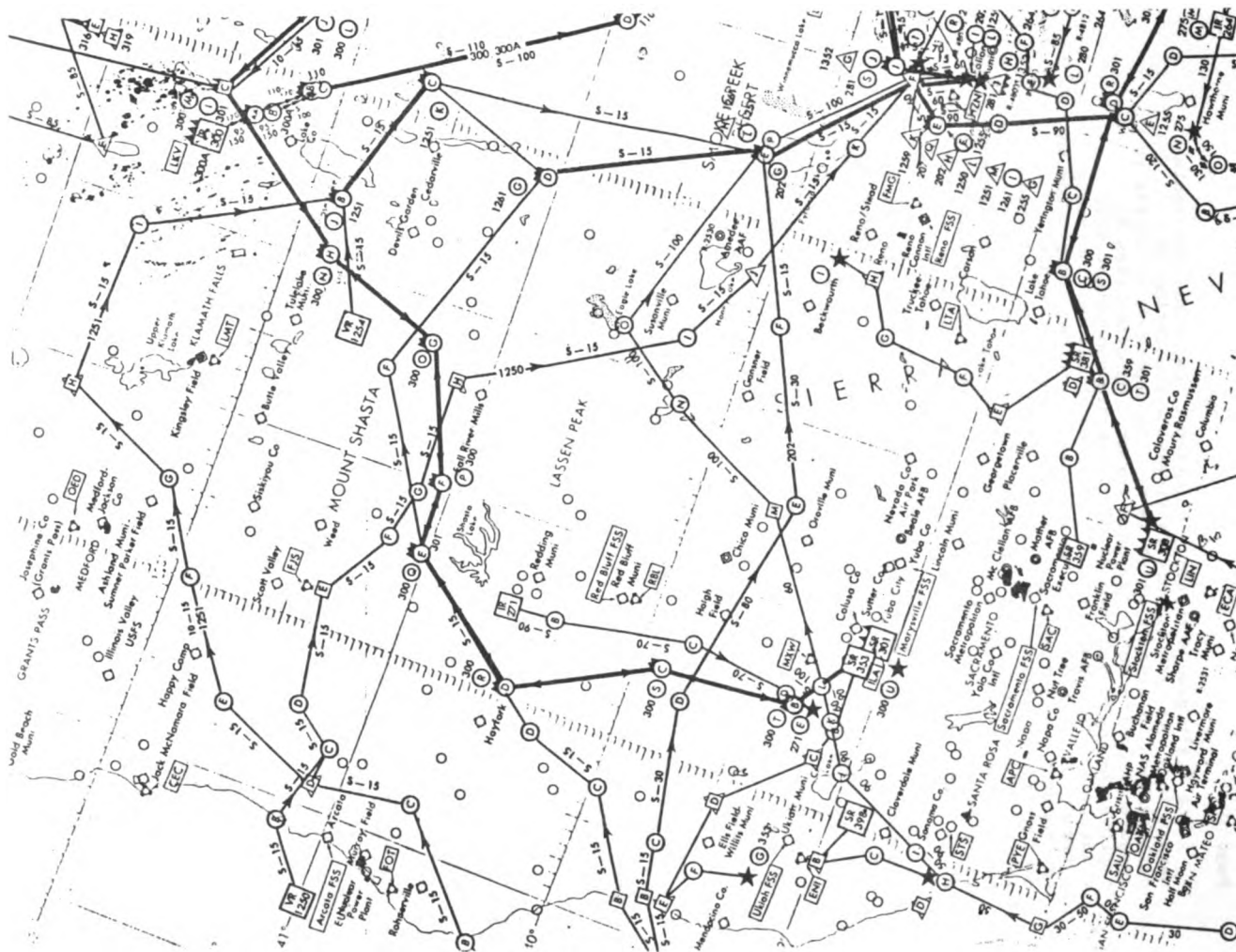
**Modoc National Forest Land and Resource Management Plan Draft Environmental Impact Statement (DEIS)**

Mr. Douglas G. Smith, Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

1. The AFRCCE/WR appreciates the opportunity to review the subject DEIS and offer the following comments:
- a. The Modoc National Forest is subject to military overflights (i.e.: slow speed low altitude training route SR-353 and VFR military training route 1254, see attached map). Military overflights, particularly low altitude overflights, have a potential to disrupt the solitude and naturalness of areas in the vicinity of their flight paths. As a result, this office recommends you consider location, altitude, and frequency of flights in your discussion and decision-making process.
- Areas which are appropriate for military overflights and low altitude training routes are becoming increasingly rare. In selecting overflight training routes, the Air Force must consider mission requirements and fuel costs as well as environmental constraints. Ideally, training routes are located within areas which: are relatively isolated, have diverse topography and minimal commercial activity, maintain sparse human populations, and contain lands under federal jurisdiction. It is obvious that these characteristics are also compatible to a large degree with potential wilderness areas. Therefore, even though several of the areas being proposed are subject to air training activities, the Air Force generally supports designation of wilderness areas provided such designations, and subsequent management thereof, do not restrict use of the airspace for military overflights.
- b. The Air Force is considering siting of three receiving sectors of the Over-the-Horizon Backscatter (OTH-B) West Coast Radar System (WCBS) in the Rimrock Lake area of Modoc National Forest. Each receiver sector is planned to be slightly larger than one square mile and features access and perimeter roads, above ground water tanks, below ground fuel tanks, an 8,000 foot long antenna, support buildings, various equipment pads, and a well for potable water and fire protection.
- We recommend that this activity also be considered in your discussion and decision-making process. Additional information on this project can be supplied upon request.
2. We hope these comments are useful in your planning process. If we can be of assistance in any manner, please contact the undersigned or Mr. Michael Tye at (415) 556-0357.

PHILIP J. LAMMI, Chief  
Environmental Planning Division

Atch  
Training Routes Map  
Training Routes Map  
cc: AF/LEVX  
AFREP/FAA





UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IX  
215 Fremont Street  
San Francisco, Ca. 94105

17 MAR 1988

Mr. Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, California 96101

Dear Mr. Smith:

The Environmental Protection Agency (EPA) has reviewed the Draft Environmental Impact Statement (DEIS) titled MODOC NATIONAL FOREST, LAND AND RESOURCE MANAGEMENT PLAN.

Under the National Environmental Policy Act and Section 309 of the Clean Air Act, EPA is required to review and comment on this DEIS. Our comments on the document are enclosed.

We have classified this DEIS as Category EC-1, Environmental Concerns-Adequate EIS (see attached "Summary of Rating Definitions and Followup Action"). This DEIS is rated EC because timber harvest levels and road construction, proposed under the preferred alternative, have the potential to exacerbate existing water quality problems in the Forest. However, EPA commends the DEIS' disclosure of existing water quality problems and strongly supports the proposed monitoring programs, riparian restoration measures, and decreases in grazing outputs, as means of identifying and improving water quality problems in the Forest.

We appreciate the opportunity to review this DEIS. Please send us two copies of the FEIS when it is filed with the EPA Headquarters office. If you have any questions, please call me at (415) 974-8083 (FTS 454-8083), or have your staff contact David Powers at (415) 974-8187 (FTS 454-8187).

Sincerely,

*Deanna M. Wileman*  
Deanna M. Wileman, Director  
Office of External Affairs

Enclosure (three pages)

cc: S. Warner, North Coast RWQCB

-1-

Water Quality Comments

1. EPA commends the Modoc National Forest staff for cooperating with us on water quality issues. While we are concerned that approximately 37 percent of the water on the forest does not meet water quality standards, and may be adversely affecting beneficial uses" (Forest Plan p. 3-37), we commend the DEIS's documentation of the problem and the measures it identifies to address the problem. Although the full restoration time frame is four decades, the DEIS makes a long term commitment to restoration and proposes excellent monitoring and protection measures.
2. Page 4-103 of the DEIS indicates that timber harvesting, road building, and grazing are the primary forest activities adversely impacting water quality and riparian areas. The preferred alternative suggests various protection and restoration measures and proposes decreases in grazing levels to improve water quality in the Forest. Timber harvest levels and road building, however, increase under the preferred alternative. Given the current water quality problems in the Forest (Comment #1), we are concerned about planned increases in these activities. While we believe that improvements in water quality will result from the proposed protection and restoration measures, the extent of the Forest's water quality problems may warrant reductions in timber harvest levels and road building activities. Such reductions could help the Forest achieve compliance with water quality standards sooner than the projected four decade timeframe.
3. We strongly support the proposed implementation of controls on grazing and standards and guidelines for the protection of riparian areas. The preferred alternative's emphasis on improvement of water quality through a decrease in grazing outputs and the treatment and restoration of riparian areas is commendable. This emphasis on water quality management indicates progress towards compliance with the North Coast Regional Water Quality Control Board's (RWQCB) Basin Plan objectives.
4. The DEIS and Forest Plan identify Best Management Practices (BMPs), listed in Appendix W of the Forest Plan, as the means for protecting water quality in the Modoc National Forest. The 1981 Management Agency Agreement between the State Water Resources Control Board (SWRCB) and the Forest Service certified that the BMPs developed in the \$208 Plan would constitute sound water quality management and that implementation of these practices would constitute compliance with substantive and procedural requirements of state water pollution control law as mandated by §13 of P.L. 95-217. It should be noted, however, that implementation of BMPs does not constitute compliance with water quality standards *per se*. In the event that a Forest project, undertaken with or without appropriate BMPs, creates a water quality problem or causes a standards violation, the State and Regional Boards retain the authority to carry out their responsibilities for management of environmental quality.

Environmental Impact of the Action

IO—Lack of Objections

The EPA review has not identified any potential environmental impacts requiring substantive changes to the proposal. The review may have disclosed opportunities for application of mitigation measures that could be accomplished with no more than minor changes to the proposal.

DC—Environmental Concerns

The EPA review has identified environmental impacts that should be avoided in order to fully protect the environment. Corrective measures may require changes to the preferred alternative or application of mitigation measures that can reduce the environmental impact. EPA would like to work with the lead agency to reduce these impacts.

DO—Environmental Objections

The EPA review has identified significant environmental impacts that must be avoided in order to provide adequate protection for the environment. Corrective measures may require substantial changes to the preferred alternative or consideration of some other project alternative (including the no action alternative or a new alternative). EPA intends to work with the lead agency to reduce these impacts.

EJ—Environmentally Unsatisfactory

The EPA review has identified adverse environmental impacts that are of sufficient magnitude that they are unsatisfactory from the standpoint of environmental quality, public health or welfare. EPA intends to work with the lead agency to reduce these impacts. If the potential unsatisfactory impacts are not corrected at the final EIS stage, this proposal will be recommended for referral to the Council on Environmental Quality (CEQ).

