



United States
Department of
Agriculture



Forest Service

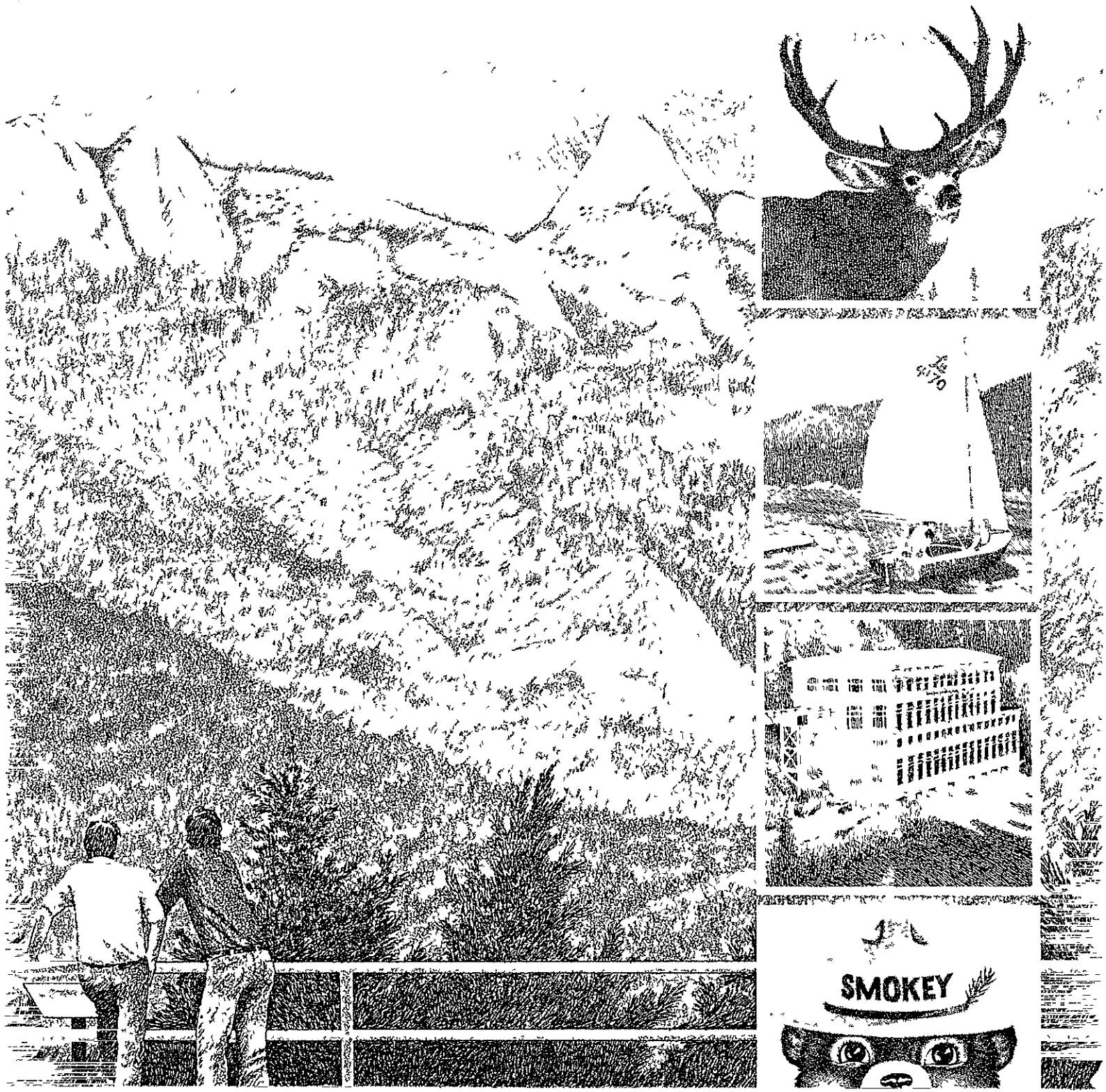
Pacific
Southwest
Region

1991

FINAL ENVIRONMENTAL IMPACT STATEMENT

Forest Land and Resource
Management Plan

Sierra National Forest



SUMMARY
FINAL ENVIRONMENTAL IMPACT STATEMENT

Sierra National Forest
Land and Resource Management Plan

Type of Action:	Administrative
Responsible Federal Agency:	USDA, Forest Service
Responsible Official:	Ronald Stewart, Regional Forester Pacific Southwest Region USDA, Forest Service 630 Sansome Street San Francisco, California 94111
Cooperating Federal Agency	USDI, Bureau of Land Management
Responsible Official	Ron Fellows Bakersfield, California
For Further Information Contact:	James L. Boynton, Forest Supervisor Sierra National Forest 1600 Tollhouse Road Clovis, California 93612 Telephone: (209) 487-5155

Date of Transmission to Environmental Protection Agency and the Public:

Final: March 1992

USDA policy prohibits discrimination because of race, color, natural origin, sex, age, religion, or handicapping condition. Any person who believes he or she has been discriminated against in any USDA-related activity should immediately contact the Secretary of Agriculture, Washington, DC, 20250

A. PURPOSE AND NEED

(Chapter 1)

A proposed action and alternatives to the proposed action, for managing the land and resources administered by Sierra National Forest, are described in this Final Environmental Impact Statement (FEIS). The proposed action serves as the basis for the proposed National Forest Land and Resource Management Plan (Forest Plan), which accompanies this FEIS. To meet the purposes of the National Environmental Policy Act, the FEIS and Forest Plan are treated as a joint document.

The FEIS and Forest Plan are the culmination of several years of study, surveys, and planning conducted under the authority of the Multiple Use and Sustained-Yield Act of 1960 and the Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act.

The area is basically Sierra National Forest, located in Fresno, Madera, and Mariposa Counties of central California. The Forest is an administrative unit within the Pacific Southwest Region (Region 5), Forest Service, U S Department of Agriculture. A small portion of Sierra National Forest, administered by Inyo National Forest, is excluded, while a small portion of Sequoia National Forest, administered by Sierra National Forest, is included.

The goal of the Forest Plan is to develop a fully integrated mix of management practices, which. 1) provide for use and protection of Forest resources, 2) satisfy guiding legislation, and 3) address local, regional, and national issues. The Plan directs the way the Forest will be managed for the production of goods and services in a way that maximizes long-term net public benefit in an environmentally sound manner.

Net public benefit is measured in three separate categories. 1) cash receipts, such as timber sales; 2) noncash benefits, such as dispersed recreational user's willingness to pay for values; and 3) nonpriced benefits, such as visual quality. Present net value (PNV) is the portion of net public benefit resulting from the sum of cash receipts and noncash benefits minus the costs to produce them. PNV in the Forest changes most in relation to the size of the timber and recreational programs, with noncash benefits comprising 85% to 90% of total PNV. Nonpriced benefits change most in relation to the level of vegetative treatments, primarily timber harvesting and prescribed burning of forest and range land.

Development of the Forest Plan began with public efforts to determine public issues. Management concerns were also identified and combined with public issues to form an integrated list of issues and concerns. These issues and concerns were used to guide the development and evaluation of alternatives. Forest issues, found on pages 1-4 to 1-6 of the FEIS, are primarily concerned with

- Recreational and scenic opportunities
- Wild and Scenic River classification
- Fish and wildlife habitat and management
- Timber management
- Energy conservation
- Hydroelectric development
- Resource management and protection
- Spotted owls
- Budget

B. PROPOSED ACTION AND ALTERNATIVES (Chapter 2)

A range of alternatives were developed in response to planning questions, legislation, and regulations. Each alternative has a different management emphasis, resulting in different levels of resource use and management. Forestwide standards and guidelines will assure quality land stewardship in all alternatives. The multiple use nature of the alternatives provides a mix of outputs and insures that no single resource is emphasized or exploited to the extent that other resources are excluded or irrevocably damaged. Six alternatives are considered in detail.

Alternative A (Preferred)

The Proposed Plan will represent a balanced management program with a decrease in some market resources. Dispersed recreational and wilderness uses will be stressed, with opportunities for quality wilderness experiences enhanced. Timber benefits will be commensurate with costs, while recognizing essential balance with other uses and resource capabilities. Fish and wildlife habitat management programs will be enhanced and/or greatly increased.

Alternative B (Current)

This alternative will represent no change, continuation of the Forest's current programs and activities into the future. Emphasis will be to maintain a moderate level of timber production and range forage utilization and an equal program of developed and dispersed recreational opportunities. Efforts to make optimum use of the Forest's land will continue. Adverse environmental impacts will be minimized, and the Forest's resources protected and conserved. Any deteriorated resources will be scheduled for rehabilitation. The budget will be restricted to 1982 levels with adjustments for inflation.

Alternative C (RPA)

This alternative will represent the role the Forest will have to play to best meet the 1980 RPA program. It will emphasize timber and range forage production, where benefits are commensurate with costs, and will maintain the environment, including wildlife habitat on all Forest land. Dispersed recreational opportunities will be stressed. Developed recreational opportunities will be

maintained and new developments from private investments, on Forest land, will be encouraged. Wilderness management will be directed toward increasing opportunities for a high quality wilderness experience.

Alternative D (Low Budget)

This alternative will represent a basic or low budget level of activities. It will be near the minimum of activities and production prescribed by laws, regulations, and Forest Service management direction. It will respond to the basic responsibilities of control, protection, and use of the Forest's air, land, and water resources. Production will be concentrated on existing roaded land base and activities will be dispersed as widely as practicable. Actions will be implemented primarily to protect and conserve resources and to rehabilitate resources where deterioration has occurred.

Alternative E (Amenity)

This alternative will emphasize nonmarket (amenity) values, such as dispersed recreation, wilderness, wildlife and fish habitat, and environmental quality, with fish and wildlife and wilderness receiving the primary emphasis. Timber harvest volumes will be reduced from current levels. An uneven-aged harvest system will be implemented on all tractor ground. Commodity resources will be managed to avoid conflicts with or enhance amenity values, such as visual resources, wildlife, and fish. Developed recreation will remain near present levels.

Alternative H (Market)

This alternative will more fully use the Forest's productive capacity. It was formulated to portray market opportunities. Even though production will be emphasized, environmental quality will be a major concern. Timber, range, mineral resources, and developed recreation will be emphasized. Nonmarket resources will be managed at economically efficient levels.

C. AFFECTED ENVIRONMENT (CHAPTER 3)

The Forest extends from rolling chaparral-covered foothills to high alpine peaks on the Sierra Nevada Crest. Vegetation, soils, and wildlife are diverse and recreational opportunities are numerous. Three major river systems drain the Forest. Merced, San Joaquin, and Kings Rivers flow westward through deep canyons to the western slopes of the cordillera and the San Joaquin Valley beyond.

Located in central California, the Forest is bordered on the west by the agriculturally rich San Joaquin Valley and its growing population. The Forest has a strong recreation orientation, with a high proportion of visitors

coming from Los Angeles and San Francisco areas. Timber and water yield are significant, as are opportunities for wildlife habitat improvement. Opportunities to increase grazing are modest, stemming mainly from multipurpose resource management considerations on annual grasslands. The varied socio-economic conditions are an important aspect of natural resource management. Consideration of current conditions and future needs indicate there are many opportunities in the Forest. There are also many demands, all of which cannot be met. Some of the major conditions and considerations are described here.

Economics

The cost of managing the Forest into the future, using current management practices and intensity is estimated to be \$19.1 million (includes appropriated and nonappropriated funds). By the end of the fifth decade, an estimated \$219 million of benefits will be produced annually from recreation, timber, range, wildlife and fish, minerals and water resources.

Annually, by the end of the projected fifth decade, about \$35.8 million will be returned to local counties as a result of Forest activities. These federal payments are in lieu of local taxes (25% of gross receipts) and state yield tax payments, and are used for maintaining roads and schools in Fresno, Madera, and Mariposa Counties.

Recreation

The Forest ranks among the top 15 of all National forests in recreational use. As a result, increasingly higher levels of user supervision have become necessary in recent years. Demand for dispersed recreational areas and developed sites are expected to increase substantially each decade through 2015. Conflicts for activity space among user groups, between recreational activities and resource management and other uses are expected to intensify.

There is a need to improve low standard facilities as well as provide additional facilities for use in short supply. Additional supervision and control of visitors will be required, particularly in dispersed recreational areas, to resolve or reduce conflicts and to mitigate or eliminate environmental degradation resulting from recreational activities.

Few other national forests offer the range of scenic attractions found in the Forest. In the past, visual resource management has focused on constraining resource activities. This emphasis will continue. However, some desired scenic characteristics may be lost. As an example, some overmature tree stands will become vulnerable to insects and disease and standard management practices will dictate these stands to be harvested. This will affect that area's short- and long-term scenic quality.