Adequacy of the Impact Statement

Category 1—Adequate

EPA believes the draft EIS adequately sets forth the environmental impact(s) of the preferred alternative and those of the alternatives reasonably available to the project or action. No further analysis or data collection is necessary, but the reviewer may suggest the addition of clarifying language or information.

Category 2—Insufficient Information

The draft EIS does not contain sufficient information for EPA to fully assess environmental impacts that should be avoided in order to fully protect the environment, or the EPA reviewer has identified new reasonably available alternatives that are within the spectrum of alternatives analyzed in the draft EIS, which could reduce the environmental impacts of the action. The identified additional information, data, analyses, or discussion should be included in the final EIS.

Category 3—Inadequate

EPA does not believe that the draft EIS adequately assesses potentially significant environmental impacts of the action, or the EPA reviewer has identified new, reasonably available alternatives that are outside of the spectrum of alternatives analyzed in the draft EIS, which should be analyzed in order to reduce the potentially significant environmental impacts. EPA believes that the identified additional information, data, analyses, or discussions are of such a magnitude that they should have full public review at a draft stage. EPA does not believe that the draft EIS is adequate for the purposes of the NEPA and/or Section 309 review, and thus should be formally revised and made available for public comment in a supplemental or revised draft EIS. On the basis of the potential significant impacts involved, this proposal could be a candidate for referral to the CEQ.

\*From: EPA Manual 1640, "Policy and Procedures for the Review of Federal Actions Impacting the Environment."

5. The DEIS gives excellent treatment to the reduced budget alternative. This is particularly important because the budget for implementing the preferred alternative cannot be guaranteed. We support the reduced budget alternative's lowering of resource outputs to compensate for its reduced emphasis on watershed improvement projects.

6. EPA is pleased with the level of monitoring resources proposed to ensure that water quality protection measures and riparian improvements are satisfactory. We encourage the Forest staff to work closely with the North Coast RWQCB on monitoring efforts.

7. The information provided in Appendix S is helpful in the development of our Section 319 program for Nonpoint Source Management. We look forward to ongoing cooperation with the Forest staff during the implementation phase of its watershed improvement priorities.

8. The Forest should coordinate closely with the North Coast RWQCB concerning geothermal development to ensure that discharge requirements are met and adequate mitigation measures are imposed.

Air Quality Comments

1. The FEIS should discuss how resource management activities will be consistent with protection of Class I air quality increments and criteria in the South Warner Wilderness and the adjacent Lava Beds Wilderness. The FEIS should clarify the statement that in order to comply with the Class I designation "the forest may have to develop ways to identify limits of acceptable change in air quality" (DEIS p. 3-24).

# CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD— NORTH COAST REGION

1440 GUERNEVILLE ROAD  
SANTA ROSA, CA 95403  
Phone: (707) 576-2220



February 18, 1988

Nadell Gayou  
Resources Agency  
1416 Ninth Street  
Sacramento, CA 95814

Dear Ms. Gayou:

Subject: SCH No. 87110602 - Draft Environmental Impact Statement/Land  
and Resource Management Plan for Modoc National Forest.

The North Coast Regional Board staff has reviewed the above-referenced documents and submits the following comments for your consideration:

- 1) These documents both recognize and support the requirement to meet Basin Plan water quality objectives, and that this is best accomplished using Section 208 approved Best Management Practices (BMPs). This is as specified in the 1981 Management Agency Agreement between the State Water Resources Control Board and the U.S. Forest Service.
- 2) We view with concern the Plan's statement (Page 3-37) that "approximately 37 percent (208,700 acre-feet) of the water produced on the Forest does not meet established water quality standards, and may be adversely affecting beneficial uses". We realize however that one of the goals of this planning process and Forest Plan is to apply future management practices that will result in attainment of water quality objectives.
- 3) The plan's recommended 40 year time period (Page 2-6) to achieve 100 percent compliance with water quality objectives is arguably a very long time frame. We understand funding constraints and the sensitivities of dealing with certain management practices, but it would appear to us that a more realistic time frame should be established. A long time frame could conceivably result in avenues for inaction during the 10 to 15 year life of this Plan. If the Forest ultimately decides that the 40 year time frame is most appropriate, the plan and draft EIS should better develop both the rationale for the time period, and the actual commitments to be met during the life of this Plan.
- 4) The projected watershed and fisheries habitat improvement projects are "based on priority needs and cost effectiveness" (Page 2-7). We know that watershed improvement funds on other Forests have in the past been restricted for a variety of reasons.

Nadell Gayou  
February 18, 1988  
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To what degree will the Forest be able to realistically meet watershed rehabilitation objectives given any foreseeable budget constraints? What emphasis or priority will be placed on using these funds under the Forest Plan? If funds do not come available to meet final Forest Plan goals for watershed improvement, will the plan and EIS need to be amended? How would this affect other management programs on the Forest?

- 5) We support the recommended water quality monitoring program (Page 5-16) as the basis for a sound self-monitoring and compliance evaluation. We have one question regarding the column labeled "variation from standard requiring further action". The part of the plan, under the headings "Water" and "Riparian Areas", refer to 10 percent reductions in short-term water quality and stream channel conditions. It should be made clear that such variations must still result in compliance with water quality objectives. The Forest Plan recommendation of a 10 percent variation does however provide reasonable general guidelines for BMP application during specific project level reviews.
- 6) We find that Modoc National Forest has done a good job in addressing water quality issues in this draft Plan and EIS. The recommended Plan provides the appropriate framework for a good water quality management program on the Forest.

Sincerely,

*William D. Winchester*

William D. Winchester  
Environmental Specialist

cc: Gordon Snow, Resources Agency  
Douglas Smith, Modoc National Forest  
Debra Caldon, EPA  
USFS, San Francisco. Attn: Andy Levin

# CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD— LAHONTAN REGION

3097 LAKE TAHOE BOULEVARD  
P.O. BOX 9428  
SOUTH LAKE TAHOE, CALIFORNIA 95731-2428  
(916) 544-3481



March 4, 1988

Mr. Douglas G. Smith

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3. (DEIS, pg 2-164) The Preferred Alternative provides for riparian area improvements on only 15 grazing allotments. What about the riparian areas in the remaining grazing allotments? How will State water quality objectives be met on streams within these remaining allotments?
4. (DEIS, pg 2-170) The Preferred Alternative specifies improving ecological condition by managing livestock distribution through structural improvements. What amount of improvements will be constructed and at what cost? Is the amount of this type of structural improvements equal in all alternatives? If not, discussion of the differences is necessary.
5. (DEIS, pg 3-41) The DEIS states that the Forest Service will initiate a road closure and obliteration plan. The Regional Board supports such efforts and is interested in reviewing and providing input on the plan. In order for seasonal closures to be effective, barricades (e.g., gates or boulders) may be necessary in addition to posting of signs.
6. (DEIS, pg 3-78) Concerning wild horses, the DEIS states, "The range cannot accommodate a large population because horses graze year-round, decimate large amounts of forage and compact the soil. Allotments within horse territories are in the worst ecological condition of any on the Forest." Why do all the alternatives allow for approximately 300 horses when the resources (soil, vegetation) cannot be protected from destruction?
7. (DEIS, pg 3-97) The current high percentage of land grazed under continuous season-long grazing systems must be altered if riparian areas are to be restored. One of the grazing systems identified on page 3-97 (spring use only, rest-rotation, double rest-rotation, substituting sheep for cattle, and total exclusion of livestock) should replace continuous season-long grazing and deferred grazing systems on all such allotments. We agree with and fully support efforts to monitor and evaluate the effects of various grazing strategies and structural improvements. The results of the monitoring should be utilized in making appropriate changes to improve management strategies.
8. The Range Allotment Map should identify specific grazing strategies currently being implemented on each allotment. This information would be of much greater value than the general forage information provided on the map.

Regional Board staff requests the opportunity to review and provide input on draft Allotment Management Plans for allotments within the Lahontan Regional Board's jurisdiction.

8. On Figure 3-30, the Lahontan Region is spelled wrong ("Lahontan"). Also, the area described as "Pacific Northwest Region" is within the Lahontan Regional Board's jurisdiction.

Mr. Douglas G. Smith, Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

## COMMENTS ON DRAFT MODOC NATIONAL FOREST LAND MANAGEMENT PLAN (LMP) AND CORRESPONDING DRAFT ENVIRONMENTAL IMPACT STATEMENT (DEIS)

Dear Mr. Smith:

Thank you for providing us the opportunity to comment on the Draft Land Management Plan for the Modoc National Forest and on the corresponding Draft Environmental Impact Statement (DEIS). Regional Board staff also appreciated the meeting held by your staff to discuss the Plan.

In general, the Plan and DEIS are well-written and your staff is to be commended for placing emphasis on watershed restoration and improvement and protection of water quality and associated beneficial uses.

We have the following comments:

1. The DEIS identifies 37% of all surface waters within the Modoc National Forest as not meeting water quality objectives (primarily for temperature and/or sediment). It is proposed that by the fifth decade all but one of the alternatives will result in improvements so that 100% of the streams will meet the State's water quality objectives. In the Preferred Alternative, 100% of the streams will meet the objectives by the fourth decade. Regional Board staff support immediate implementation of those measures necessary to accomplish this goal. Achievement of water quality objectives should become and remain the highest priority on the Forest.
2. The amount of road construction and reconstruction proposed under the Preferred Alternative is not clearly justified in the DEIS. We are concerned that the increased road construction may hinder achievement of water quality objectives since increased road construction increases the potential for erosion and stormwater runoff.



Mr. Douglas G. Smith

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9. The Soil Erosion and Sedimentation Index (ESI) is derived from weighted values of outputs which contribute to soil erosion and sedimentation and water quality degradation. The index for the Preferred Alternative for the fifth decade exceeds the index specified for the current condition. An increase in the ESI over the fifty year planning period does not provide us with much confidence that water quality and associated beneficial uses will be protected in the future. The ESI for the Preferred Alternative in Decade 5 is actually higher than for the Industry Alternative. Please explain. Regional Board staff encourage implementation of an alternative where the ESI decreases over time.

10. Why are portions of roadless areas (RARE II) mapped on the Recreation Opportunity Spectrum Map as being "roaded-natural"? Will roads in these areas be obliterated in the future?

11. Regional Board staff commend you and the Forest staff on the comprehensive measures included in the Standards and Guidelines, primarily for riparian areas. These Standards and Guidelines should be strictly enforced and projects should be periodically monitored for compliance with them. The agency urges inclusion of monitoring and enforcement provisions in the final plan.

12. The Regional Board staff strongly support efforts to monitor compliance with Best Management Practices and to evaluate water quality and stream stability. We encourage more frequent evaluations than the proposed annual evaluation of BHP's where the situation warrants. Field logs of BHP compliance should be maintained at least weekly by the project coordinator and should not be left to an end-of-year evaluation. In addition to the measures specified to monitor condition of riparian areas, we encourage implementation of measures to quantify stream cutting and sediment deposition. Also, on sensitive streams or where water quality objectives are not being met, water quality monitoring should be initiated. This would require more frequent sampling (e.g., monthly or quarterly) for constituents such as nutrients, dissolved solids and suspended solids.

13. We firmly support the concept that Stream Management Zones (SMZ's) be specified on a case-by-case basis in order to protect riparian dependent resources. The concept identified in Appendix M allows for a variable width zone in which the width exceeds the area dominated by riparian vegetation. Stream Class Determinations could be improved by including more quantitative criteria (e.g. define "large numbers", "substantial influence").

Mr. Douglas G. Smith

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We support your efforts in the identification and correction of water quality degradation problems. We look forward to working with your staff in the implementation of the Land Management Plan. Should you have any questions regarding the above comments, please contact Lauri Zander at this office.

Yours truly,



O. R. BUTTERFIELD  
EXECUTIVE OFFICER

cc: Regional Board members  
CRWQCB, Central Valley, Redding  
CRWQCB, North Coast, Santa Rosa  
Dept. of Fish and Game, Redding  
John Keene, State Clearinghouse

sh



## Department of Fish and Wildlife

### OFFICE OF THE DIRECTOR

508 SW MILL STREET, P.O. BOX 59, PORTLAND, OREGON 97207 PHONE (503) 229-5406


Oregon Department of Fish and Wildlife Comments  
on the Modoc National Forest  
Draft Environmental Impact Statement and Proposed Plan  
March 7, 1988

March 8, 1988

Mr. Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

Dear Mr. Smith:

Enclosed is the Oregon Department of Fish and Wildlife response to your proposed plan and DEIS. Our response is primarily addressing management activities that would effect the interstate deer and antelope herds; water quality of the Lost River system; and populations of the shortnose and Lost River suckers. If you or your staff have questions concerning our response, please contact our Central Region Office in Bend (503) 388-6363.

Sincerely,  
  
Randy Fisher  
Director

rro  
enclosure

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#### GENERAL COMMENTS

The Oregon Department of Fish and Wildlife (ODFW) congratulates the Modoc National Forest (Forest) on issuance of its Draft Environmental Impact Statement Draft (DEIS) and Proposed Plan for public review. Considerable information was provided on the consequences of management actions on the Forest's natural resources.

The ODFW is primarily addressing the DEIS and Proposed Plan regarding impacts on (1) interstate deer and antelope, (2) water quality of the Lost River system, and (3) shortnose and Lost River suckers.

The following information is essential for a more thorough and site-specific evaluation of the proposed alternative:

1. A map of streamside management units (SMU's) showing the riparian zone and its condition rates according to a method that describes relative value as wildlife habitat. "Managing Riparian Ecosystems for Fish and Wildlife in Eastern Oregon and Eastern Washington," (1979) is an example of a good method for evaluating riparian condition and values.
2. A map showing the location of grazing allotments to superimpose on the riparian zone map with summary information by allotment on: management class, range condition and trend, overuse problems to resolve, existing and planned grazing season, livestock numbers and permitted AUM's, improvements planned, and schedule for implementation.
3. Explicit information on methods to be used to effectively implement Forest access and travel management to protect natural resources.
4. A map delineating big game winter and transition ranges along with management direction for transition range.

## OREGON DEPARTMENT OF FISH AND WILDLIFE CONCERNS AND RECOMMENDATIONS

ODFW comments and recommendations are intended to be constructive and lead to positive results. They are based on ODFW understanding of the National Forest Management Act (NFMA), the Clean Water Act, Executive Order 11990, and key provisions of the Wildlife Policy of the State of Oregon.

ODFW considers its position on the amounts and condition of resources that comprise or affect fish and wildlife habitats to be realistic and reasonable. Recommendations consistent with this position are presented for:

1. Aquatic/Riparian Habitats
2. Big Game Habitat
3. Threatened, Endangered, Sensitive, and Unique Species Habitats
4. Access and Travel Management
5. Grazing
6. Standards and Guidelines

### 1. Aquatic/Riparian Habitats

It is distressing that over 75 percent of riparian areas are only in poor to fair ecological condition and only 10 percent are improving (Figures 3-20 and 3-21, pg. 3-93, DEIS). With continuous, season-long grazing as the predominant grazing management practice in riparian areas (Figure 3-22, pg. 3-96, DEIS), it is unlikely the trend will improve without substantial management direction change. A major effort by the Forest is required immediately to reverse this situation. No grazing should be permitted on riparian areas in less than "good" condition.

The goal for riparian management should be at least 80 percent of potential. ODFW recommends the protective measures necessary to achieve functional recovery to at least 80 percent of potential fish and wildlife habitat characteristics for all riparian zones within 10 years and ecological recovery in 20 years. This is consistent with the Forest-stated goal for maintenance or recovery of riparian values and with Forest Service Manual (FSM) 2526 policy to give preferential consideration to riparian-dependent resources over nondependent resources. These standards need to be included as Forest-wide standards and guidelines.

Implementation of an aggressive riparian recovery program would guarantee improved riparian conditions, water quality, and water flows. It has been demonstrated that protecting riparian areas can lead to improved aquifers within the riparian zones, resulting in protected flows. Some presently intermittent stream courses could become perennial, which has also been demonstrated by studies.

The DEIS discusses livestock abuse of springs, seeps, and associated riparian vegetation, and the need to "sanitize" such water sources. Most such water sources are degraded and the potential exists for disease transmission between and amongst livestock and wildlife. ODFW recommends the Forest give high priority to scheduling an aggressive water improvement program that provides source protection, installation of sanitary water structures, and piping of overflow to rocky channels.

It appears that an attempt will be made to reduce grazing on riparian areas; however, these reductions appear tied to structural improvements which may not be funded. A change in management that is not dependent on increased funding is preferable.

The riparian zones of Boles Creek, Mowitz Creek, and Willow Creek below Boles Creek are rated in poor condition. This is unacceptable, since these creeks are assumed to be the major spawning areas for Lost River and shortnose suckers from Clear Lake. Livestock management strategies on the range allotments associated with these creeks should be "Strategy D", with exclusion of cattle from the riparian zones as the primary practice.

### 2. Big Game Habitat

Essential transition range is not delineated and appropriate management direction is omitted. Deer forage and cover should receive emphasis on transition range. The goal for cover should be 40 percent of the area in well distributed stands. The shrub component needs management emphasis to provide browse for big game. Fall greenup should be reserved for big game productivity and survival. Livestock use on transition range should be discontinued after September 30. Prescribed fire should only be used as a tool for habitat improvement.

Deer winter range is not adequately delineated and management direction is not adequate. The goal for cover should be 50 percent of the area in well distributed thermal cover stands. Again, the shrub component needs management emphasis. Livestock grazing on winter range should be discontinued after June 30. Roads should be minimized (approaching zero miles open roads) and no ORV use should be permitted between December 1 and March 31.

Standards and guidelines need to reflect grazing restrictions, road management, and deer cover and forage on winter and transition ranges.

The evaluation of habitat effectiveness for deer needs to be limited to an area of less than 10,000 acres. This area needs to be a permanent monitoring unit to evaluate the effects of roading, harvest dispersion, and grazing on big game over time.

### 3. Threatened and Endangered Species Habitat

ODFW supports the Forest in full protection of bald eagle nesting, potential nesting, and roosting habitat.

With the imminent federal listing of the Lost River and shortnose suckers as endangered, the Forest needs to put a high priority on habitat improvement and protection for these species.

### 4. Access and Travel Management

ODFW supports regulation of motorized travel on the Forest to protect fish and wildlife and their associated habitats. There is insufficient detail in the DEIS or Proposed Plan to evaluate the adequacy of the

proposals and the impacts on deer habitat effectiveness. Either seasonal or permanent (preferred) road closures should be used on winter range to minimize densities approaching zero miles per section) open roads from approximately December 1 to March 31.

#### 5. Grazing

ODFW is concerned about the absence of grazing allotment data. An allotment map and summary tables with essential information by allotment (see General Comments) should be provided for comparison with on-the-ground conditions. ODFW is particularly interested in plans to correct resource damage problems, with a timeframe for planned improvements.

With 75 percent of riparian areas in less than "good" ecological condition, and 36 percent of the range in poor condition, drastic changes are needed in grazing management. Information in the DEIS and Proposed Plan does not indicate a significant upward trend in range condition if the Plan is implemented. An aggressive grazing management plan is needed to correct resource damage problems.

ODFW recommends grazing curtailment on big game winter ranges after June 30; reservation of fall greenup for big game on transition ranges after September 30; no grazing of riparian zones in less than good condition; protection of water sources; and no grazing of upland areas with a poor range condition rating.

#### 6. Standards and Guidelines

ODFW recommends development of a strong set of specific standards for the plan. By definition, a standard is a point to measure against or a basis for comparison. The qualifiers used (such as some, sufficient, where needed, significant, should, etc.) are subjective and do not allow for comparison. The Forest must develop clear and objective standards which would provide guidance for implementing the final plan.

When terms are used that identify a type of direction or degree of restriction, the terms need to be defined. ODFW recommends that the Forest use the definitions (below) developed by the Siskiyou National Forest for four of the most often used terms. The Forest would need to define other terms used in the standards and guidelines that can be subjective in nature.

"The type of direction and degree of restriction are identified by the terminology in the Standards and Guidelines. To understand the intent of the direction, the interpretations of the terms used are critical."

"The first intent is conveyed by the word 'shall.' With this degree of restriction the action is mandatory in all cases."

"The second is conveyed by the word 'should.' With this degree of restriction, action is required, unless justifiable reason exists for not taking action. This direction is intended to require a practice unless it entails unacceptable hardship or expense. Exceptions to "should" restrictions are expected to occur infrequently."

"The third type of direction uses the word 'practicable' and acknowledges that a given practice is not always feasible and practical in every situation. It is intended to encourage, but not require, a practice."

"The fourth uses the word 'may' and has to do with activities which may or may not be appropriate, depending on circumstances. For example, grazing may be consistent with the objectives of certain management areas, but specific sites may or may not contain suitable forage. This direction is intended to allow for taking advantage of compatible opportunities, or to provide for exceptions when objectives of a particular standard can be met through alternate methods."