Wilderness

Among the wilderness areas of the central and southern Sierra Nevada Range are some of the most popular and some of the least popular wilderness areas in California, as evidenced by user data. Within a 150-mile radius of the Forest, more than 7.25 million acres of land are designated, proposed for designation, or scheduled for wilderness study. The Forest has almost 528,000 acres in five designated wilderness areas.

Heavy use of some wilderness areas indicated a need for user controls. Early in 1970, limits on group size and length of stay were implemented. User quotas have been established for entry points and certain travel corridors or zones. There are, however, many areas which are rarely visited, indicating a need to disperse visitors to these areas.

Fish, Wildlife, and Sensitive Plants

The Forest provides suitable habitat for about 315 wildlife species and 31 fish species. Several species receive special management attention. Of particular concern are two endangered birds (peregrine falcon and bald eagle), two threatened fish (Lahontan and Paiute cutthroat trout), three Forest Service sensitive birds (California spotted owl, goshawk, and willow flycatcher), three sensitive mammals (fisher, pine marten, and Sierra red fox) and several game animals. The Forest is solely responsible for maintaining the habitat of these Forest Service sensitive species. Additionally, 19 sensitive plant species also receive special management attention. Sensitive plants are protected or enhanced on a project-by-project basis. Species management guides will be developed for each plant which will help protect them. The policy of this region directs the Forest to give special management emphasis to sensitive plant species. This ensures their viability and precludes trends toward endangerment that may result in the need for Federal listing. Where projects are absent, protection is provided by natural conditions, such as lack of access, and monitoring where the public has access.

The Forest provides suitable habitat for at least 10 species of game animals. Commonly hunted species are: band-tailed pigeon, mountain quail, valley quail, turkey, gray squirrel, Douglas squirrel, black bear, mule deer, and two species of rabbit. Mule deer provide the most significant source of recreation and the Forest has cooperatively developed management plans for the five local herds with the California Department of Fish and Game. The goal is to restore the Forest's herds to population levels occurring during the 1960's. The Forest is currently modifying timber harvest and reforestation practices in about half the key areas and conducting about 1,000 to 1,500 acres of habitat improvements a year to accommodate deer.

The Forest contains 1,800 miles of streams and rivers and 480 inventoried lakes. Only 8 species of fish are native to the Forest. Rainbow, brown, and eastern brook trout are the predominant game fish. The quality of fishery habitat in the Forest is generally good. Management activities that can degrade fishery habitat include hydroelectric development, road construction, timber harvest, and grazing.

Riparian

The riparian areas in the Forest have not been individually inventoried or mapped. However, available data indicates the Forest has about 480 lakes, 1,800 miles of perennial streams and rivers, 5,100 acres of wet meadow, and 400 acres of dry meadow.

Riparian areas are extremely important habitat components to fish and wildlife. In addition, riparian areas protect water quality by filtering sediment and providing vegetation for streambank stability. Management activities that influence the quality of riparian areas include timber harvesting, road construction, grazing, hydroelectric development, and recreation.

Range

About 37,000 AUMs of forage production on 36 active allotments are realized in the Forest. The majority of commercial grazing is for cattle, with moderate amounts for horses used by commercial packers and recreationists. Available forage is used by 25 ranchers who depend on the Forest mainly for spring and summer feed to maintain their ranch operations.

Only 104,000 acres (11%) of the Forest are suited for primary grazing. About 33% is located in annual grass-oak woodland below 4,000 feet. Less than 5% of the primary range is in poor condition. Periodic measurements show range conditions to be either maintaining or improving. Vegetative treatment provides opportunities that have potential to increase present forage production substantially. Coordination between cattle use and wildlife needs, especially deer use, may be necessary.

Timber

Forested land is estimated to be 563,000 acres. Most of the commercial timberland occurs in four major forest types: ponderosa pine, mixed conifer, red fir, and subalpine. Concerns for recreational areas, visual and cultural resources, wildlife habitats, streams, and riparian zones have led to constraints which will reduce the area considered as suitable for intensive timber management.

Timberland, designated by Congress as Wilderness, Wild and Scenic River, or Special Management Areas, is not available for timber production. Timberland not capable of growing industrial-quality wood at rates greater than

20 cubic feet/acre/year is not considered suitable for production. In the final analysis, there are about 393,700 acres of timberland in Sierra National Forest Capable, Available, and tentatively Suitable for timber production, including land recently acquired through land exchanges. The majority of timberland is moderately to highly-productive for timber production with growth rates greater than 50 cubic feet/acre/year. Land with growth potential between 20-50 cubic feet/acre/year is estimated to be 62,000 acres.

Two contrasting methods are used to manage the Forest. Uneven-aged management results in trees of different ages being intermingled. Even-aged management results in trees in a particular stand being essentially the same age. The Plan prescribes even-aged and uneven-aged management; both methods are currently used. Currently, 80-90% of the annual timber harvest is from stands being converted to even-aged management. Considering the silvicultural characteristics of the trees, the makeup and condition of the various kinds of timber stands, and uncertainties of uneven-aged management, even-aged management appears most capable of sustaining optimum yields into the future.

Timber from the Forest is the only long-term supply for the local wood products industry. The Forest provides 30% of the lumber manufactured in the San Joaquin Valley. At three local sawmills, all mill residue is being used by co-generation plants to produce their own power. Interest in using forest residue at these and other cogeneration plants is developing. Demand for woody material for home heating purposes has decreased over the past few years, with estimates of over four million cubic feet of wood removed from the Forest annually.

The current approved timber management plan (circ. 1961) indicates a potential annual yield of 152.9 MMBF from 430,286 acres. The actual annual harvest over the life of that plan has been 128 MMBF.

Diversity

Diversity generally refers to the relative degree of abundance of wildlife species, plant species, plant and animal communities, habitats, or habitat features per unit of area. Managing for diversity is important for ecosystem stability, biological variety, fish and wildlife habitat and aesthetic value.

The characteristics of the three broad ecosystems in the Forest (conifer forests, hardwoods, and chaparral) are influenced by natural events such as wildfire and management practices including timber harvesting, road construction, prescribed burning, hydroelectric development and grazing. Vegetation types dramatically changed by management include conifer Forest type, hardwoods and chaparral.

About 47,000 acres or 8 percent of the productive Forest area is made up of stands which qualify as "older over-mature habitat." An estimated 9 percent of the Forest vegetation is in early seral stages, 4 percent in midsuccessional and about 87 percent in mature or late successional stages.

Soils

Soils characteristics are a major consideration in forest management. Soils affect timber growth rates, forage quantity and quality, ease of road and campsite construction and other forest resource production or use. Areas of sensitive and highly erodible soils, where care must be exercised to assure regeneration, prevent erosion and siltation, and maintain fertility, have been identified. Accelerated erosion occurred on some old, abandoned, low standard roads. These need to be closed and stabilized.

Water

Water yield from the Forest is about 2.6 million acre-feet annually. The waters are of excellent quality and care is exercised in the Forest's management to ensure that state and federal water quality standards are met. Consumptive water uses are insignificant. Nonconsumptive uses are of significant magnitude, mainly for hydroelectric generation and recreation.

Runoff is very important to farm production in the San Joaquin Valley. Conserving present water yields appears to be the most economically efficient approach to maintaining resource benefits.

Mineral and Energy Resources

The Forest has at least 15 known mineral commodities and at least 100 mineral products. Mining has not been an important activity in recent years, but much of the Forest is open to mineral and mineral energy entry, subject to existing laws and regulations. A number of mineral withdrawals are scattered through the Forest. Mineral entry rights were withdrawn in wilderness formally classified under the 1964 Wilderness Act. At present, there are no known prospects of any Forest area being developed for geothermal purposes.

The 1980 RPA Forest Service program calls for an expanded and accelerated minerals program, which may increase the number of approved mineral development operating plans, cause some increase in the inventory of current mineral activities and potential mineral sites, give priority to the development of energy-related minerals and minerals in short supply, and continue with the resolution of occupancy trespass problems.

Lands

The Land Adjustment Program will achieve more efficient and effective management of Forest resources by acquiring or exchanging land for consolidation of scattered parcels. Opportunities to consolidate are diminishing because there is an accelerating trend toward fragmenting private land for recreational homes, urban developments, or speculative investment. Trespass from adjacent landowners occur since few of the property corners and boundary lines on the forest are properly monumented and posted.

Hydroelectric Development

The Forest has an abundance of the two elements necessary for hydroelectric developments; large elevation drops in short distances and abundant water. These elements, in conjunction with the matrix of roads, land management practices, electrical grid, laws and social expectations allow many hydroelectric developments to exist. There is great potential for other projects to evolve.

The major features and activity effects of hydroelectric projects on the Forest are categorized as: roads/access, transmission lines, tunnels, penstocks and conduits, storage reservoirs, construction needs and application/studies process.

The Forest has one major project (200 mw) under preliminary FERC permit (Bear Butte), one licensed and one exempt unconstructed run-of-the-river project under 5 mw, and approximately five projects from 7 to 590 mw in various stages of application for license. The existing Forest power output of approximately 2,800 mw can increase by over 1000 mw within the next ten years.

Cultural Resources

Cultural resources include archaeological, historical, and architectural sites and data of value to ethnic groups. Cultural resources are considered a nonrenewable resource and receive special attention in planning and conducting Forest activities because of federal legal protection.

The Forest contains much evidence of habitation by Native Americans, and later use by early lumbering, mining, grazing, hunting, trapping, homesteading and exploration activities. Over 3,000 sites have been reliably inventoried.

In the past, the remoteness of National forests provided protection to cultural resources. With better access and increasing use, potential for damage to areas and items of

historic and scientific interest has increased significantly. As a result, the Forest Service has started an active program of cultural resource management. This program integrates cultural resource management with other multiple-use management practices. Avoidance of cultural resources is preferred, however, a system of mitigation is available for situations where impact cannot be avoided.

Transportation and Facilities

The Forest's transportation system was developed to serve both resource management and recreation. The system is divided into three classes: arterial, collector, and local roads. The 265 miles of arterial roads are primarily two-lane, allweather roads. The 500 miles of collector roads are generally singlelane, aggregate-surfaced roads with intervisible turnouts. The 1,785 miles of local roads usually access a single resource terminal facility such as a log landing, campground, or trailhead.

Forest Highways are another part of the transportation system. Forest Highways are segments of the state and county road systems, generally serving areas with heavy public ownership. Within the Forest are 116 miles of road classified as Forest highways. Additionally, 185 miles of county roads lie within the Forest boundary and supplement the Forest system.

Current plans will modify the arterial and collector road system by reclassifying, reconstructing, or adding some roads to complete the arterial/collector network. The local road system may be increased by reclassifying some roads presently in the system, and by entering some nonroaded areas. With these changes, the road system will increase in the next 20 years and remain fairly static thereafter.

Protection

Fire suppression policies, initiated early in this century, allowed vegetation to become dense and hazardous. Activity-caused fuels left on the ground constitute an additional fire hazard. Although burned acreage has been reduced over the years, fuels buildups lead to increased fire intensities and suppression costs. This situation and increasing public use raises the potential risk of resource losses to high levels. The current funding level for fuels reduction and the fire suppression organization may limit our ability to protect the resources at stake. The Forest Plan calls for reduction of fuels buildup and for prescribed burns to eliminate the fire hazards.

D. ENVIRONMENTAL CONSEQUENCES (CHAPTER 4)

Environmental consequences are the changes that can be expected from implementing the proposed Forest Plan or its alternatives. They will result from applying a set of management prescriptions to different land areas in each alternative. The varying amounts of activities, uses, and land allocations between alternatives result in varying levels of outputs, goods and services, and environmental consequences. Generally, alternatives having high levels of goods and services will increase social and economic benefits, with some negative effects on the physical and biological environment. On the other hand, if physical and biological amenities are preserved, social and economic benefits will be reduced.

Forest Management plans, under any alternative, require mitigating and coordinating measures to protect the physical and biological environment, while producing social and economic benefits. Provision is made to maintain or improve the long-term productivity of the land, while producing outputs, goods, and services.

In this summary, the intent is to highlight the major environmental consequences of the alternatives and the differences between them. For purposes of orientation, the alternatives are listed here.