An established set of standards would lead to more consistent management across the Forest. For this reason, ODFW recommends the use of more specific standards in the final plan.

## DRAFT ENVIRONMENTAL IMPACT STATEMENT

### Alternatives (DEIS Chapter 2)

#### Firewood

2-40 Need to include: Design juniper firewood cutting areas to retain 50 percent of the area in properly dispersed cover on deer winter range.

#### Range

2-41 (b.) Permitted grazing and forage capacity needs to be balanced during this planning period if an upward trend in poor range conditions to be realized.

2-47 (b.) Riparian Area Management Prescription does not include exclusion of cattle in the "standards and guidelines" when livestock grazing has caused stream channel degradation. Because streams containing Lost River and shortnose suckers are already in poor riparian condition, and because removing livestock is the most expedient means of improving degraded stream channels, ODFW believes livestock removal should be included in the primary practice for improving degraded stream channels. This practice should be implemented on all watersheds containing Lost River, shortnose, and Modoc suckers.

2-47 (3.) Energy expended by deer to obtain needed forage for nutritional requirements is important in maintaining a healthy, reproductive herd. Forage in excess of minimum requirements should be allocated to reduce energy expenditure. Energy expenditure is of extreme important on transition and winter ranges; therefore, forage allocations for deer and antelope need to be immediately calculated into all allotments.

### Affected Environment (DEIS Chapter 3)

#### Opportunities

3-31 (Paragraph 3) On winter range, 50 percent cover is required by deer to minimize energy expenditure. Firewood cutting area plans need to meet the amount and distribution of thermal cover required by deer.

#### Introduction

3-72 What percent of rangeland is deer and antelope winter range? The second paragraph on page 3-73 indicates typical winter range is also more heavily used by livestock. What are the consequences?

#### Grazing Seasons

3-74 What considerations are given for deer winter and transition ranges when setting grazing seasons?

#### Range Condition

3-74 It is disturbing that 492,000 acres of range are only in "fair" condition and 340,000 acres are in "poor" condition. These statistics indicate an aggressive program is needed to improve rangelands for wildlife.

3-75 It is doubtful wildlife are a continued contributor to fair and poor range condition. The Interstate deer herd is currently below management objective.

3-76 (Paragraph 1) Recovery of depleted range should not be at the expense of cover requirements for deer. Juniper manipulation is an effective tool that must be carefully planned to protect wildlife resources.

3-76 (Paragraph 2) The management direction is not promising when little improvement of rangelands, allotment management plan revisions, or monitoring projects have occurred since 1980.

#### Water

#### Grazing

3-143 Good discussion on the adverse effects of grazing on riparian condition and water quality. ODFW recommends rangeland improvements, especially for protection of riparian zones, receive a high priority.

#### Current Management

3-146 Static watershed condition is unacceptable. Future management of the Forest should be directed toward improving watershed condition and not just preventing the current condition from becoming worse.

#### Wildlife and Fish

3-156 The population goal for 20 percent above 1982 levels does not reflect the mule deer management objectives of ODFW. Management objectives set by ODFW are based upon historic population levels and are reasonable objectives based upon available habitat (see comments, page 3-204, DEIS).

#### Current Management

3-167 The shortnose sucker should remain on the Regional Forester's Sensitive Species List until the question of hybridization is resolved. The logic implied by excluding shortnose suckers from the list is shortsighted and against the conservation ethic.

#### Deer Herds

3-180 (Paragraph 1) Forage needs for the Interstate herd should reflect management goals, not the current population level.

California Interstate Herd Management Unit Goals			
	Current	1990 Target	
<b>A. Deer population on California winter ranges</b>			
1. Migratory Interstate	7,480	9,600	
2. California Resident	1,020	1,250	
California Total	8,500	10,850	
<b>B. Post-hunt buck ratio per 100 does</b>			
	10	12 or more	
<b>C. Annual Harvest</b>			
1. Bucks	650	Available surplus that maintains ratio goal	
2. Antlerless	0	Surplus in excess of 10,850 population	
<b>D. Fawns per 100 does in springtime</b>			
	25	x	
1. To achieve goal	x	35-40	
2. To maintain goal	x	30-35	

#### Environmental Consequences (DEIS Chapter 4)

4-115	<u>Range Management</u>	The effect of range management on wintering deer and antelope is not discussed. Season and intensity of livestock use changes forage species composition and forage available for wildlife.
4-116	<u>Road Management</u>	The effect of roads on habitat effectiveness for deer needs to be discussed. Habitat effectiveness is reduced to 80 percent on winter range with a density of one mile of road per section.
4-116	<u>Fire Management</u>	Wildfire can also be detrimental to early successional wildlife species, depending on the type of habitat burned. Burning bitterbrush, mahogany, and sage, for example, can be very detrimental to wildlife such as deer and antelope.
4-119		There is no discussion on the effects of the alternatives on Lost River and shortnose suckers.

- 3-181 Current Management  
(Paragraph 2) There are clear management objectives for the Interstate deer herd (see comments on 3-204, DEIS).
- 3-184 Opportunities to Increase Deer Populations  
(Paragraph 6) There should be no livestock grazing on winter range after June 30, or on transition range after September 30.
- Pronghorn
- 3-185 Supply and Habitat  
(Paragraph 4) The Clear Lake winter range is used by Interstate antelope that summer in Oregon.
- 3-185 Opportunities  
(Paragraph 1) Forage allocations in allotment management plans should be revised to include antelope.
- 3-201 Social and Recreational Demand  
Interstate deer and antelope that winter on the Forest provide hunting opportunities in Oregon. The contribution to this recreational opportunity needs to be recognized.
- 3-204 Agency Objectives  
The 9,600 migratory Interstate deer are part of management objectives set by the Oregon Fish and Wildlife Commission.

4-120 Deer

The effect of the preferred alternative on deer does not adequately address winter range. With a majority of rangeland in "poor" or "fair" condition, it does not seem plausible to meet deer forage needs with the projected livestock use.

4-140 There are also possible conflicts with the ODFW herd management objectives.

## DRAFT FOREST LAND AND RESOURCE MANAGEMENT PLAN

These comments generally do not repeat those made on the DEIS. It is assumed comments on the DEIS will result in substantial changes in the plan.

2-7

### Wetlands and Riparian Areas

Without major changes in the management of livestock, including a high level of structural improvements, we do not believe 100 percent rehabilitation in 40 years is obtainable.

3-12

### Current Management

(Paragraph 2) It is an oversimplification to say fire suppression has resulted in undesirable ecological changes for wildlife. Juniper is valuable cover and forage for deer. Sagebrush is valuable forage for deer and antelope. The Juniper/sage lands should be managed with wildlife needs as a priority.

3-20

### Current Management

This section is severely critical of Juniper on rangelands. Juniper is a valuable range plant for many wildlife species. Juniper should be managed for its benefits to wildlife and receive proper recognition in range allotment management plans.

3-27

### Riparian Areas

Riparian areas in poor condition cannot sustain grazing for any duration if recovery is the goal. ODFW suggests the use of rotation and early season grazing strategies only after full recovery of the riparian area.

3-37

### Water Quality

Poor water quality in the Lost River below Malone Dam is responsible for keeping fish production at low levels in the Lost River in Oregon.

### Forest Mission and Goals

4-9

### Wildlife and Fish

(Paragraph 5) It is questionable that Forest direction will achieve the goal to "provide habitat quality and quantity necessary to meet the Forest's share of population objectives" for the interstate deer herd. A much more aggressive program will be required to solve existing livestock grazing problems.

#### Forest Standards and Guidelines

##### 4-22 Facilities

The need to manage the road system to minimize harassment of deer on winter range should be added.

##### 4-25 Firewood

(f). Firewood cutting in juniper areas needs to be managed to protect cover requirements (amount and spatial arrangement) for deer on winter range.

##### 4-29 Range

Range management standards and guidelines were covered exclusively under DEIS comments.

(a.1) What are examples of cost-effective range improvements? Since fencing riparian areas usually costs more than present revenues from grazing, is elimination of grazing in portions or all of some allotments the most cost-effective method of range improvement?

##### 4-44 Wildlife and Fish

(9.a.) The desired thermal-cover/forage ratio for deer on winter range is 50/50. The goal should be to ensure thermal cover does not go below 50 percent on winter range, or to manage for improvement approaching 50 percent where cover is lacking.

(9.b.) Transition and summer range should be managed to provide for minimum of 40 percent cover well distributed over the area. Monitoring units should not exceed 10,000 acres.

#### Management Prescriptions

##### 4-110 Rangeland

Grazing cutoff dates for winter and transition ranges need to be included.

##### 4-116 Range-Forage

Same comments as rangeland, P.4-110.

Old (decadent) mountain mahogany stands provide important food and cover for deer on winter and transition ranges. The weight of fall snows on mahogany bring desired browse for deer within reach. Unlike birchleaf mountain mahogany, curleaf, mountain mahogany has not been shown to respond favorably to direct manipulation; however, it has been shown to respond to the removal of competing juniper. Due to its high value for deer, a cautious approach should be taken to the manipulation of mahogany until successful projects can be demonstrated.

##### 4-149

##### Riparian Area

Good management prescription overall, with one glaring omission: on page 152, the first priority to remedy channel degradation from livestock is to remove the livestock! The four practices mentioned are all costly and mostly ineffective without livestock removal or control.

#### Management Area Direction

##### 4-258

##### Range Allotment Strategy

Boles Creek drainage should be managed under "Strategy D" to improve riparian and water quality conditions for Lost River and shortnose suckers.

##### 4-264

##### Range Allotment Strategy

Boles Creek drainage in Mammoth Allotment should also be managed under "Strategy D" to improve riparian and water quality conditions for suckers.

#### Monitoring and Evaluation Requirements

##### 5-19

Monitoring plan for Lost River and shortnose suckers is inadequate in terms of frequency. This is especially relevant because of the lack of baseline population and habitat preference information on these fish.

#### Fish and Wildlife Monitoring Techniques

##### E-3

Monitoring techniques for Lost River and shortnose suckers do not include population sampling. This is contrary to the techniques noted on page 5-19.

#### Range Allotment and Riparian Improvement Priorities

##### S-4

Streams need riparian improvement in the Doublehead Ranger District because of: (1) their importance to Lost River and shortnose sucker spawning, (2) the poor ecological condition of these streams, and (3) the need to improve water quality in Clear Lake for rearing suckers. All of these streams should be priority level 1.