Alternative Emphasis

- A Preferred (PRF)
- B Current (CUR)
- C Resource Planning Act (RPA)
- D Low Budget (LBU)
- E Amenity (AMN)
- H Market (MKT)

Economic

Alternatives H and C will provide the greatest contributions to National and local revenues and induce the largest number of jobs. These alternatives are followed by B, A, E, and D, with D providing the lowest revenues and employment levels. Ranking of alternatives by benefit/cost ratios is D, B, E, A, C, and H. All alternatives will have negative cash flows in the first decade, with Alternatives B, D, H and C, being the least negative. Projecting the alternatives beyond the first decade shows positive cash flows for all alternatives by the fifth decade, except the Preferred. Alternatives B, C, and H will have the greatest net cash flow by the fifth decade. Alternatives D, B, E and A will require the smallest budgets to implement, while Alternatives C and H will require considerably higher budgets.

Social

The lifestyles and values of longtime residents, who tend to favor commodity uses of the Forest, will benefit most by Alternatives H and C. Most new residents and second-home owners, whose lifestyles and values tend to favor the amenity end of the spectrum, will be best served by Alternatives E and A. The alternatives will have little effect on the attitudes, beliefs, and values of California Native Americans, except those who are tied economically to Forest resources. Regional recreationists looking for wilderness experiences will not be significantly affected by any alternative, but will favor Alternatives B, E and A. Regional recreationist looking for developed site experiences will be negatively affected only by Alternative D and best represented by Alternatives A and H. Those regional recreationists seeking dispersed uses in natural settings will find Alternatives E and A best serve their lifestyles. Alternative D, with its recreational site closures, reduced services, and road closures will be supported mainly by the preservationists among new arrivals and second-home owners.

Recreation and Wilderness

Alternative E will emphasize dispersed recreation and wilderness and de-emphasize developed site recreation, except for facilities that will provide strong support to dispersed recreation. Developed recreation will be less in all other alternatives.

Alternative D will emphasize developed recreation over dispersed recreation. Dispersed recreation will have the lowest ranking. Alternatives C and H will emphasize developed recreation, but dispersed recreation and Wilderness administration will be at standard levels.

Alternative B will provide a balanced emphasis between developed and dispersed recreation. Alternatives A will emphasize dispersed recreation and Wilderness. Most of the developed sites will provide standard service.

Off-highway vehicle routes and opportunities will be greatest in Alternatives E and H; slightly less in Alternatives A, and C; and lowest in Alternatives B and D.

Wildlife and Fish

Alternative E will increase fish production. Alternative A, D and E will favor increases of late seral stage wildlife more than all other alternatives.

Alternatives A, B, C, and H will maintain fish production near current level. Alternative B will provide a moderate decrease in late seral stage wildlife and moderate increases in species requiring early successional stages. Alternatives C and H will lead to decreases in species needing late seral stage forests.

Riparian

Although all alternatives are expected to preserve the existing values of riparian areas, the potential for adverse impacts may increase as the intensity of timber harvest, road construction, livestock grazing, and other such practices increase. Accordingly, Alternatives B, C, and H will offer a moderate potential for impact. Alternatives A and D will provide a low potential for impact, and Alternative E will improve riparian zones

Range

In Alternatives C and H, range management and grazing will significantly increase over present levels. Increased production will meet or exceed RPA goals. Intensive range improvements will occur, but range condition will be maintained.

A moderate increase in range management will occur in Alternatives A and B. There will be a moderate amount of cost-effective improvements and only a slight increase in production over current levels

Alternatives D and E will result in decreased range management and reduced forage production and use. There will be little or no range improvements constructed, however, existing needed facilities will be maintained.

Timber

Alternative B will provide a moderate level of timber production. Substantial regeneration harvest will occur. Limited timber harvest will occur in expanded sensitive areas such as streamside and critical view areas

Alternative C will have high timber as well as other resource outputs. Timber harvest will occur on all suitable timber land outside of wilderness areas. To produce at this level, some investment in timber management above anticipated timber values will be made.

Alternatives A, D, and E will provide for a low level of timber production. Alternatives A and D will predominately use an even-aged management prescription. Alternative E will include uneven-aged management on all tractor ground. In Alternative D, harvest areas will be substantially restricted to timber ground with existing access.

Alternative H will produce higher levels of timber from most cost-effective timber stands. Timber harvest will occur over most of the Forest and be readily apparent throughout each decade

Diversity

Alternatives that harvest and regenerate a lot of acres over time (C & H) will maintain more of the land base in earlier seral stages through reduction of older seral stage habitat. Conversely, A, D, and E will maintain the most late seral stage habitat and the least amount in earlier seral stages

By the end of the fifth decade, "older over-mature habitat" will be as follows: Alternative A = 119,000 acres, Alternative B = 83,000 acres, Alternative C = 68,000 acres, Alternative D = 79,000 acres, Alternative E = 117,000 acres and Alternative H = 61,000 acres.

Watershed

In Alternatives C and H, watershed management will increase to a high level. Complex and expensive mitigation measures, such as mulching, YUM yarding, and hand piling slash will be used to maintain soil productivity and water quality.

In Alternatives A and B a moderate level of management will occur. Mitigation measures and standard practices recommended by watershed specialists will be used.

Alternatives D and E will have a low level of management. Similar types of mitigation measures will be used in Alternative A and B, except that fewer measures will be needed because of reduced total harvest.

Geology

Alternatives A, B, C, E and H will allow for continued effective utilization of sources of earth construction material. Alternative D will switch to commercial sources.

In Alternatives A, B, C, E and H, groundwater production will be maintained near current levels. Production will drop in Alternative D, under-utilizing the investment made in well development.

Minerals

Legitimate mining will be encouraged on National Forest land open to mineral entry. Mining will be primarily influenced by the market price of the various minerals and controlled by factors outside the Forest. The primary effect on mining by the various alternatives will be the amount of land recommended for withdrawal from mineral entry. Alternatives A, C, and H will recommend withdrawing an additional 1,140 acres. Alternative D will withdraw 26,238 additional acres; Alternative E 11,310 additional acres.

Lands

Primary emphasis of the Land Line Location Program will be to facilitate preparation and sale of timber. Miles of land line marked and posted to standard, will range from 360 miles/decade in Alternative D to 590 miles/decade in Alternative A. Approximately 800 miles of landline will be identified each decade in Alternative H, 560 miles in Alternative B, 675 miles in Alternative C, and commensurate reduction in numbers to a low of 375 miles in Alternative D. Right-of-way acquisitions will be 50 miles/decade in Alternative A or 25 miles/decade in Alternatives B through H.

In Alternative A, the Land Adjustment Program will emphasize acquisition of key tracts of large, non-Federal inholdings to enhance management efficiency. Alternatives C, D, E, and H will emphasize acquisition of non-Federal land located within timber, range, or recreational areas. Alternative E will emphasize acquisition of land within Wilderness. Alternative B will include land acquisitions that solve administrative problems, can become actionable cases, and have a favorable cost/benefit ratio.

Hydroelectric Development

Alternatives A, B, and H essentially will balance hydroelectric development with other resources. Management concerns will indicate which resources must be protected, however, no site will be off limits to development. Alternative C will slightly restrict development at some sites in favor of maintaining commodity balance and RPA production. Alternative D will encourage development as a means to accomplish recreational goals, or certain mitigation measures to enhance existing resource protection.

Alternative E will discourage development by giving other resources priority over hydroelectric projects. Development must locate in areas devoid of other prime resources and mitigate heavily to compensate for any resource loss.

Roads

Investments will vary from low levels in Alternatives B, D and E to significantly higher levels in Alternatives C and H. Alternative A will have a moderate increase in investment.

The ratio of reconstruction to construction will vary as indicated below:

<u>Alternative</u>	<u>Ratio</u>
D	1:1
C, H	1.25:1
A	1.5:1
E	2:1

Management emphasis will be directed towards protecting our investment in Alternative D, providing a stable haul system in Alternatives A, B and E; and providing a system to support all activities in Alternatives C and H.

General public road access will be discouraged in some areas in Alternative A and strongly discouraged or prohibited in Alternative D. The public will generally be accepted throughout the system in Alternatives B and E. The public will be encouraged to use the open system in Alternatives C and H.

CONTENTS

SUMMARY	i
---------------	---

LIST OF ILLUSTRATIONS

Figures
Tables

1.0	PURPOSE AND NEED	1-1
1.1	Historical and Legislative Framework	1-1
1.2	Forest Service Planning Process	1-2
1.3	Vicinity	1-2
1.4	Scope of Issues Addressed	1-4
1.4.1	Recreation	1-4
1.4.2	Visual Resources	1-4
1.4.3	Further Planning	1-4
1.4.4	Wild and Scenic Rivers	1-4
1.4.5	Fish, Wildlife and Sensitive Plants	1-4
1.4.6	Timber	1-5
1.4.7	Energy	1-5
1.4.8	Hydroelectric Development	1-5
1.4.9	General Issues	1-5
1.5	Major Issues Resulting From the Draft Document Review	1-5
1.5.1	Timber	1-5
1.5.2	Fish, Wildlife, and Sensitive Plants	1-5
1.5.3	Economics	1-6
2.0	ALTERNATIVES CONSIDERED, INCLUDING THE PROPOSED PLAN	2-1
2.1	Introduction	2-1
2.2	Alternative Development Process	2-1
2.2.1	Description of an Alternative	2-1
2.2.2	Description of the Process Used to Develop Alternatives	2-1
2.2.3	Range of Alternatives	2-3
2.3	The Benchmarks	2-7
2.3.1	Significant Findings and Conclusion from Benchmarks	2-9
2.4	Alternatives Considered but Eliminated from Detailed Study	2-15
2.5	Alternatives Considered in Detail	2-21
2.5.1	Introduction	2-21
2.5.2	Directions Common to All Alternatives	2-21
2.5.3	Management Goals and Objectives/Standards and Guidelines Common to All Alternatives	2-22
2.5.4	Management Prescriptions and Management Areas	2-30
2.6	Individual Alternative Descriptions	2-36
2.6.1	Alternative A (Preferred)	2-36
2.6.2	Alternative B (Current)	2-46
2.6.3	Alternative C (RPA)	2-54
2.6.4	Alternative D (Low Budget)	2-62
2.6.5	Alternative E (Amenity)	2-70
2.6.6	Alternative H (Market)	2-78
2.7	Comparison of Alternatives	2-86
2.7.1	Overview	2-86
2.7.2	Recreation and Wilderness	2-86
2.7.3	Wild and Scenic Rivers	2-86
2.7.4	Wildlife and Fish	2-87
2.7.5	Riparian	2-87

2.7.6	Range	2-87
2.7.7	Timber	2-87
2.7.8	Diversity	2-88
2.7.9	Watershed	2-88
2.7.10	Geology	2-88
2.7.11	Minerals	2-88
2.7.12	Lands	2-88
2.7.13	Hydroelectric Development	2-89
2.7.14	Roads	2-89
2.8	Summary Comparisons of Environmental Features, Consequences, and Management Activities	2-89
2.9	Land Classification for Timber	2-108
2.10	Economic and Tradeoffs Analysis	2-110
2.10.1	Introduction	2-110
2.10.2	Narrative of Table 2.25	2-110
2.10.3	Narrative of Table 2.26	2-114
2.10.4	Narrative of Table 2.27	2-117
2.10.5	Narrative of Table 2.28	2-119
2.10.6	Narrative of Table 2.29	2-120
2.10.7	Narrative of Table 2.30	2-122
2.11	Issues, Concerns, and Opportunities	2-126
3.0	AFFECTED ENVIRONMENT	3-1
3.1	Introduction	3-1
3.2	General Description of Forest	3-1
3.3	Social Environment	3-4
3.3.1	Social Groups	3-4
3.3.2	Social Variables	3-5
3.4	The Economic Environment	3-7
3.5	Resource and Support Elements	3-9
3.5.1	Recreation	3-9
3.5.2	Visual Resources	3-14
3.5.3	Wilderness	3-15
3.5.4	Wild and Scenic Rivers	3-20
3.5.5	Fish, Wildlife, and Sensitive Plants	3-22
3.5.6	Riparian	3-35
3.5.7	Range	3-36
3.5.8	Chaparral	3-38
3.5.9	Timber	3-39
3.5.10	Diversity	3-46
3.5.11	Integrated Pest Management	3-50
3.5.12	Soils	3-50
3.5.13	Water	3-55
3.5.14	Geology	3-57
3.5.15	Minerals	3-59
3.5.16	Lands	3-63
3.5.17	Hydroelectric Development	3-65
3.5.18	Cultural Resources	3-68
3.5.19	Special Areas	3-69
3.5.20	Transportation and Facilities	3-74
3.5.21	Air	3-77
3.5.22	Protection	3-77
4.0	ENVIRONMENTAL CONSEQUENCES	4-1
4.1	Introduction	4-1
4.2	Social Consequences	4-1
4.3	Economic Consequences	4-3
4.3.1	Orientation	4-3
4.4	Recreation	4-6
4.4.1	Developed Recreation	4-6