ADMINISTRATION  
Frank Burk  
Superintendent  
Carol Harbaugh  
Director of  
Operations/Office

MODOC JOINT UNIFIED SCHOOL DISTRICT  
908 W. 4th Street - Alturas, California 96101  
(916) 233-4411

BOARD OF TRUSTEES  
Chris Starr  
President  
Sean Currie  
Vice President  
Seaborn McDonald  
Clerk  
Earl Sullivan  
Member  
Dessie Boyko  
Member

March 3, 1988

Doug Smith  
Forest Supervisor  
MODOC NATIONAL FOREST  
441 N. Main Street  
Alturas, CA 96101

Re: Forest Land and Resource Management Plan

Dear Mr. Smith:

Enclosed please find a copy of Resolution FY 88-03 which was approved by a unanimous consensus of the Board of Trustees of Modoc Joint Unified School District on February 18, 1988.

Sincerely,

*Frank C. Burk*

Frank C. Burk  
District Superintendent

FCB:mp

Encl.

MODOC JOINT UNIFIED SCHOOL DISTRICT  
Resolution FY 88-03

Resolution supporting the SOC Alternative (Save Our Community) and opposing the Modoc Draft Forest Land and Resource Management Plan.

WHEREAS, the Modoc Draft Forest Land and Resource Management Plan does not conform to the Organic Act of 1897 and the Sustained Yield Act of 1960, both congressional acts; and

WHEREAS, because the Modoc Draft Forest Land and Resource Management Plan has an unfavorable economic impact on ranches, the timber industry, education, business and professional community or other, it is time to reconsider the plan; and

WHEREAS, the Modoc Draft Forest Land and Resource Management Plan shows substantial reductions in forest receipts supporting the quality education of Modoc County children and maintenance of Modoc County roads regularly used transporting children to and from school; and

NOW, THEREFORE, BE IT RESOLVED that the Modoc Joint Unified School District Board of Trustees supports the Modoc Cares alternative plan - namely; the SOC Alternative (Save Our Communities) and the maintenance of harvest levels at 75MMBF per year.

AND, BE IT FURTHER RESOLVED that the Superintendent provide copies of this Resolution along with attachments, if needed, to interested citizens.

Approved by a unanimous consensus of the Modoc Joint Unified School District Board of Trustees at a regular board meeting on February 18, 1988.

*Frank C. Burk*

Frank C. Burk, Secretary  
Modoc Joint Unified School District  
Board of Trustees

RESOLUTION NO. 88-25

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE  
COUNTY OF LASSEN OPPOSING THE MODOC NATIONAL  
FOREST DRAFT FOREST LAND AND RESOURCE MANAGEMENT  
PLAN AND ENDORSING THE "SAVE OUR COMMUNITIES" ALTERNATIVE

WHEREAS, much of the population of the County of Lassen is dependent upon the ranching and timber industries; and

WHEREAS, substantial funds for the Big Valley Joint Unified School District and county roads are derived from Forest receipts payments; and

WHEREAS, this Board and the citizens of the County of Lassen are vitally concerned with the protection of this valuable national and local resource; and

WHEREAS, none of the alternatives in the Draft Environmental Impact Statement adequately address the dependence of the economy of this and neighboring counties on the resources of the National Forest and the policies by which the forest is administered;

NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of the County of Lassen register its objection and opposition to the preferred plan alternative in the Draft Forest Land and Resource Management Plan as well as all alternative set forth in the Draft Environmental Impact Statement.

BE IT FURTHER RESOLVED that the Board of Supervisors of the County of Lassen supports the alternative plan known as the Save Our Communities (SOC) Alternative developed by local citizens as that which best meets the needs of the local community and best fulfills the goals of sound forest management practices.

The foregoing resolution was adopted at a regular meeting of the Board of Supervisors of the County of Lassen, State of California, held on the 23rd day of February, 1988, by the following vote:

AYES: Supervisors de Martimprey, Jenkins, Gaither, Lanke, Williams

NOES: None

ABSENT: None

Marion M. Jenkins  
Chairman of the Board of  
Supervisors

1

Reso. No. \_\_\_\_\_

ATTEST:

Theresa Nagel  
Clerk of the Board

I, THERESA NAGEL, Clerk of the County of Lassen, State of California and ex officio Clerk of the Board of Supervisors thereof, do hereby certify that the foregoing resolution was adopted by the said Board of Supervisors at a regular meeting thereof held on the 23rd day of February, 1988.

Theresa Nagel  
Clerk of the County of Lassen,  
State of California and ex  
officio Clerk of the Board of  
Supervisors thereof

2

RESOLUTION OF THE BOARD OF SUPERVISORS OF THE  
COUNTY OF SISKIYOU OPPOSING THE MODOC DRAFT  
FOREST LAND AND RESOURCE MANAGEMENT PLAN AND  
ENDORSEING THE "SAVE OUR COMMUNITIES" ALTERNATIVE

WHEREAS, much of the population of the County of Modoc is dependent upon the ranching and timber industries, and  
WHEREAS, 72 percent of Modoc County's commercial timberland is in the Modoc National Forest, and  
WHEREAS, a substantial portion of the funds for Modoc County schools and county roads are derived from forest receipts payments, and,  
WHEREAS, the Modoc County Board of Supervisors and the citizens of the County of Modoc are as vitally concerned with the protection of this valuable national and local resource upon which they are so dependent as is the United States Forest Service, and  
WHEREAS, none of the alternatives in the Draft Environmental Impact Statement adequately acknowledge and honor the dependence of the economy of Modoc County on the resources of the Modoc National Forest and the policies by which the forest is administered.  
NOW, THEREFORE, BE IT RESOLVED that the Board of Supervisors of the County of Siskiyou go on record in support of the Modoc County Board of Supervisors opposing the preferred plan alternative in the Draft Forest Land and Resource Management Plan and as opposing all of the alternatives set forth in the Draft Environmental Impact Statement, and  
BE IT FURTHER RESOLVED that the Board of Supervisors of the County of Siskiyou go on record in support of the alternative plan presented by local citizens known as the Save Our Communities (SOC) Alternative which best meets the needs of the local community while fulfilling the goals of sound forest management practices.  
PASSED AND ADOPTED at a regular meeting of the Board of Supervisors of the County of Siskiyou held on the 23rd day of February, 1988, by the following vote:

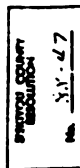
AYES: Supervisors Frey, Jackson, Thackeray and Swansiger.  
NOES: None.  
ABSENT: None.

ATTEST:  
NORMA PRICE, County Clerk

By Philip Mattos Deputy

This instrument is a  
correct copy of the original  
on file in this office.

ATTEST: 1988 9 188  
NORMA PRICE  
County Clerk and ex-officio Clerk of  
the Board of Supervisors of and for  
the County of Siskiyou  
By Philip Mattos c.c.



BEFORE THE BOARD OF SUPERVISORS

COUNTY OF SISKIYOU, STATE OF CALIFORNIA

23rd day of February 1988

PRESENT: Supervisors Patti Jackson, Phillip Mattos, George Thackeray, Roger Swansiger and Norma Frey, Chairman Mattos presiding.  
ASSIST: Supervisor Norma Frey - Morning session.  
COUNTY ADMINISTRATOR: Michael B. Hanford  
COUNTY CLERK: Lisa Chandler  
COUNTY COUNSEL: Frank J. DeMarco  
PURPOSE OF MEETING: Regular

RESOLUTION ADOPTED - IN SUPPORT OF MODOC COUNTY BOARD OF  
SUPERVISORS OPPOSING THE MODOC DRAFT FOREST LAND AND RESOURCE  
MANAGEMENT PLAN AND ENDORSEING THE "SAVE OUR COMMUNITIES" ALTERNATIVE.

It was moved by Supervisor Frey, seconded by Supervisor Swansiger, and unanimously carried that Resolution No. 88-47, being a resolution of the Board of Supervisors of the County of Siskiyou endorsing the Modoc Draft Forest Land and Resource Management Plan and endorsing the "Save Our Communities" alternative, is adopted and the Chairman authorized to sign.

STATE OF CALIFORNIA)  
COUNTY OF SISKIYOU ) ss

I, NORMA PRICE County Clerk and ex-officio Clerk of the Board of Supervisors do hereby certify the foregoing to be a full, true and correct copy of the minute order of said Board of Supervisors passed on 2-23-88.  
Witness my hand and the seal of said Board of Supervisors this 9th day of March 1988

cc: File  
County Administrator  
County Counsel  
Auditor  
Public Works  
Sheriff  
Modoc County

NORMA PRICE  
County Clerk and ex-officio Clerk of the Board  
of Supervisors of Siskiyou County, California

By Philip Mattos  
These minutes are subject to a demand made by the  
Board of Supervisors





## COUNTY OF MODOC

### COMMUNITY PROGRAMS DEPARTMENT

[916] 233-3939 ext. 426

Daniel C. Steinhagen  
Coordinator

Richard Graham  
Assistant Coordinator

- ☐ Modoc-Siskiyou  
Community Action Agency
- ☐ Modoc County P.G.C.
- ☐ Modoc County S.H.G.N.

March 4, 1988

Mr. Doug Smith  
Forest Supervisor  
U.S. Forest Service  
Modoc National Forest  
441 N. Main Street  
Alturas, CA 96101

SUBJECT: COMMENT ON MODOC NATIONAL FOREST DRAFT E.I.S.  
AND MANAGEMENT PLAN

Dear Mr. Smith:

I am writing this letter as a Modoc County Department Head. As the Community Programs Coordinator for the past six years, it has been my responsibility to gather and analyze information concerning the economy of Modoc County and to use that information to secure grant funding from all sources to assist the County in broadening our economic base and in providing direct assistance to our residents who are caught in the effects of the deterioration of Modoc's traditional economic base of logging, agriculture, and government.

I have two main concerns regarding the subject documents. First, that the pre-1980 data used by the U.S.F.S. is too out-dated to provide an accurate picture of Modoc County's present economic situation. This data used by the U.S.F.S. disregards the effects of the national recession of 1981-82 upon Modoc's traditional economic base:

- Lumber: 1 of 3 mills closed with remaining 2 cutback (1 of these closed; 1 recently reopened).
- Agriculture: beef prices running at 70% of production costs since 1980; market for alfalfa and potatoes severely depressed.
- Government: 72% of land area owned by federal government; reductions in force each year since 1984; decline in school enrollment; total job loss 10% since 1981.