4.4.2	Dispersed Recreation and Recreation Opportunity Spectrum (ROS) Classes	4-10
4.4.3	Off-Highway Vehicle Use (OHV)	4-13
4 5	Visual Resources	4-15
4.5.1	Orientation	4-15
4.5.2	Effects Common to All Alternatives	4-19
4 5.3	Comparison of Alternatives	4-19
4.6	Wilderness	4-21
4.7	Wild and Scenic Rivers	4-22
4.8	Fish, Wildlife, and Sensitive Plants	4-23
4.8.1	Orientation	4-23
4.8.2	Fisheries Resource	4-23
4.8.3	Wildlife Resources	4-24
4 8.4	Consequences Common to all Alternatives	4-24
4.8.5	Consequence of Each Alternative	4-25
4.9	Riparian	4-28
4 10	Range	4-31
4.11	Chaparral	4-33
4 12	Timber	4-33
4 12.1	Amount of Land Used for Timber Production and Intensity of Management	4-33
4.12.2	Harvest and Regeneration Systems Used	4-34
4.12.3	Timber Harvest Support to Local Economic Activity	4-34
4.13	Diversity	4-35
4 13.1	Comparison of Alternatives	4-35
4.13.2	Consequences of each Alternative	4-37
4.14	Integrated Pest Management	4-39
4.14.1	Orientation	4-39
4.14.2	Comparison of Alternatives	4-39
4.15	Soils	4-40
4 16	Water	4-41
4.16.1	Cumulative Watershed Effects	4-42
4.17	Geology	4-45
4.18	Minerals	4-45
4.19	Lands	4-46
4.19.1	Comparison of Alternatives	4-46
4.20	Hydroelectric Development	4-46
4 20.1	Effects on Hydroelectric Development	4-47
4.20.2	Effects of Wild and Scenic Rivers	4-47
4.21	Cultural Resources	4-48
4.22	Special Areas	4-49
4.23	Transportation and Facilities	4-50
4 24	Air	4-52
4.24.1	Introduction	4-52
4.24.2	Analysis	4-52
4.24 3	Consequences	4-53
4 25	Protection	4-54
4.26	Means to Mitigate Adverse Impacts	4-54
4.27	Adverse Environmental Effects Which Cannot Be Avoided	4-54
4.28	Relationship Between Short-Term Uses and Long-Term Productivity	4-55
4 29	Irreversible or Irretrievable Commitment of Resources	4-55
4 30	Possible Conflicts with Federal, Regional, State, and Local Land Use Plans	4-55

5.0 LIST OF PREPARERS 5-1

5 1	Interdisciplinary Team	5-1
5.2	Specialist Support	5-2
5.3	Support Services	5-2

6.0 LIST OF AGENCIES AND ORGANIZATIONS TO WHOM EIS WAS SENT 6-1

7.0	APPENDICES	7A-1
-----	------------	------

APPENDIX A 0 - ISSUES, CONCERNS, AND OPPORTUNITIES	7A-1
--	------

A.1	The Scoping Process	7A-1
A 2	Consultation with Others Concerning the Original DEIS and Plan	7A-2
A.3	Additional Scoping	7A-2
A.4	Coordination with Adjacent Forests	7A-3

APPENDIX B.0 - MODELING AND ANALYSIS PROCESS	7B-1
--	------

B.1	Orientation	7B-1
B.2	Forest Planning Model	7B-1
B.2.1	Overview	7B-1
B.2.2.	Land Units	7B-2
B.2.3	Prescriptions	7B-3
B.3	Time Periods	7B-7
B.4	Outputs	7B-7
B.4.1	Outputs Tracked Inside FORPLAN	7B-7
B.4.2	Outputs Tracked Outside FORPLAN	7B-10
B 5	Economics In FORPLAN	7B-13
B 5.1	Economic Efficiency and Demand Analysis	7B-13
B 5.2	Costs	7B-14
B.5.3	Benefits	7B-14
B.6	Constraints	7B-17
B 7	Constraints Common to All Alternatives	7B-17
B 8	Benchmarks	7B-20
B 9	Alternatives	7B-24
B 9.1	(PRF) Preferred Alternative	7B-24
B.9.2	(CUR) Current Alternative	7B-25
B.9.3	(RPA) 1980 RPA Program Alternative	7B-26
B.9.4	(LBU) Low Budget Alternative	7B-26
B.9.5	(AMN) Amenity Alternative	7B-27
B.9.6	(CEF) Contrained Economic Efficiency With Forest Constraints Alternative	7B-28
B.9.7	(DLI) Wilderness Emphasis With Capital Investment Alternative	7B-28
B 9 8	(MKT) Market Emphasis Alternative	7B-29
B.9.9	(PRO) High Productive Alternative	7B-29
B.9.10	(CEE) Constrained Economic Efficiency Alternative	7B-29
B.9.11	(UNE) Uneven-aged Management Alternative	7B-30
B.9 12	(CON) Conservation Alternative	7B-30
B.9 13	(TIM) Timber Association of California Alternative	7B-31
B.10	Other Models	7B-33
B.10.1	RAMPREP	7B-33

APPENDIX C.0 - KINGS RIVER FURTHER PLANNING AREA	7C-1
--	------

C 1	Introduction	7C-1
C 2	Factors Considered When Evaluating Wilderness	7C-1
C.2.1	Description	7C-1
C.2.2.	Suitability	7C-1
C.2.3	Manageability and Boundary	7C-1
C.2.4	Availability	7C-2
C.2.5	Need	7C-2
C.3	Environmental Consequences	7C-3
C.3.1	Alternative A, B, C, H	7C-3
C.3 2	Alternative D	7C-3
C.3.3	Alternative E	7C-4
C.4	Summary of Distribution Among Alternatives	7C-4

APPENDIX D.0 - ECONOMIC EFFICIENCY ANALYSIS	7D-1
---	------

D 1	Conceptual Background	7D-1
D 2	EIS Presentation	7D-1

APPENDIX E 0 - WILD AND SCENIC RIVERS STUDY, DESCRIPTION, AND EVALUATION . . .	7E-1
E 1 Introduction	7E-1
E.1.1 Background	7E-1
E 1.2 Eligibility	7E-1
E.1.3 Scoping Issues	7E-2
E.1.4 Regional Setting	7E-2
E 2 Description of Rivers	7E-4
E.2.1 Merced River	7E-4
E.2.2 San Joaquin River	7E-10
E.2.3 North Fork San Joaquin River	7E-11
E.2.4 Middle Fork San Joaquin River	7E-12
E.2.5 South Fork San Joaquin River	7E-16
E.3 Evaluation Criteria for River Eligibility	7E-19
E 3.1 Identification and Description of Merced River Segments	7E-19
E 3.2 Identification and Description of San Joaquin River Segments	7E-23
E 3.3 Identification and Description of North Fork San Joaquin River Segments	7E-27
E 3.4 Identification and Description of Middle Fork San Joaquin River Segments	7E-31
E 3.5 Identification and Description of South Fork San Joaquin River Segments	7E-35
E 4 Alternatives and Effects of Alternatives	7E-39
E.4.1 Merced River	7E-39
E.4.2 San Joaquin River	7E-39
E 4.3 North Fork San Joaquin River	7E-40
E.4.4 Middle Fork San Joaquin River	7E-40
E 4.5 South Fork San Joaquin River	7E-41
APPENDIX F.0 - DEVELOPED SITE USE	7F-1
F.1 Assumptions Made Regarding Use and Capacity	7F-1
F 2 Summary	7F-1
APPENDIX G.0 - DISPERSED AREA AND WILDERNESS USE	7G-1
G.1 Assumptions Regarding Use and Capacity	7G-1
G 2 Calculations of Dispersed Area Capacity by ROS Class	7G-1
G.3 Summary	7G-1
APPENDIX H 0 - DISPOSITION OF ROADLESS AREAS GOING TO RELEASED AREA STATUS . 7H-1	7H-1
H.1 Introduction	7H-1
H 1.1 Ferguson Ridge	7H-1
H 1.2 Devils Gulch	7H-1
H 1.3 Mt. Raymond	7H-1
H 1.4 San Joaquin B	7H-1
H 1.5 Shuteye	7H-1
H 1.6 Dinkey Lakes	7H-2
H.1.7 Sycamore Springs	7H-2
H 1.8 Rancheria	7H-2
APPENDIX I.0 - FOREST TYPES AND TIMBER CONDITIONS	7I-1
I 1 Forest Types	7I-1
I 2 Timber Conditions	7I-1
APPENDIX J.0 - MAJOR SILVICULTURAL SYSTEMS AND THEIR APPLICATION	7J-1
J 1 Introduction	7J-1
J 1.1 Management Objectives	7J-1
J.2 Description of the Silvicultural Systems	7J-1
J 2.1 Even-aged Systems	7J-1
J.2.2 Uneven-aged Systems	7J-2
J.3 Timber Yield and Regulations of Forest and Stands	7J-2
J.4 Biological Contrast Among Forests and Stands Managed by Different Silvicultural Systems	7J-3
J 4.1 Appearance	7J-3
J 4.2 Genetic Resources	7J-4
J.5 Managerial Contrast Among Forests and Stands Managed by Different Silvicultural Systems	7J-4
J 5.1 Public Concerns	7J-4

J.5.2	Achieving Regulated Forests While Maintaining Timber Harvest Levels	7J-7
J 5.3	Planning, Contracting, and Record Keeping	7J-7
J 5.4	Timber Harvesting	7J-7
J.5.5	Genetic Improvement in Forests	7J-7
J 5.6	Risk of Major Wild Fires	7J-8
J.5.7	Risk of Significant Pest Damage	7J-8
J.5.8	Production of Livestock Forage and Browse	7J-8
J 5.9	Productions of Archaeological Resources	7J-8
J 5.10	Effects of Fisheries and Wildlife Habitat	7J-8
APPENDIX K 0 - FOREST PESTS AND DISEASES		7K-1
K 1	Diseases	7K-1
K 2	Pests	7K-1
APPENDIX L.0 - THE REGIONAL TIMBER SUPPLY-DEMAND (CALIFORNIA)		7L-1
L 1	Introduction	7L-1
L 1.1	Historical Harvests From Public and Private Land - Statewide	7L-1
L.1.2	Statewide Demand for Timber Products and the Relationship to Harvest Levels	7L-1
L 2	Broad Socio-economic Effects	7L-2
L 2.1	The Outlook of Timber Supplies - Private Land	7L-2
L 2.2	The Outlook of Timber Supplies - Imports	7L-3
L 2.3	The Outlook of Timber Supplies - National Forests	7L-3
L 3	The Subregional Outlook - Overview	7L-4
L 3.1	The Subregional Outlook in the North Coast Timber Supply Area	7L-5
L 3.2	The Subregional Outlook in the Northern Interior Timber Supply Area	7L-5
L 3.3	The Subregional Outlook in the Sacramento Timber Supply Area	7L-5
L 3.4	The Subregional Outlook in the San Joaquin Timber Supply Area	7L-5
L 3.5	The Outlook in the Localized Market	7L-5
L 4	References	7L-6
APPENDIX M.0 - MINERALS		7M-1
M.1	Laws and Regulations	7M-1
M.2	Summary of Mineral Data	7M-2
APPENDIX N 0 - SPECIAL AREAS		7M-1
N 1	Introduction	7N-1
N.2	Description of Areas and Consequences and Designation and Non-designation	7N-1
N.2.1	Special Interest Areas (SIAs)	7N-1
N.2.2	Research Natural Areas (RNAs)	7N-5
APPENDIX O 0 - PROPOSED HYDROELECTRIC DEVELOPMENT		7O-1
O.1	Introduction	7O-1
APPENDIX P.0 - BUDGETS AND THEIR RELATIONSHIP TO THE FOREST PLAN		7P-1
P.1	Introduction	7P-1
P.2	The Budget Process	7P-1
P.2.1	Other Financing	7P-1
P.2.2	Forest Priorities Under the Plan	7P-2
P.3	Monitoring	7P-2
APPENDIX Q.0 - SELECTED REFERENCES		7Q-1
APPENDIX R 0 - GLOSSARY		7R-1
APPENDIX S.0 - ACRONYMS AND ABBREVIATIONS USED BY THE FOREST SERVICE IN THE FOREST PLAN AND ENVIRONMENTAL IMPACT STATEMENT		7S-1
S.1	Forest Service Terms	7S-1
S 2	Units of Measurement	7S-1
APPENDIX T.0 - PUBLIC COMMENTS (Separate Volume)		