201 S. Court St., Alturas, California 96101

Mr. Doug Smith  
Page Two  
March 4, 1988

The following facts, when taken together, provide a picture of Modoc County's present economic situation:

- Designated a DOL Surplus Labor Market Area since 1985
- Ranks last (58th) of California counties in total housing value (1980 census data)
- Lowest median household income of all California counties (California Department of Commerce; IRS)
- 14.5% of population living below poverty (1980 census data)
- 16.8% of unincorporated county area population living below poverty: 3rd highest in state (Department of Housing and Community Development)
- Ranks 22nd of 57 rural California counties in level of need for community development assistance: previous ranking of 42nd showed largest increase in need of any county (California Department of Housing and Community Development, Division of Community Affairs, RDAP)
- Ranks 5th of 58 California counties in highest percentage dependence upon logging industries (Department of Commerce, Office of Economic Research)
- High foreclosure rate with 150 of 225 commercial agricultural operations either in foreclosure or listed as financially distressed (FEMA)
- 25% loss of sales tax revenue first quarter 1985 compared to first quarter 1984; additional 5% loss 1986 over 1985; losses through third quarter 1987
- Business closure rate of 21% from 1980 to 1986 (EDD, ED & R)
- 68% of remaining business establishments employ 0-4 persons (Department of Commerce, Office of Economic Research)

My second main concern is that the model used by the U.S.F.S. in comparing the effects of the various proposed alternatives cannot possibly take into account the fragility of Modoc County's present economic situation: the ripple effect of any down-turn in the revenue stream of Modoc's economy can result in calculable damage. The preferred alternative proposes a 30% cut (from 70 to 47 mbf) in the ten-year average harvest of the forest coupled with a reduction in the grazing allotments of as much as 20%. A simple analysis of the effects of a cut-back in timber harvest

Mr. Doug Smith  
Page Three  
March 4, 1988

of this magnitude is contained in the Shasta Trinity National Forest Plan as prepared by the U.S.F.S. planners shows the following:

- a. Each mbf of stumpage directly supports 10 jobs @ \$20,000 per job from stump through a mill and onto a truck to retail destination and including manufacturing done locally.
- b. Each mbf of stumpage indirectly supports an additional 6 jobs @ \$12,000 per job in the immediate community assuming that the lumber is milled locally.
- c. Each logging truck carries approximately 5,000 bf which represents \$1,450 in wages from stump to truck.

It can be seen that a reduction of 20 mbf of stumpage results directly in a loss of 200 jobs and indirectly in an additional 120 jobs.

Additional information based on historic Modoc National Forest data shows the following:

- a. Average stumpage cost is \$200,000 per mbf (75% pine, 25% fir).
- b. Average wholesale value after milling is \$580,000 per mbf.
- c. The added value of \$380,000 is labor intensive (perhaps 65%) and, for lumber milled locally, all of this value remains in the community.
- d. The annual loss of 20 mbf in timber harvest, then, would result in the loss of over \$7 million of added value.

A restatement of this second concern is that no such economic impact analysis as presented above is provided within the subject documents although the U.S.F.S. has provided such an analysis within the Shasta Trinity Forest Plan. In fact, there is no analysis of the impact of the various alternatives upon Modoc's economy presented within the subject documents even though such analysis is required. Instead, collections of numbers descriptive of Modoc County in 1978 are spread throughout both documents with no cohesive presentation.

In summary, the data used to describe Modoc County's economy are not representative of Modoc today and, therefore, cannot be used to assess the impact of the six alternatives; the model used to process the numbers serves only to compare the alternatives between themselves and does not serve to predict the impact upon Modoc's economy; and, no cohesive analysis of the impact of the Forest Service's plan is provided in the

Mr. Doug Smith  
Page Four  
March 4, 1988

draft documents. As a person, a taxpayer, and as Modoc County staff, I support the Save Our Community (SOC) response to the subject documents and request that the U.S.F.S. work together with Modoc CARES to fashion this SOC response into a workable alternative satisfactory to both parties.

Respectfully Submitted,

*Daniel C. Steinhagen*  
DANIEL C. STEINHAGEN  
Coordinator

DCS:caw

101



BOARD OF SUPERVISORS  
(408) 428-2201

# COUNTY OF SANTA CRUZ

GOVERNMENTAL CENTER

701 OCEAN STREET SANTA CRUZ, CALIFORNIA 95060-4089

DAN FORBES  
(FIRST DISTRICT)

ROSELY LEVY  
(SECOND DISTRICT)

GARY A. PATTON  
(THIRD DISTRICT)

SHERRY MENL  
(FOURTH DISTRICT)

JOE CUCCHIARA  
(FIFTH DISTRICT)

March 7, 1988

Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 Main Street  
Alturas, CA 96101

RE: MODOC NATIONAL FOREST DRAFT LAND MANAGEMENT PLAN

Dear Mr. Smith:

I am writing these brief comments in connection with the draft Land Management Plan for the Modoc National Forest, which has been circulated for public review and comment. The "Conservationist Alternative" plan that has been submitted to you is preferable to the Land Management Plan outlined in the official draft.

I urge that efforts be made to reduce grazing within the Modoc National Forest, and also believe that clear cutting, and the use of herbicides, should be prohibited. Santa Cruz County has very effectively used a "selection harvest" method of timber harvesting, which I believe you should incorporate as a requirement within the Modoc Forest Land Management Plan.

I believe that all cultural and archaeological sites in the forest, such as the Willow Creek and Boles Creek Canyon sites, should be inventoried and protected. The Medicine Lake Highlands Recreation area should be designated as a recreational and visual resource.

I believe that it is critically important that our National Forests be maintained as critical wildlife habitat, and the Modoc National Forest does serve as critical wild habitat for antelope, big horn sheep, deer, raptors, and other wildlife species--particularly these species dependent upon old growth forests.

Douglas G. Smith  
March 7, 1988  
Page 2

Again, I urge your support for the "Conservationist Alternative" to the Land Management Plan that has been circulated for public comment. Thank you for allowing me to make these comments to you.

Yours truly,

*[Signature]*  
GARY A. PATTON, Supervisor  
Third District

GAP:lbj  
1916U



*Bruce Mix*  
SHERIFF - CORONER

February 9, 1988

MODOC COUNTY  
SHERIFF'S DEPARTMENT  
P.O. DRAWER 460  
ALTURAS, CA 96101  
(916) 233-4416

Doug Smith, Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, California 96101

RE: Modoc National Forest General Plan

Dear Doug,

I am giving this letter to the Modoc County Board of Supervisors to attach to their written comments on the proposed General Plan for our forest.

A reduction in the amount of timber harvest and grazing fees on this forest will create a negative economic impact on Modoc County. Other more qualified people have testified orally and in writing about the economic impact and I will not attempt to cover that subject in this letter.

I do, however, have a great concern about my ability to maintain an adequate level of public safety in this county if we are faced with additional negative influences on the budget. Our service at this time is only marginal and failure will result with further reductions in tax revenues.

Modoc County only has three (3) economic bases: 1. Agriculture and Cattle, 2. Timber, and 3. Public Services. The United States Forest Service has a tremendous influence on all three.

I am concerned for our future and would appreciate your consideration of alternative plans which will not have a negative impact on our economy and the living standards we enjoy in Modoc County.

Sincerely,

Bruce Mix  
Sheriff - Coroner

BM/mla

**COOPERATIVE EXTENSION SERVICE**  
**University of California**  
Modoc County

202 West 4th Street  
Alturas, CA 96101  
233-3959 Ext. 400  
or 233-3734

March 2, 1988

TO: Douglas G. Smith, Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

RE: Draft Forest Land and Resource Management Plan

The Modoc National Forest is to be commended for the extensive work in development of this document. It is very voluminous and contains many specific standards that often received a disproportionate amount of attention.

My interpretation of the Preferred Alternative is that the philosophy and intent of this alternative is not in the best interest of the region's residents.

The Plan's Analysis of the Management Situation is very comprehensive in identifying the region's economic, social, and resource environments. However, the Preferred Alternative does not reflect these needs. It ignores its own analysis. Whatever the reason, the Preferred Alternative does not fully evaluate the impact of these decisions on the region.

The wildlife component of this alternative is of major concern, but I feel it is weighted too much in favor of wildlife at the expense of social and economic issues. Habitat improvement is vital, but aggressive management techniques beyond livestock AUMs and timber harvest must be included. Social, economic, and resource issues are equally important. A more sensible solution is necessary to achieve a collective benefit.

I recommend the Current Alternative of the plan be adopted until such time the local needs are more realistically addressed.

Doug, I empathize with you and your staff on this effort. As always, our staff and the resources of the University in subject matter and public policy fields are available to serve the Forest.

Sincerely,

Robert E. Savage  
County Director

RES:cgb





DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS ELECTRONIC SYSTEMS DIVISION (AFSC)  
HANSCOM AIR FORCE BASE, MASSACHUSETTS 01731-5000

15 MAR 1988

REPORT  
AUTHORITY

ESD/SYO

SUBJECT: Comments on Draft Environmental Impact Statement for Modoc National  
Forest Land and Resource Management Plan

TO: Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

1. We have reviewed your Draft Environmental Impact Statement for the Modoc National Forest Land and Resource Management Plan, dated December 1987 and wish to take this opportunity to comment. Remote, unmanned communication facilities/antennae are an integral component of this nation's private and governmental communication's systems, and their importance will continue to rise as communication demand increases. Optimum locations (such as prominent peaks) are at a premium because of the difficulty of using line-of-site communication technologies to traverse remote mountainous areas. We request that the Modoc National Forest Management Plan address present and future communication site requirements. Such consideration would provide guidelines for the planning of communication systems.

2. To facilitate the planning of future electronic communications systems, we recommend that each alternative plan consider its prospective effect on present and future communication sites and facilities. An analysis of the impact each alternative's proposed designations of special management areas and visual quality objectives would have on both present and future communication sites would prove valuable. Plans to accommodate the future development of remote communication sites on presently non-dedicated peaks would also be of value to developers of communications systems.

3. We appreciate the opportunity to comment on the DEIS and Resource Management Plan.

*James A. Lee*  
JAMES A. LEE, Col, USAF  
Director  
Over-the-Horizon Radar Systems Directorate  
Deputy Commander for Strategic Systems



Modoc County Road Department

ROBERT J. WICKENDEN, Road Commissioner  
202 WEST FOURTH STREET  
(916) 233-3825  
ALTURAS, CALIFORNIA 96101

Our File:

March 7, 1988

Mr. Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 North Main St.  
Alturas, CA 96101

Re: Comments to the Modoc  
Forest Draft Forest Land and  
Resource Management Plan and  
Environmental Impact  
Statement

Dear Mr. Smith:

The above referenced plan represents a decrease to Modoc County Road funding. Presently Modoc County receives 62% of its total budget from Timber Revenue. The Road Department is falling behind at a rate of \$350,000 annually to even maintain a status-quo. Without the funding at its present level the Road Department will not be able to function at all. Therefore, the Road Department must support the SOC Alternative (save our communities).