APPENDIX U.0 - EFFECTS OF RESTRICTING HERBICIDE USE ON TIMBER MANAGEMENT	7U-1
U.1 Introduction	7U-1
U.2 Analysis Description	7U-1
APPENDIX V.0 - 2509 - SOIL AND WATER CONSERVATION PRACTICES	
2521 - WATERSHED CONDITION ASSESSMENT	7V-1
V.1 Stream Protection Measures	7V-1
V.1.1 Definitions	7V-1
V.1.2 Discussion	7V-1
V.1.3 Application	7V-2
V.1.4 Design Standards	7V-2
V.1.5 Streamside Management Zone Width	7V-3
V.1.6 Riparian Management Area Width	7V-4
V.1.7 Constraints	7V-4
V.1.8 References to Forest Service Manuals	7V-5
V.2 Road Construction - Very High and High Erosion Hazard Soils	7V-5
V.2.1 Objective	7V-5
V.2.2 Policy	7V-5

ILLUSTRATIONS

FIGURES

1.0 PURPOSE AND NEED

1.01 Location Map	1-3
1.02 Vicinity Map	1-3

2.0 ALTERNATIVES CONSIDERED, INCLUDING THE PROPOSED PLAN

2.01 Comparison of Average Annual Outputs and Costs	2-5
2.02 Direction Tiering Process	2-29

3.0 AFFECTED ENVIRONMENT

3.01 Projected Recreation Demand	3-10
3.02 Stream Habitat Quality	3-33
3.03 Deer Herds Inhabiting the Sierra National Forest	3-34
3.04 Mineral Potential/Resource Map	3-61
3.05 Mineral Withdrawal/Resource Map	3-62
3.06 Utility Dams/Hydroelectric Projects Resource Map	3-67
3.07 Transportation/Facilities Resource Map	3-76
3.08 Primary Fuelbreak System	3-79

4.0 ENVIRONMENTAL CONSEQUENCES

4.01 Projected Campground Use	4-8
4.02 Visual Condition (VC) - Visual Quality Objective (VQO)	4-17
4.03 Visual Quality Index Fifth Decade	4-18
4.04 Visual Rehabilitation Acres	4-18
4.05 Visual Condition Decline by Alternative	4-18
4.06 Cumulative Departure of Clearcut Acres Compared to Current Alternative	4-44

APPENDIX E.0

E1 Area Location Map, Wild and Scenic Rivers, Sierra National Forest	7E-1
E2 Merced and South Fork Merced Wild and Scenic Rivers Resource Map	7E-9

E3	San Joaquin, North Fork San Joaquin, and Middle Fork San Joaquin Wild and Scenic Rivers Resource Map	7E-15
E4	South Fork San Joaquin Wild and Scenic River Resource Map	7E-18

APPENDIX F.0

F1	Projected Campground Use	7F-2
----	------------------------------------	------

APPENDIX G.0

G1	Dispersed Recreation (ROS: Roaded Natural/Rural)	7G-3
G2	Dispersed and Wilderness Recreation (ROS: Primitive)	7G-3
G3	Dispersed and Wilderness Recreation (ROS: Semiprimitive Nonmotorized)	7G-4
G4	Dispersed Recreation (ROS: Semiprimitive Motorized)	7G-4

APPENDIX H.0

H1	Released Areas Map	7H-3
----	------------------------------	------

APPENDIX O.0

O1	Forest Service Role in the FERC Hydroelectric Licensing Process	7O-2
----	---	------

APPENDIX P.0

P1	Budget Process Flow Chart	7P-3
P2	Budget Comparison	7P-4

APPENDIX V.0

V1	Sediment as Function of Ground Cover	7V-3
----	--	------

ILLUSTRATIONS

TABLES

2.0 ALTERNATIVES CONSIDERED, INCLUDING THE PROPOSED PLAN

2 01	Comparison of Benchmarks by Outputs and Activities	2-11
2 02	Outputs and Activities of the Alternatives Eliminated From Detailed Study	2-17
2 03	Changes in Timber Yields and Costs by Vegetative Type	2-28
2.04	Summary Comparison of Forestwide Management Prescriptions	2-34
2.05	Alternative A: Average Annual Outputs During First Five Decades	2-43
2 06	Alternative A: Distribution of Prescriptions by Management Areas	2-45
2 07	Alternative B: Average Annual Outputs During First Five Decades	2-51
2.08	Alternative B: Distribution of Prescriptions by Management Areas	2-53
2.09	Alternative C: Average Annual Outputs During First Five Decades	2-59
2.10	Alternative C: Distribution of Prescriptions by Management Areas	2-61
2.11	Alternative D: Average Annual Outputs During First Five Decades	2-67
2.12	Alternative D: Distribution of Prescriptions by Management Areas	2-69
2.13	Alternative E: Average Annual Outputs During First Five Decades	2-75
2.14	Alternative E: Distribution of Prescriptions by Management Areas	2-77
2.15	Alternative H: Average Annual Outputs During First Five Decades	2-83
2.16	Alternative H: Distribution of Prescriptions by Management Areas	2-85
2 17	Management Standards and Guidelines Unique to Each Alternative	2-90
2.18	Comparison of Other Significant Environmental Consequences	2-94
2 19	Comparison of Alternatives by Acres and Management Prescription	2-98

2.20	Comparison of Average Annual Outputs by Alternative for First and Fifth Decades	2-99
2.21	Timber Management Intensity Areas	2-106
2.22	Summary by Silvicultural Systems of Acres Utilized to Maximize Long-Term Sustained Yield . . .	2-106
2.23	Special Areas by Alternative	2-107
2.24	Land Classification for Timber by Alternative	2-109
2.25	Summary Comparison of Economic Effects by Alternative	2-111
2.26	Present Net Value Comparison - Marginal Cost of Constraints - Millions of 1982 Dollars	2-116
2.27	Present Net Value - Comparison of Alternatives	2-118
2.28	Average Annual Cash Flows and Non-Cash Benefits	2-119
2.29	Indicators of Responsiveness to Major Issues and National Concerns	2-121
2.30	Summary of Reasons for Change in Present Net Value Compared to the Constrained Economic Efficiency Alternative	2-123
2.31	Comparison of Alternatives by Major Issues	2-127

3.0 AFFECTED ENVIRONMENT

3.01	Population	3-6
3.02	Selected Population Composition by Age	3-6
3.03	Racial Composition	3-6
3.04	Employment by Industry in Fresno, Madera, and Mariposa Counties, 1970 and 1980	3-8
3.05	Personal Income in Fresno, Madera, and Mariposa Counties in 1970 and 1980	3-8
3.06	Returns to the U.S. Treasury and County Share from the Sierra National Forest Revenues	3-8
3.07	California Wilderness Act, 1984 Designations	3-16
3.08	Changes in Wilderness Areas in Sierra National Forest Resulting from the California Wilderness Act	3-16
3.09	Distribution of Stream Quality	3-22
3.10	Rating of Silvicultural Systems by Principal Biological Attributes	3-40
3.11	Comparison of Resource Management Goals With Silvicultural Methods	3-42
3.12	Major Vegetation Types by Percent	3-47
3.13	Vegetation Types by Wildlife Habitat Relationship (WHR) in M Acres	3-49
3.14	Distribution of Forest Survey Site Classes (FSSC) on Commercial Land	3-51
3.15	Soils Families Showing Site Class and Yield	3-53
3.16	Forest Annual Water by National Forest System Watershed	3-55
3.17	Ten Most Important Water Quality Problem Sites	3-56
3.18	Active Mineral Operations	3-60
3.19	Existing Land Withdrawals	3-63
3.20	Boundary Line Inventory Classification	3-64
3.21	Existing Special Interest Areas	3-73
3.22	Candidate Special Interest Areas	3-73
3.23	Existing Research Natural Areas	3-73
3.24	Candidate Research Natural Areas	3-73

4.0 ENVIRONMENTAL CONSEQUENCES

4.01	Comparison of Economic Effects - First Decade	4-5
4.02	Developed Recreation Visitor Day Use by Alternative on Sierra National Forest Land	4-7
4.03	Current Capacity Estimates for Family and Group Campgrounds	4-7
4.04	Relative Emphasis - Developed and Dispersed Service Levels by Alternative	4-7
4.05	Area and Volume of Use for ROS Classes in Each Year of First Decade	4-11
4.06	ROS Class Changes at End of First Decade by Alternative	4-11
4.07	Miles and Acres of Off-Highway Vehicle (OHV) Categories for the First and Fifth Decades	4-14
4.08	Acres of Initial and Recommended Visual Quality Objectives by Variety Classes	4-16
4.09	Acres of Existing and Future Visual Condition by Variety Classes	4-16
4.10	Distribution of Eligible Wild and Scenic Rivers Segments Among Various Governmental Agencies .	4-22
4.11	Length of Rivers Recommended for Wild and Scenic Designation	4-23
4.12	Average Annual Outputs for Activities Affecting Riparian Values	4-30
4.13	Potential Opportunities for Increased Range Use	4-32
4.14	Timber Land Classification and Prescription by Alternative	4-38
4.15	Seral Stage Acres by Alternative	4-38
4.16	Estimated Disturbed Land Under High and Low Impact Management Activities During First Five-Decades	4-40
4.17	Water Yield and Annual Increase Compared to Base Year	4-42

4.18	Additional Acres Proposed for Withdrawal From Mineral Entry and Leasing	4-45
4.19	Average Annual Miles of Landline to Mark and Post	4-46
4.20	Collector Road Additions	4-51
4.21	Local Road Additions	4-51
4.22	Road System After Five Decades	4-51
4.23	Road Closure Mileage	4-51
4.24	Number of Administrative Sites After Five Decades	4-52
4.25	Activities Affecting Air Quality	4-53

APPENDIX A.0

A 01	Listing of Respondents to the Original DEIS	7A-4
------	---	------

APPENDIX B.0

B 01	Prescription Comparisons	7B-6
B 02	Summary of Scheduled and Nonscheduled Outputs Tracked Inside FORPLAN	7B-7
B 03	Outputs Tracked Outside of FORPLAN	7B-10
B.04	Estimated Future Annual Change in Timber Price and Costs	7B-13
B.05	Benefits Used in the Analysis	7B-16
B.06	Dispersed and Developed Recreational Demand Cutoffs	7B-17
B.07	Benchmark and Alternative Constraints	7B-32

APPENDIX C.0

C 01	Kings River Further Planning Area - Estimated Wilderness/Nonwilderness Trade-offs if Total Area Goes to Wilderness in Alternative D	7C-5
C 02	Kings River Further Planning Area - Estimated Wilderness/Nonwilderness Trade-offs if Only Upper Area Goes to Wilderness in Alternative E	7C-5
C 03	Distribution of Kings Further Planning Area by Management Emphasis (in acres)	7C-6

APPENDIX D.0

D.01	Concerns About Economy Efficiency	7D-1
------	---	------

APPENDIX E.0

E 01A	Location Description of Merced River Segments	7E-19
E 02A	Summary of Outstandingly Remarkable Values of Merced River Segments	7E-20
E 03A	Eligibility Classification Analysis of Merced River	7E-20
E 04A	Summary of Significant Impacts of Alternatives for Merced River Resources	7E-21
E 05A	Summary of Recommended Classifications by Alternative for Merced River Segments	7E-22
E.01B	Location Description of San Joaquin River Segments	7E-23
E.02B	Summary of Outstandingly Remarkable Values of San Joaquin River Segments	7E-24
E 03B	Eligibility Classification Analysis of San Joaquin River	7E-24
E 04B	Summary of Significant Impacts of Alternatives for San Joaquin River Resources	7E-25
E 05B	Summary of Recommended Classifications by Alternative for San Joaquin River Segments	7E-26
E.01C	Location Description of North Fork San Joaquin River Segments	7E-27
E .02C	Summary of Outstandingly Remarkable Values of North Fork San Joaquin River Segments	7E-28
E 03C	Eligibility Classification Analysis of North Fork San Joaquin River	7E-28
E 04C	Summary of Significant Impacts of Alternatives for North Fork San Joaquin River Resources	7E-29
E 05C	Summary of Recommended Classifications by Alternative for North Fork San Joaquin River Segments	7E-30
E 01D	Location Description of Middle Fork San Joaquin River Segments	7E-31
E 02D	Summary of Outstandingly Remarkable Values of Middle Fork San Joaquin River Segments	7E-32
E.03D	Eligibility Classification Analysis of Middle Fork San Joaquin River	7E-32
E.04D	Summary of Significant Impacts of Alternatives for Middle Fork San Joaquin River Resources	7E-33
E.05D	Summary of Recommended Classifications by Alternative for Middle Fork San Joaquin River Segments	7E-34
E.01E	Location Description of South Fork San Joaquin River Segments	7E-35
E.02E	Summary of Outstandingly Remarkable Values of South Fork San Joaquin River Segments	7E-36