Sincerely,

*Robert J. Wickenden*  
Robert J. Wickenden  
Road Commissioner

RJM/110



## Modoc County OFFICE OF EMERGENCY SERVICES

JOSEPH SPEAR  
DIRECTOR  
COURT HOUSE  
ALTURAS, CA. 96101  
(916) 233-3639  
EXT. 209  
Feb. 29, 1988

Mr. Doug Smith  
Supervisor  
U.S. Forest Service  
441 N. Main St.  
Alturas, CA  
96101

Dear Mr. Smith;

After discussion of the contents and potential fiscal effects of the U.S. Forest Service proposed Plan, this office is opposed to the Plan.

Modoc County's fiscal input is strained as it is and further cutbacks are considered as negatively influencing future budgets.

This office operates on a part-time management basis, with a reduced operating budget during the current fiscal year. The opinion is that further cuts would jeopardize our ability to plan for and operate during emergency situations.

Sincerely,

  
JOSEPH F. SPEAR

JFS/hs

cc: Board of Supervisors

## MODOC COUNTY BOARD OF EDUCATION

### RESOLUTION 888-01

Resolution supporting the SOC Alternative (Save Our Communities) and opposing the Modoc Draft Forest Land and Resource Management Plan.

WHEREAS, the Modoc Draft Forest Land and Resource Management Plan does not conform to The Organic Act of 1897 and the Sustained Yield Act of 1960, both congressional acts; and

WHEREAS, because the Modoc Draft Forest Land and Resource Management Plan has an unfavorable economic impact on ranches, the timber industry, education, business and professional community or other, it is time to reconsider the plan; and

WHEREAS, the Modoc Draft Forest Land and Resource Management Plan shows substantial reductions in forest receipts supporting the quality education of Modoc County children and maintenance of Modoc County roads regularly used transporting children to and from school; and

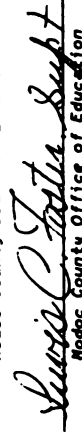
NOW THEREFORE BE IT RESOLVED, that the Modoc County Board of Education supports the Modoc Cares alternative plan - namely; The SOC Alternative (Save Our Communities) and the maintenance of harvest levels at 75MMBF per year.

AND BE IT FURTHER RESOLVED, that the superintendent provide copies of this resolution along with attachments, if needed, to interested citizens.

Adopted by a unanimous consensus of the Modoc County Board of Education at a regular board meeting on February 2, 1988.

  
Adelle M. Sizemore

Modoc County Board of Education

  
Susan C. Foster, Supt.  
Modoc County Office of Education

# LANGELL VALLEY IRRIGATION DISTRICT

ROUTE 1 - BOX 43  
 DONANZA, OREGON 97423

OFFICE AT LORELLA

February 11, 1988

Plan Comments  
 Modoc National Forest  
 441 E. Main Street  
 Alturas, Calif. 96101

Gentlemen:

I want to thank you for the opportunity to view and comment on the drafts for Modoc National Forest. We commend you on your goals of improving the quantity and quality of downstream water. You have acknowledged superior water rights of downstream waterusers (described on pages 3 through 27). We encourage you to continually work with the Bureau of Reclamation on any development or expansion of any increased water storage or use.

Respectfully submitted for the Lamell Valley Irrigation District Board of Directors.

*Don Douglas*  
 Don Douglas, Engineer

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## SHASTA COUNTY OFFICE OF EDUCATION

MARJORIE S. GATES, SUPERINTENDENT

1644 MAGNOLIA AVENUE • REDDING, CALIFORNIA 96001 • (916) 244-4600

BOARD OF EDUCATION  
 DAVID EDWARDS  
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 DAVID EDWARDS  
 DAVID EDWARDS  
 DAVID EDWARDS

March 2, 1988

Mr. Douglas G. Smith, Supervisor  
 Modoc National Forest  
 441 Main Street  
 Alturas, California 96101

SUBJECT: MODOC LAND MANAGEMENT PLAN

Dear Mr. Smith:

I support the purpose and objective of Modoc Forest, which is to maintain and protect the stability of our local forest dependent communities, conserve our National Forest for multiple use, maintain wildlife populations and improve the quality of life for those national forest dependent communities.

Congress has mandated that our National Forests be harvested and the sustained yields of those forests provide economic stability for the communities dependent upon the resources provided by the forests. The Organic Act of 1897 has been interpreted by the U. S. Forest Service as a statute to mandate community stability in areas dependent on the National Forest. The Sustained Yield Act of 1960 ensures that stability. The proposed Modoc Draft Land and Resource Management Plan does not conform to these two congressional acts.

We strongly recommend maintenance of harvest levels at or above 75 million board feet per year which is stated to be capable and allowable within all environmental constraints to ensure stable funding to schools and roads. The economies of all our forest dependent communities will be dramatically affected.

To this end, I recommend the Save Our Communities (SOC) Alternative.

Sincerely,

*Marjorie S. Gates*  
 MARJORIE S. GATES  
 Superintendent of Schools

MSG:blm

cc: Mr. Lew Foster, Supt., Modoc County Office of Education

Shasta County

## DEPARTMENT OF AGRICULTURE

MAIN OFFICE 1916-042 1511 EXT 280

525 SO. FOOTHILL DRIVE  
YREKA, CALIFORNIA 96097

November 23, 1987

EDMOND W. HALE  
AGRICULTURAL COMMISSIONER AND  
SEALER OF WEIGHTS AND MEASURES

BRANCH OFFICE - TULELAKE (916) 687-5310



Mr. Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

Dear Mr. Smith:

Ref: Draft FIS for Land and Resource Management Plan

Thank you for the opportunity to comment. Although the document is enormous, it is totally inadequate. It is difficult for the average person to read and decipher what is the best alternative.

The best alternative is not even considered, and that would be to maximize timber production, maximize timber reforestation, while protecting the environment. These objectives are compatible and possible with good common sense management. I would hope that you come up with a better management alternative for the public to comment on, and that you present all the alternatives in a more understandable manner.

Sincerely,

Edmond W. Hale  
Agricultural Commissioner

EWI:jh  
cc: Paul Barker  
Regional Forester

## SHASTA COUNTY BOARD OF SUPERVISORS

SHASTA COUNTY COURTHOUSE  
P.O. BOX 880  
REDDING, CALIFORNIA 96099

TELEPHONE 225-5557

March 7, 1988

Bob Rowaneth, District 2, CHAIRMAN  
John Reri, District 1  
Abe Hathaway, District 3  
Don C. Madden, District 4  
Ron J. "Pete" Peters, District 5  
Phyllis Caldwell, Administrative Assistant

Douglas Smith, Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

Dear Mr. Smith:

As a member of the Shasta County Board of Supervisors I am vitally interested the outcome of the Modoc Draft Forest Land and Resource Management Plan.

As a result of discussions with my constituents and review of the material published I specifically support the "SOC Alternative". It is important that the Range Forage Allocation be maintained at or above current levels with promotion of firewood cutting in Juniper stands. Improvements to forage should be proportionately allocated between livestock and wildlife based on current use and transitory rangeland should be utilized to increase areas available for forage.

There is a need to obtain additional data regarding yields on selective harvesting systems, as opposed to clearcutting. I also strongly object to clearcutting near state highways and communities.

At the present time as proposed the Modoc National Forest Land and Resource Management Plan is unacceptable. Its implementation will result in severe economic damage to the communities and county governments that are within and around the Modoc National Forest. Specifically the Snag Recruitment Program as proposed would result in a loss of timber receipts for local community schools and county roads in the amount of \$1 million. In addition, the Federal Treasury stands to lose as much as \$3 million per year.

Thank you for your consideration of my concerns. The Modoc National Forest Plan must be changed to provide a workable solution to the needs of the forest dependent communities.

Very truly yours,

  
Abe Hathaway  
Supervisor, District 3

AM:pc

# Modoc County Farm Bureau

105 W. 2ND STREET  
PO BOX 4082 TELEPHONE (916) 233-4444  
ALTURA, CALIFORNIA 95101

Douglas Smith, Supervisor  
Modoc National Forest  
441 N. Main Street  
Alturas, CA 95101

March 7, 1988

Dear Doug,

The Modoc County Farm Bureau represents approximately 750 families. Two thirds of our members are actively involved in some form of production agriculture. Many of them will be directly affected by the proposals of the Modoc Forest Management Plan as they relate to grazing and timber. Our other members will feel the impact of the plan through it's affect on schools, roads and the local economy.

It has become abundantly clear that there are a great number of questions being raised over portions of the plan. The questions involve, among other things, the implementation of new programs such as snag recruitment and increased wildlife populations and the validity of the base inventory data used as a foundation of the entire plan. In a 120 day comment period, it is difficult to be much more constructive than to just raise questions and concerns. It appears that there has been more doubts raised than should be acceptable for a plan that will impact so many lives in this county for such a long period of time.

The Modoc County Farm Bureau realizes that the comment period is just that, a comment period, and that the forest service does not wish to get in a debate over the questions being raised. There is no doubt that many of the issues being raised are due to different interpretation, but you can understand the feelings of our members who will live with this plan long after the forest service personnel that have written it have transferred elsewhere. We must make sure that anyone who reads the plan interprets it the same way.

It is the feeling of the Modoc County Farm Bureau that the best approach is to not approve any of the six alternatives and to form a local task force to iron out all of the doubt, questions and misunderstandings raised during the comment period. We are eager to participate fully in this endeavor.

Sincerely,

*Alan Curtis*

Sean Curtis  
President

Les Leids Resource Conservation District  
Rt. 1, Box 246AA  
Tulelake, California 96134  
March 4, 1988

Mr. Douglas Smith,  
Forest Supervisor,  
Modoc National Forest  
441 North Main Street  
Alturas, California 95101

Dear Mr. Smith:

The Lava Beds Resource Conservation District (LRCD) would like to comment on the Modoc National Forest (MNF) Draft Forest Land And Resource Management Plan (a.k.a. the Forest Plan) and the associated Draft Environmental Impact Statement (DEIS).

The LRCD District is on the West Side of the Modoc National Forest.

The LRCD is aware that the Soil Conservation Service (SCS) State Range Conservationist felt some of the methodology used and attributed to SCS was inappropriate in the area of *forage allocation*.

The LRCD is requesting the local SCS representative to further study the document to attempt to determine its accuracy in the area of forage allocation.

The LRCD recommends the MNF consider the financial implications of its actions in all management decisions to lessen the adverse impacts on the already overburdened local county budgets.