E 03E	Eligibility Classification Analysis of South Fork San Joaquin River	7E-36
E 04E	Summary of Significant Impacts of Alternatives for South Fork San Joaquin River Resources . . .	7E-37
E.05E	Summary of Recommended Classifications by Alternative for South Fork San Joaquin River Segments	7E-38

APPENDIX F.0

F 01	Capacity Estimates for Developed Family and Group Campground Sites	7F-1
------	--	------

APPENDIX G.0

G 01	Estimated Dispersed Area and Wilderness Capacity in PAOT ROS Class	7G-2
G 02	Formula for Calculating Time Spent for ROS Classes	7G-2
G.03	Recreation Visitor Day Capacity in Dispersed Areas and Wilderness	7G-2
G 04	Existing Use and Capacity RVD by ROS Class and Type of Area	7G-2

APPENDIX I.0

I.01	Timber Condition Classes, Area, Estimated Volume, and Growth Rates	7I-3
------	--	------

APPENDIX L.0

L 01	California Timber Harvests by Ownership	7L-1
L.02	Timber Harvest, Growth, and Inventory on Private Land in California	7L-3
L 03	Average Annual National Forest Timber Sales Compared to Allowable Sale Quantities in Forest Plans	7L-4

APPENDIX M.0

M 01	Summary of Significant Mineral Occurrence and Status	7M-2
M.02	Mining Claims with Surface Rights Stipulation	7M-4

APPENDIX N.0

N.01	Comparison of Research Natural Areas and Special Interest Areas by Alternative	7N-7
------	--	------

APPENDIX O.0

O.01	Proposed Hydroelectric Developments	7O-1
------	---	------

APPENDIX P.0

P 01	Sierra Forest Budget History (Thousands of 1990 Dollars)	7P-2
------	--	------

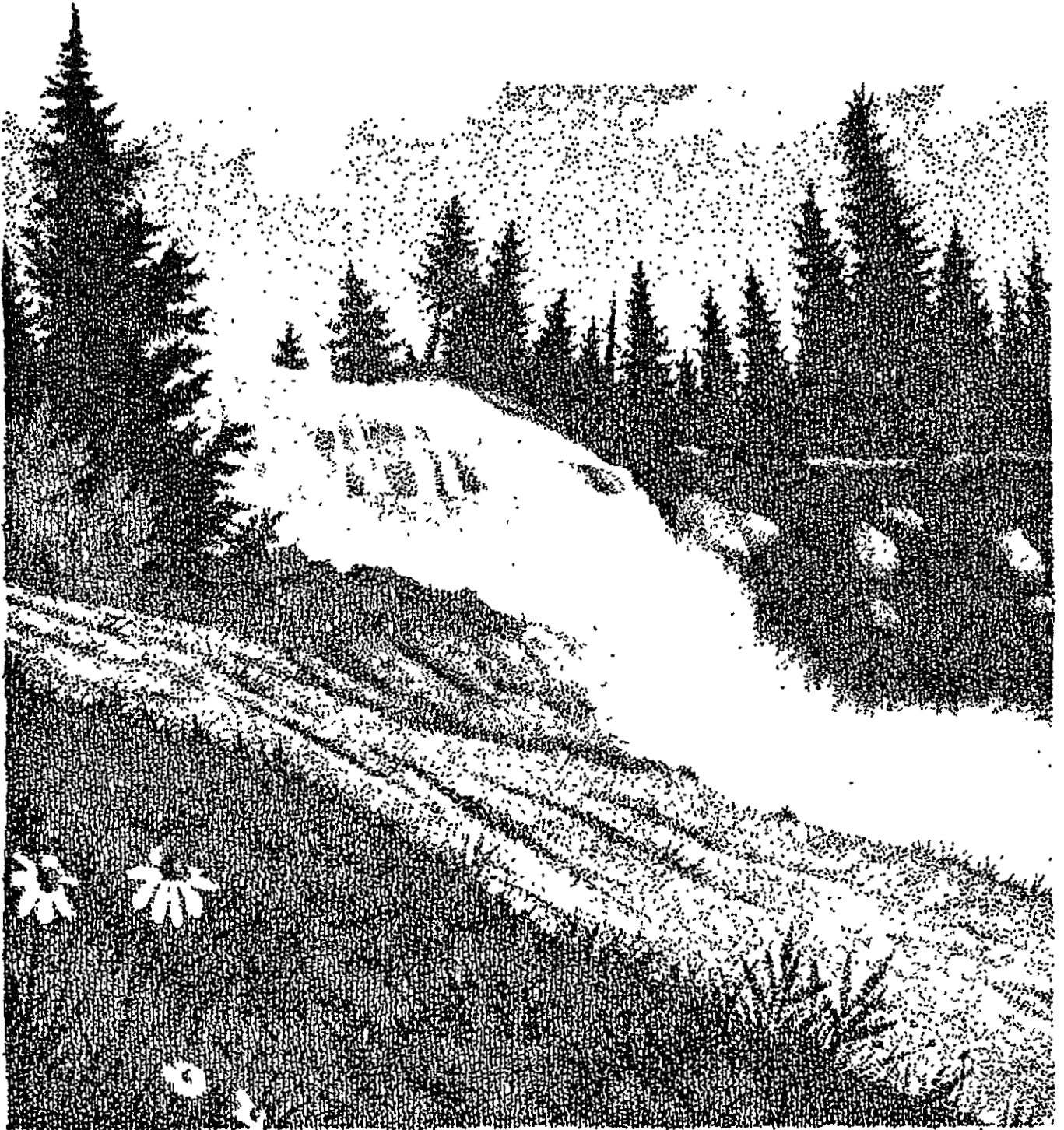
APPENDIX U.0

U.01	Acres of Major Vegetation Type by Competing Vegetation/Slope Class	7U-2
U.02	Acres by Regulation Class by Alternative	7U-3
U 03	Summary of Effects of Herbicide Use	7U-3
U 04	Comparison of LMP Alternatives for "old" policy	7U-3

APPENDIX V.0

V.01	Streamside Management Zone Formula	7V-3
V.02	Streamside Management Zone Width (Quick Reference Guide)	7V-4

Chapter 1.0 – Purpose and Need



1.0

PURPOSE AND NEED

1.1

HISTORICAL AND LEGISLATIVE FRAMEWORK

In 1974, Congress began acting upon the need for coordinated long-range planning of the uses and resources provided by the National Forests. Two legislative actions were passed:

- the Forest and Rangeland Renewable Resources Planning Act of 1974 (RPA), and
- the National Forest Management Act of 1976 (NFMA), amending RPA.

These laws required comprehensive long-range Forest Plans be developed to replace the individual and often poorly coordinated resource management plans.

Other significant legislation directed National Forests to investigate and make public, as part of this planning process:

1. Alternative approaches that could be used in developing the Plan
2. The environment affected by the Plan.
3. Anticipated environmental consequences of each alternative.

These are the major elements of this Final Environmental Impact Statement (FEIS), as required by.

- the National Environmental Policy Act (NEPA), and
- the Council on Environmental Quality (CEQ) regulations

The format established in 40 CFR Part 1502.10, includes the CEQ regulations adhered to in this EIS.

From among the alternative approaches described in the EIS, one was selected as the preferred alternative and has been developed into the proposed Forest Plan. Published as a companion document, the Forest Plan will.

- guide multiple-use management of the Forest for ten to fifteen years.
- distribute land to the combination of management activities for which it is best suited
- include 50-year long-range objectives.

- provide for multiple use and sustained yield of goods and services from the Sierra National Forest in a way that maximizes long term net public benefits in an environmentally sound manner.
- respond to major issues, management concerns, and resource opportunities.
- be revised at least every 15 years
- be reviewed every five years to determine the need for more frequent revision.
- when approved, supersede the following plans now being used to manage Sierra National Forest:
 1. District Multiple Use Plans,
 2. Timber Management Plans, and
- when approved, will incorporate the land allocation from the following individual management plans that are presently in use:
 1. John Muir Wilderness Plan,
 2. Ansel Adams Wilderness Plan,
 3. Kaiser Wilderness Plan (interim),
 4. Monarch Wilderness Plan,
 5. Dinkey Lakes Wilderness Plan,
 6. Bass Lake Recreation Area Composite Plan (interim),
 7. Huntington Lake Recreation Area Composite Plan (preliminary),
 8. Off Highway Vehicle Travel Plan 1977,
 9. Grazing Allotment Plans,
 10. Range Improvement Plans - 5-Year Plans,
 11. North Kings Deer Herd 1981,
 12. Yosemite Deer Herd 1981,
 13. Oakhurst Deer Herd 1984,
 14. Huntington Deer Herd 1984,
 15. San Joaquin Deer Herd 1983,
 16. Fishery Management Plan for Lahontan Cutthroat Trout 1986,
 17. Paiute Cutthroat Recovery Plan 1985,

- 18 Peregrine Falcon Recovery Plan 1984,
19. Tri-Forest Monitoring Plan 1989,
20. Forest Development Transportation Plan,
- 21 Facility Master Plan, and
- 22 Kings River Special Management Area Plan

-- It will also incorporate the land allocation direction from the following, when complete

1. Upper Kings River Fishery Habitat Management Plan,
2. South Fork Merced River Fishery Habitat Management Plan,
3. Land Adjustment Plan,
4. Lahontan Cutthroat Trout Recovery Plan,
- 5 Spotted Owl Habitat Area Plans,
6. Merced Wild and Scenic River Plan,
- 7 Kings Wild and Scenic River Plan, and
8. Off Highway Vehicle Travel Plan.

1.2

FOREST SERVICE PLANNING PROCESS

Forest Plans are only one part of the Forest Service planning framework. Based upon information gathered from the Regions, the National RPA Recommended Program sets direction and assigns targets to the Regions for producing goods and services. Each Region, in turn, provides direction and disaggregates its share of the national production levels to individual Forests, each Forest Plan validates or provides a basis for changing the production levels assigned by the Region.

At the District level, activities and projects carry out the direction contained in the Forest Plan. The data, evaluations, and other information in the Plan and the EIS can be used as a basis for local project environmental analyses. This process of "tiering to" the broader documents and incorporating the Plan and EIS, by reference, allows concentration on issues specific to subsequent smaller projects. Similarly, the Forest Plan is tiered to the Pacific Southwest Regional Plan (called the Regional Guide), which is tiered to the National RPA Program.

The Forest planning process, as specified in the National Forest Management Act, is an interdisciplinary approach, which, with public participation, gives full consideration to economic, environmental, and social impacts. The

planning actions described in the regulations and used in this Forest planning process are:

1. Identification of issues, concerns, and opportunities
- 2 Development of planning criteria
3. Inventory of data and collection of information
- 4 Analysis of the management situation.
5. Formulation of alternatives.
- 6 Estimation of effects of the alternatives.
- 7 Evaluation of the alternatives
8. Selection of the preferred alternative for proposed action.
9. Plan implementation
- 10 Monitoring and evaluation.

This EIS presents the results of planning actions one through seven and identifies the preferred alternative (proposed action), which forms the basis for the proposed Forest Plan.

A Draft Forest Plan and DEIS was made available to the public for a 90-day review period. Public comments were used in developing the Final Environmental Impact Statement and Forest Plan. The selection of a final Forest Plan will be made by the Regional Forester and documented in a Record of Decision which will be provided to the public.

The public may review the planning records (files containing details of the planning process) at the Forest Supervisor's Office, 1600 Tollhouse, Clovis, CA 93612. These records are referenced throughout the EIS and proposed Forest Plan at appropriate points.

There is a glossary in the Appendices section, as well as an appendix that spells out acronyms and abbreviations used in the EIS and Forest Plan.

1.3

VICINITY

Sierra National Forest is located on the west side of the central Sierra Nevada in Fresno, Madera, and Mariposa Counties. It is bordered on the west by eastern foothills of the San Joaquin Valley, on the north by Yosemite National Park and Stanislaus National Forest, and on the east and south by Inyo National Forest, Kings Canyon National Park, and Sequoia National Forest.

The Forest is within a one-hour drive from Madera or Fresno, a three-hour drive from Stockton or Bakersfield, and a six-hour drive from San Francisco or Los Angeles. The communities of Shaver Lake, Big Creek, North Fork, and Bass Lake are located within the Forest.