Sincerely,

*Les Lequieu*

Les Lequieu, Director LRCD

17774 4-1-88

COOPERATIVE EXTENSION SERVICE  
University of California

Modoc County

202 West 4th Street  
Alturas, CA 96101  
233 3939 Ext. 460  
or 233 0734

March 7, 1988

Douglas G. Smith  
Forest Supervisor  
Modoc National Forest  
441 North Main Street  
Alturas, CA 96101

Re: Draft Forest and Land Resource Management Plan

Dear Doug:

It is obvious that your forest service staff has put a tremendous amount of time, effort, and thought into this plan. The management of our renewable natural resources for future generations is a conscientious task with many differing opinions. All user groups will have to accept changes in the final plan, however, if the energies of all these user groups is channeled constructively, I believe a sound final plan can be developed which can be accepted by most user groups and benefits the Modoc National Forest.

I would urge you to take the Experimental Stewardship approach of forming a Technical Review Team to assist you in writing the final Forest Land and Resource Management Plan. I believe this process would enhance the acceptance of this final plan and create a very open working relationship between the Forest Service and the various user groups of the forest.

As the University of California Cooperative Extension Livestock and Range Area Advisor for Modoc County, and a concerned citizen, I am willing and available to participate and assist you in your endeavors to develop the final Forest Land and Resource Management Plan.

Attached are general and specific comments regarding the Draft Forest Land and Resource Management Plan.

Sincerely,

*Richard Delmas*

Rick Delmas  
Livestock/Range/Renewable Resource  
Area Advisor

RD/cb

University of California and the United States Department of Agriculture Cooperating

GENERAL COMMENTS REGARDING  
DRAFT FOREST AND LAND RESOURCE MANAGEMENT PLAN

1) In Chapter 2, page 5: Socio-Economic Section:

The statement is made that Community Economic Stability will be maintained. 70% of the land base in Modoc County is federally owned either by the B.L.M. or the U. S. Forest Service. Because of the large land holdings of the Federal Government in this county, any resource management plan by either agency must be scrutinized closely to ascertain its possible and/or probable effect on the local economy. This Forest Service Plan has not adequately addressed the issue of local economic stability under each alternative.

What are the economic impacts to the County's revenues?

What effects would reduced livestock grazing have on the local economy?

What are the impacts to the local ranching community?

What are the impacts to the local timber industry?

What are the impacts to the local business community?

What effect would each alternative have on the population of Modoc County?

Would increased recreational use generate enough local income to offset reduced grazing and timber harvest revenues?

2) Prescription Standards & Guidelines:

There is no indication which Standards and Guidelines are required by law (U.S. Legislature and Federal Register) and which have been written by the Modoc National Forest Service Staff. Without this information it is difficult to comment on these standards and guidelines.

3) Value of an AUN:

The value of an AUN for this report was \$11.47, which was based on the economic principle of willingness to pay. The actual product (red seat) produced from the Modoc National Forest Service land is approximately \$40/AUM on today's retail seat market. This figure is above the \$30 figure for hunting or recreational use and above a much higher contribution to the national economy then is indicated in this report.

6) This plan states very specific guidelines and management prescriptions which will be adhered to.

How do you plan to monitor and evaluate the effects of these management activities?

What monitoring techniques do you plan to use?

Will additional range and wildlife personnel be hired to monitor, evaluate, and write up allotment management plans?

If stated range, timber, wildlife, riparian, water quality, and habitat improvement goals have not been reached within the first decade (for whatever reasons, such as budgets, weather, manpower, etc.) could you be court ordered to fulfill these goals (requirements)? What would be the ramifications of such a court order to the local ranching community, local economy, and the Modoc National Forest?

5) Western Juniper invasion of the rangelands is generally increasing throughout the Modoc National Forest reducing forage production for domestic livestock, feral horses, and wildlife. This plan doesn't address this issue in any detail. A more detailed plan is needed.

6) The overall tone of this plan seems to be combative (pitting one resource against another) rather than symbiotic. True, there are always trade-offs between different resource uses, but how you state these trade-offs affects how people perceive the resource problems and their willingness to accept the trade-offs.

7) Obviously, there are many different user groups and many conflicting areas within the Modoc National Forest Management Plan. To facilitate the preparation of the final Management Plan, I believe it would be beneficial to form a committee of selected individuals from the various user groups. This committee would help the Modoc National Forest formulate the final Forest Service Plan. This committee could be patterned after the Experimental Stewardship Process which is readily accepted both nationally and in Modoc County.

# SPECIFIC COMMENTS REGARDING THE FOREST SERVICE PLAN: EIS

## Chapter 4, P. 4-3, Overall Management:

Improved rangeland condition--does this mean all rangeland is in poor shape? If so, I think you need to prove it through documentation.

Even aged timber with a diversity of age classes -- clarify this statement. How can you have even aged timberlands throughout the forest with a diversity of age classes.

Improved water quality and riparian areas--are all riparian areas and water quality poor now throughout the forest?

Higher populations of snag-dependent species, and early successional wildlife. If snag dependent species have viable populations now, why is it necessary to increase their populations? Does management for early successional wildlife mean you will allow f feet regeneration to increase grass, forbs, and browse availability?

P. 4-9 Wildlife and Fish:

2. Not all riparian areas will have or can have viable fish populations.

P. 4-19 Wildlife and Fish:

There is no need to provide forage for deer on summer range if the winter range is not adequate to maintain said population of deer. Before reducing livestock grazing you should first look at year-round deer forage needs. What impact would increased deer numbers have on private landowners? What impact would increased deer numbers have on the local economy?

P. 4-28 10 (a): Change encourages to allow.

P. 4-29 12-a-(4): This general rule for grazing gives you little or no flexibility for innovative allotment management planning. Secondly, some poor ranges will remain in poor shape no matter if they are grazed heavily, lightly, or not at all. I think you should strike that entire second sentence.

P. 4-29 12-a-(6): This statement indicates that there is a problem in all allotments, which isn't true. Add between to and improve: maintain or

P. 4-29 12-b: add wildlife to list of animals included in this sentence: they utilize this resource also.

P. 4-30-12-d: strike "while maintaining overall resource productivity." You have already mentioned this in a-2 and this is the theme of your overall range management S & G. Continual statements like this

throughout this document continually stress the competition between user groups, create a bias in this report, and will in the end, believe, create greater conflicts for the forest Service. The Forest Service should stress symbiotic relationships throughout this plan rather than competition between user groups.

4-30 12-g: Change this statement to read:  
Use the Hodge/Wasche Experimental Stewardship Program to establish resource allotment management plans for the Warner Mountain Ranger District.

4-34 (17) e: Soil Coespersion -- good guideline

4-35 17 a: Erosion 3 -- sound standard

4-40 21 f: Redundant -- same as e

4-41 a 1 b: -- isn't the eagle population stable or increasing? If this is the case then Bald Eagles are recovering. State this.

4-42 3-a: A reintroduction and management plan should be in place prior to the reintroduction of any species. Numbers should not be introduced into the plan without the carrying capacity having been assessed in a management plan.

4-43 Osprey a: What is the definition of an active nesting site. Used once every 20 years, 10 years or what?

4-44 9-a: Is this amount of thermal cover necessary for deer? What percentage of the deer herd population winter on private vs. federal land?

4-45 d-1: Snags -- are snag-dependent species endangered under present management practices or do we have viable populations of snag dependent species? Why not allow the natural recruitment of snags to occur throughout the forest?

4-55 Element D - Range 1: Wild Horses and Burros  
While the Wild Horse and Burro Act legislated the protection and management of wild horses on our rangeland, their impact on the rangelands should be assessed and recorded annually so that better management plans can be developed for wild horses in the future.

4-60 Element C 4: The Experimental Stewardship Program should be included when developing the Big Horn Sheep Plan for the Warner Mountain Ranger District.

4-110 Element c Wildlife 3-2:  
What constitutes cover for deer? A 30% juniper cover may not be necessary especially if rocky cliffs and bluffs are present. A study from LeGrande, Oregon, indicated that a 10-20% cover requirement was adequate.

4-110 Element C Wildlife 3 - # 1.2.4.5: should be guidelines rather than standards to allow flexible resource management decision

4-110 Element C Wildlife 3 - # 1.2.4.5: should be guidelines rather than standards to allow flexible resource management decision making.

4-111 Element D - Range 1-2: It should be stressed that improved allotment management plans will be adopted and evaluated before livestock numbers are reduced. Under your management direction "maintenance level of management" it can only be assumed you will cut animal numbers rather than develop new management approaches.

4-112 3-b-1: What constitutes an active lek? Historical data? Actual activity within the last 5 years? It should be actual activity within a designated amount of time.

4-113 c: Poor standard -- what are you going to do, shoot the deer if they over utilize bitterbrush and there is no livestock grazing on an allotment. This should be a guideline not a standard. Bitterbrush utilization is also dependent upon the number of bitterbrush plants per acre, deer concentrations and livestock grazing.

4-117 a-6-a and b on top p.4-118:  
Make these guidelines rather than standards which will allow you greater management flexibility.

4-121 b-1: This standard may jeopardize any perennial grasses/forbs reseeding possibility on a given range site due to annual grass invasion. It seems more realistic to assess potential native species re-establishment and determine the course of action to take (native vs. introduced species) prior to your treatment. Does this need to be a standard?

4-149 Element C-2-1-e: Questionable standard-- What is the percent of natural sedimentation in a stream vs. that caused by activities such as roads, logging, recreation, livestock, etc. Over 15% of a spawning area substrata may be changed each year just by natural causes.

4-150 Element C-2-1-C,d,e: Better suited for guideline.  
Enhance cold water fisheries in streams by improving, and/or maintaining stream stability, pool/riffle ratios, and shading end/or narrowing of channels.

4-150 2 e: Delete "except"

4-151 Element D - Range a: This standard, if adhered to throughout the forest, would/could eliminate all livestock grazing on the forest, especially on allotments where animal inputs are indicated in the plan. Why not say: "All riparian areas will be managed in such a way as to be maintained and/or in improving condition. Allotment management plans will be adopted which take into consideration and enhance riparian improvement."



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- P. 4-151 Element D 1-c: Change to guideline. Again a specific statement for a condition which may or may not be true. What constitutes stream bank stability? Streamflow (peak), gradient, roads, logging, recreation, livestock, etc., all have an effect.
- P. 4-152 Element D 2: Change to "where stream channel degradation has occurred, undertake erosion control measures."
- P. 4-153 Element E 1-c: What is the advantage of providing shade on intermittent streams?
- P. 4-154 Elements F & E 3-b-2: How do you know that diurnal water temperature variations didn't exceed 5 degrees and/or 72 degrees naturally?

MAR -7 1973  
MS