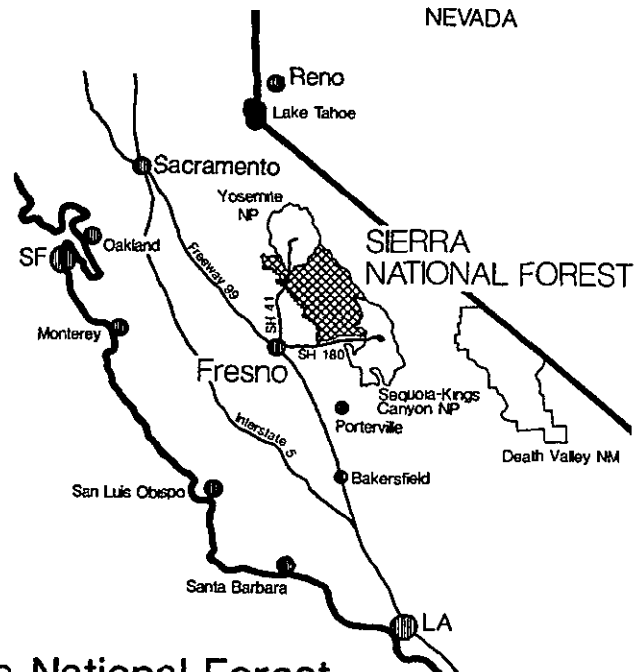
The Forest Plan will apply to 1,275,152 acres of National Forest land under the jurisdiction of the Forest Supervisor, Sierra National Forest. A portion of Sierra National Forest will be administered by Inyo National

Forest and included in the Inyo's Forest Plan. Included in the Sierra Forest Plan is a small portion of Sequoia National Forest administered by Sierra National Forest. The Plan will also include WSR analyses and recommendations for segments of the Merced and San Joaquin Rivers and National Monuments administered by the BLM. The BLM, as a cooperating agency, will make final recommendations pertaining to river segments on land they administer.

FIGURE 1.01 - LOCATION OF SIERRA NATIONAL FOREST, CALIFORNIA



FIGURE 1.02 - VICINITY MAP OF SIERRA NATIONAL FOREST



1.4

SCOPE OF ISSUES ADDRESSED

The scoping process resulted in the identification of issues, concerns, and opportunities (ICOs) to be addressed in the Forest Plan. Collectively, these ICOs indicated the scope and nature of the analysis needed for the EIS, and acted as blueprints in the structuring of alternatives

The alternatives considered for the Sierra National Forest Plan addressed public issues and management concerns. Because public issues often represented opposing views, some issues are likely to remain controversial during the life of the Forest Plan, surfacing again in the next planning cycle. Nonetheless, the issues and concerns represent the topics that must be addressed if the Plan is to provide appropriate and effective management *direction for the Forest. The issues and concerns were also used to establish the scope of this EIS.*

Forestwide public issues and management concerns were developed, from comments received over the years and from input solicited from the general public and Forest staff, specifically for this planning effort. The scoping process originally resulted in the identification of nine broad issue and concern areas from which 27 planning questions were derived. Details of that process can be found in Appendix A and the planning records for Planning Action I, "Identification of Issues, Concerns, and Opportunities." The broad issue areas and planning questions developed during the original scoping process are cited as follows.

1.4.1

Recreation

Issue - What strategy of recreation opportunity development and utilization should be emphasized by kinds and amounts of recreation opportunities and where should they be located?

Planning Questions:

What kinds of recreation experiences and what experience levels should be provided?

Should forest areas be zoned to eliminate conflicts between certain recreation activities? If so, to what extent?

What kinds and intensities of recreation activities should be planned in roadless areas released by the California Wilderness Bill?

Under what circumstances should general public recreation uses take priority over existing recreation residences?

1.4.2

Visual Resources

Issue - What priority should be given to managing scenic values in the Forest?

1.4.3

Further Planning

Issue - How should the Forest Service manage released areas?

Planning Questions:

What values exist in each released area, how suitable are they for management and to what degree of intensity should they be managed?

1.4.4

Wild and Scenic Rivers

Issue - How should we manage rivers that are inventoried for possible inclusion into the Wild and Scenic River System?

Planning Questions:

What river segments should be recommended for wild, scenic, or recreation classification?

What river segments should not be recommended for designation?

What river segments should be deferred for further study?

1.4.5

Fish, Wildlife, and Sensitive Plants

Issue - What kinds and amounts of fish and wildlife habitat should be provided, and what are management's effects on the habitats?

Planning Questions:

What is the desired mix of harvest and nonharvest species and what are the desired target species for habitat management?

What constitutes maintaining appropriate diversity of plant and animal diversity?

What effects could fish and wildlife management programs have on other resources?

What effects could other resource management programs have on Forest fish and wildlife habitat conditions?

Under what conditions should roads be closed to the public?

1.4.6 Timber

Issue - How intensive and how widespread should timber management activities be in the Forest?

Planning Questions:

How far should the Forest go toward meeting local, regional, and national demands for wood products?

How much should the Forest disperse or concentrate timber management activities, and what are the environmental and economic trade-offs?

What level and intensity of timber management activities should be planned in the roadless areas released by the California Wilderness Bill?

To what extent will harvest levels affect community stability, other resources, and uses?

How much productive forest land is suitable or unsuitable for timber management activities?

1.4.7 Energy

Issue - How shall the Forest management contribute to energy efficiency?

Planning Questions:

How much fuelwood removal can the Forest sustain over a long period? Is fuelwood removal really contributing to national energy self-sufficiency when taken in balance with the energy expended in gathering and preparation?

Can the Forest cause a change to more terminus occupancy at recreation facilities?

Is mass transit to the Forest feasible or possible for a significant number of Forest visitors?

Can the existing physical plant (buildings) in the Forest be retrofitted effectively for efficient energy use?

How can the Forest Development Road System be improved or changed to promote more efficient log hauling?

1.4.8 Hydroelectric Development

Issue - How shall the Forest Service resolve conflicts between hydroelectric development and free-flowing conditions of rivers and streams in the Forest?

1.4.9 General Issues

- Use of fire to enhance the resource values
- Desirability of vegetative manipulation measures
- Adequacy of soil and water quality protection
- Domestic use versus other resource use of Forest range

Planning Questions.

Should fire be used to enhance resource values and protection opportunities? If so, for what purposes and under what conditions?

Should vegetation manipulation/control measures be accelerated? If so, where and for what purposes?

Should management policies be changed to increase soil and water quality protection?

What is the appropriate balance between livestock grazing and other resource values and needs?

1.5 MAJOR ISSUES RESULTING FROM THE DRAFT DOCUMENT REVIEW

Following the second release of the DEIS and Draft Forest Plan and a five-month comment period in 1987, a list of five major issues was developed. This list was the result of analysis of the comments contained in approximately 2,000 letters of input and oral testimony from two formal public hearings on the DEIS and Draft Plan. Three of the five issues were related to the original timber issue contained in the initial issue list, while the other two issues are new

1.5.1 Timber

Issue - What should the allowable sale quantity (ASQ) level be?

Issue - Is clearcutting necessary to meet the Forest's long-term timber resource management goals?

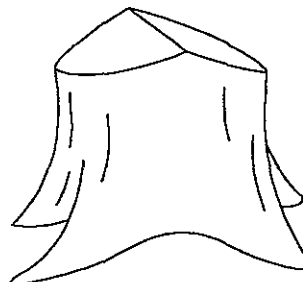
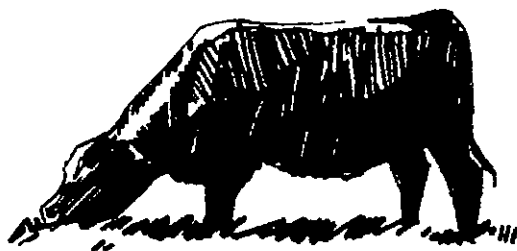
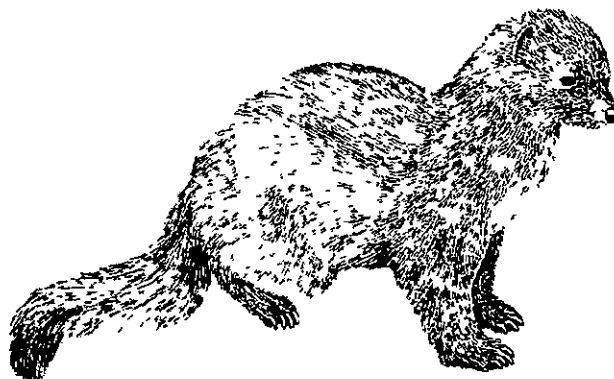
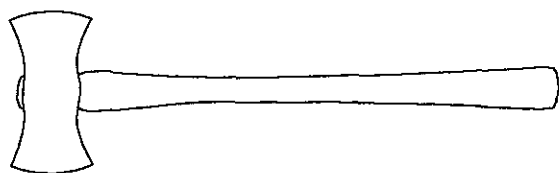
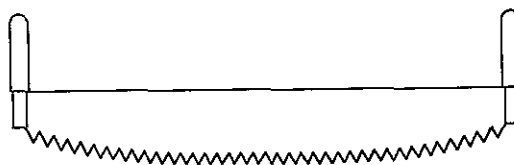
Issue - What are the socio-economic consequences of the changes in allowable sale quantity (ASQ) on the community of North Fork and surrounding area?

1.5.2 Fish, Wildlife, and Sensitive Plants

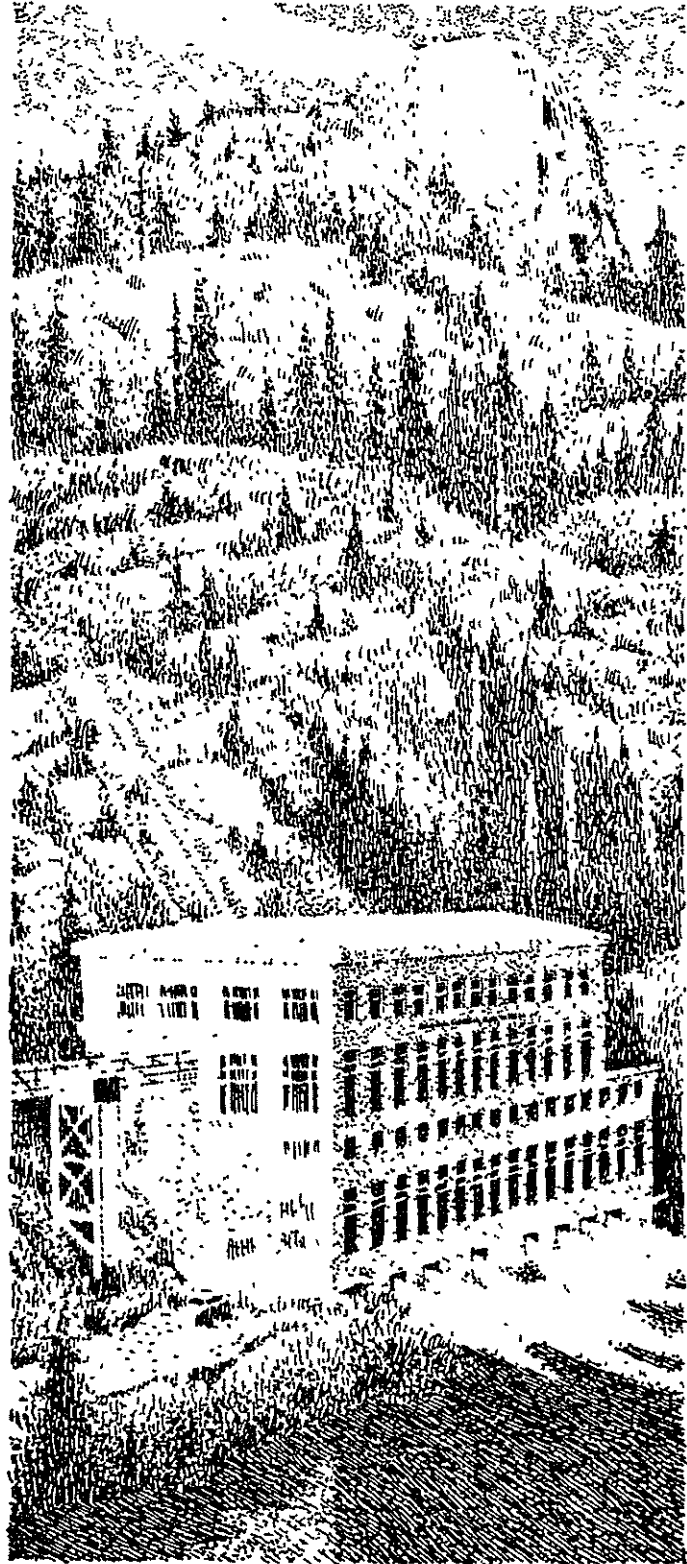
Issue - How many spotted owl habitat areas (SOHAs) should be established in the Forest?

15.3
Economics

Issue - How will the Forest implement the Forest Plan,
given the discrepancy between current budget trends and
the budget needed?



Chapter 2.0 – Alternatives Considered, Including the Proposed Plan



2.0

ALTERNATIVES CONSIDERED, INCLUDING THE PROPOSED PLAN

2.1

INTRODUCTION

This chapter describes the alternatives and benchmarks examined in the planning process. Section 2.2 defines an alternative, discusses the NEPA regulations applicable to the development of alternatives, describes how Forest alternatives were developed and discusses the range of alternatives and factors that limit the range. Section 2.3 describes the purpose and function of benchmarks and gives an explanation of each benchmark used in the process. Section 2.4 describes alternatives considered but eliminated from detailed study and the reasons why they were eliminated. Section 2.5 describes the alternatives considered in detail. This section is the heart of the chapter. It compares the alternatives both quantitatively and qualitatively through a series of narratives, tables, and figures.

2.2

ALTERNATIVE DEVELOPMENT PROCESS

2.2.1

Description of an Alternative

In forest planning, an alternative is a given combination of resource uses and management prescriptions that achieves a certain management emphasis or theme. Many combinations of such uses and prescriptions are possible in formulating a reasonable range of alternatives for evaluation as possible forest plans.

NEPA regulations require rigorous exploration and objective evaluation of all reasonable alternatives to the proposed action, including a no action or no change alternative, as well as alternatives not within the jurisdiction of the agency. NEPA regulations also require identification and discussion of alternatives eliminated from detailed study.

NFMA regulations establish criteria for guiding the development of alternatives. These criteria are:

- Each alternative will be capable of being achieved;
- A no action alternative will be formulated, representing the most likely condition expected to exist in the future if current management direction continues unchanged,
- One or more alternatives will meet the RPA program specified in the Regional guide;

- Each alternative will provide for the orderly elimination of backlogs of needed treatment for the restoration of renewable resources as necessary to achieve the multiple use objectives of that alternative;
- Each identified major public issue and management concern will be addressed in one or more alternatives; and,
- Each alternative will represent to the extent practicable the most cost efficient combination of management practices examined that can meet the objectives established in the alternative.

NFMA regulations also require that each alternative state:

- Conditions and uses resulting from the long-term application of the alternative;
- The goods and services to be produced, and the timing and flow of these resource outputs;
- Resource management standards and guidelines, and,
- Purposes of the management direction proposed

The alternatives described in this chapter are based on management themes, each of which is a strategy for managing the land and resources of a given area. The alternatives considered thus represent different combinations of management prescriptions, management intensities, and area apportionments. These differences vary from alternative to alternative because each alternative's theme is different. This does not mean there are no similarities between the alternatives. For example, all alternatives preclude intensive timber management in developed recreation areas where high capital investments exist. However, the intensity of recreation and other resource management in those areas varies as a function of the alternatives' themes. The objective for each alternative is to produce the most Net Public Benefit within the goals and objectives for that particular alternative.

2.2.2

Description of the Process Used to Develop Alternatives

The formulation of alternatives (Planning Action 5) is the culmination of Planning Actions 1 through 4 of the NFMA Planning Process. The following discussion summarizes how Planning Actions 1 through 5 were accomplished. A more detailed discussion of the various components, including the use of FORPLAN, is found in Appendix B as well as in the Forest's planning records.

1. Management concerns were developed by the Forest Management Team and public issues identified through public involvement. The public issues and management concerns were screened and consolidated into a set of issue statements to be addressed in the Forest Plan and DEIS. A detailed discussion of issues and concerns,

including the scoping and screening process can be found in Appendix A.

2. Supply and demand projections were made by the ID Team for various resources such as recreation, timber, and range. Also, needed changes in Management Direction and opportunities to deal with the issues by changing future management emphasis were identified. More detailed information concerning supply and demand can be found in Chapter 3 and in the Forest Planning Records

3. Using the list of issues and determining where opportunities existed to resolve the issues, a set of issue analysis areas was identified and mapped for use in the planning process. The boundaries of these areas were established using soils, vegetation, and topographic information as well as administrative boundaries and previous management decisions (not subject to change) in this plan. The primary purpose of these areas was to identify broad areas relative to issue conflict that form the basis for deriving management areas in accord with the theme of each alternative. They are not to be confused with the analysis areas used in FORPLAN. FORPLAN analysis areas are further sub-divisions of the issue analysis areas discussed here.

4. A list of possible management practices and activities applicable to the Forest were developed using the definitions in the Management Information Handbook. Many of these activities were eventually entered into a linear computer program, FORPLAN, and are referred to as FORPLAN prescriptions. Appendix B contains a detailed discussion on the use of FORPLAN.

5. A set of preliminary alternatives, including themes, Management Direction, and Standards and Guidelines was developed. RPA alternatives, adjusted to fit local issues and conditions, formed the basis for development of the alternatives by the Forest ID team.

The alternatives were then mailed to the public for comment. These comments, as well as the comments received on the original DEIS helped formulate the final set of alternatives appearing in this document. (See Appendix A for more detailed discussion of public involvement on the preliminary alternatives and original DEIS.)

6. The analysis areas described in Step 3 were subdivided into similar land units for use in FORPLAN. These units, called FORPLAN Analysis Areas, allow distinctions to be made relative to costs, outputs, and different land capability and suitability on various areas within the Forest.

Two hundred analysis areas were identified. For each FORPLAN analysis area, the full range of suitable FORPLAN prescriptions that could be applied was identified. Only those practices and activities that are

feasible and will not cause permanent impairment of site productivity were used in the FORPLAN analysis.

7. The preliminary alternatives, adjusted in response to public comment and Forest Management Team concerns, along with a preferred alternative, were then analyzed using FORPLAN, FIREPLAN, and Transshipment Models in an interactive mode.

A DEIS and Proposed Plan were then completed and mailed to the public for comment. Content analysis of the public comments was completed and a final EIS and Plan prepared, but not distributed. New direction and legal decisions necessitated that additional analysis be done and the DEIS re-issued.

8. FORPLAN analysis areas and the Forest issue analysis areas were adjusted to reflect the California Wilderness Bill decisions.

9. Benchmarks were then run using FORPLAN to:

- a. Display the Forest's minimum or naturally occurring level of activities and outputs
- b. Determine the Forest's maximum potential to produce individual resources such as water, livestock forage, timber, and wilderness.
- c. Determine the most cost efficient schedule of activities and allocation of land areas using only minimum management requirements.
- d. Serve as a reference point for comparing alternatives.
- e. Determine the space within which alternatives can be developed.
- f. Conduct constraint analysis for the purpose of determining the effects individual constraints have on present net value.

10. Based on the limits and opportunities defined by the analysis of the benchmarks and the public and Management Team comments received on the original DEIS, the alternative themes were modified and new alternatives added. New alternative themes were added to ensure a wide range of options for future management of the Forest and to deal with the additional issues and concerns that evolved over time.

11. Minimum management requirements were then imposed on each alternative and additional modeling requirements were added to the individual alternatives, where necessary, depending on the alternative's theme, goals, and objectives. These requirements are discussed in detail in Appendix B. FORPLAN was then used to determine the most cost efficient combination of prescriptions, activities and outputs for each alternative.

12. The results of the FORPLAN linear computer program runs for each alternative were evaluated by the ID Team and Forest Management Team to ensure that the allocation of prescriptions and schedule of resource outputs could be implemented on the ground. Adjustments were made, where needed, to produce feasible schedules of prescriptions and outputs while still meeting the themes and goals of the alternatives. The adjusted alternatives were then run again through the FORPLAN linear computer program for final solution. In completing this process, many alternatives were run several times, including variations of the alternative for testing purposes.

13. The issue areas described in Step 3 were then aggregated into management areas to spatially assign FORPLAN solutions and the management prescriptions to ground locations.

Each management prescription includes a set of compatible directions, including applicable standards and guidelines and a list of activities and practices necessary to attain the goals and objectives of an alternative. More than one management prescription can apply to a given management area and the list of practices and activities include both those apportioned by FORPLAN and those assigned outside FORPLAN by the ID Team and Forest Management Team. Application of management direction to site specific locations within management areas is accomplished through a direction tiering process which is unique to Sierra National Forest. This direction tiering process is explained in detail later in the chapter.

2.2.3

Range of Alternatives

Indicators which demonstrate that a broad range of alternatives have been considered in this document include:

1. The range of alternatives for most resources is well distributed between the minimum level benchmark and the maximum single resource benchmarks
2. All the issue statements are addressed by one or more alternatives
3. All Further Planning Areas and portions thereof are apportioned to both wilderness and non-wilderness in one or more alternatives.
4. A broad range of Wild and Scenic River recommendations are made.
5. Various resources, such as timber and range, show wide ranges of outputs and activities or in the case of recreation, a wide range of activity, intensity level, and quality of experience.
6. Management goals, direction and standards and guidelines vary significantly between alternatives.

The physical characteristics and statutory or judicial obligations that limit the range of alternatives were also considered. Specifically, these present significant limitations on the kinds and amounts of goods and services, the management options, and thus the range of viable alternatives that can be considered as part of this planning process. These are summarized below.

1. High Capital Investment Areas

In developed recreational areas like Bass Lake and Huntington Lake, where high capital investments exist, little variation occurs in land allocation between alternatives. However, in and around these areas, types and intensities of activities vary widely.

2. Designated Areas

The Ansel Adams (138,660 acres), John Muir (315,790 acres), Dinkey Lakes (30,000 acres), Kaiser (22,700 acres), and Monarch (20,788 acres) Wilderness areas and the Kings River Special Management Area (48,668 total acres, 24,368 acres Sierra, 24,300 acres Sequoia) and portions of the Kings and Merced Wild & Scenic Rivers will not be subject to re-evaluation or change as a result of this planning.

Smaller classified areas not subject to reevaluation include Teakettle Creek Experimental Forest, Backbone Creek Research Natural Area, Carpenteria Botanical Area, Kings Caverns Geological Area, and San Joaquin Experimental Range.

3. Special Uses

In 1984, 1,157 permits on approximately 6683 acres authorized various uses of Forest land. These ranged from cabins and resorts to ski areas, roads, utilities, and established water uses in and along reservoirs. This did not include six temporary permits on 36,170 acres, which authorized cultural resources surveys and studies. These permits would not change as a result of this planning.

4. Withdrawals

About 378,175 acres of existing and previously proposed withdrawals from power and mineral entry may be affected upon completion of the Withdrawal Review pursuant to Public Law 94-579, Section 204. Unless or until these withdrawals are restored, management activities on the affected land will be limited accordingly.

5. Accessible Terrain

About 50% of the Forest is accessed by about 2,550 miles of road, of which approximately 300 miles are under the jurisdiction of counties and the State. Approximately 15% of the remaining Forest roads are cooperatively managed with other landowners.

6. Wildfire

There will always be land subject to wildfire from weather and terrain conditions and human presence. This cannot be avoided, mitigated, or eliminated, no matter what the fire management policies are or what organization may be available.

Figure 2.01 graphically compares selected resources in Decades 1 and 5.



FIGURE 2.01 - COMPARISON OF AVERAGE ANNUAL OUTPUTS AND COSTS

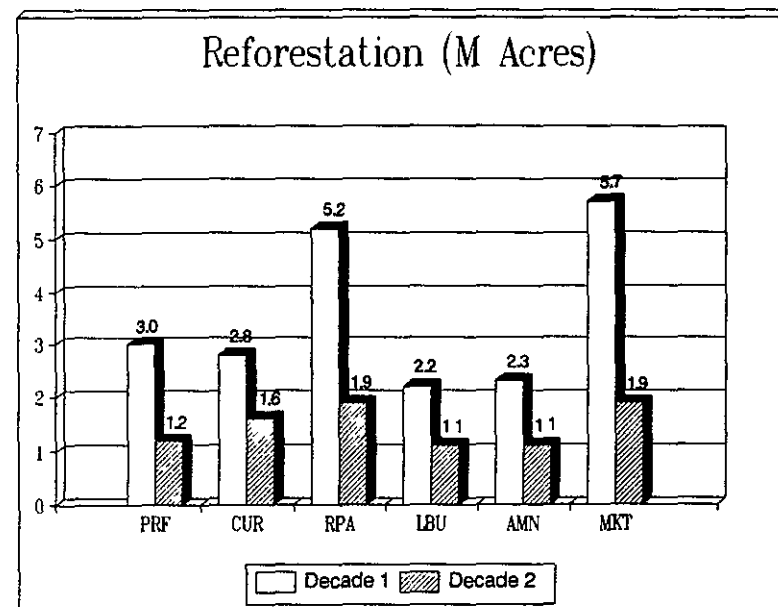
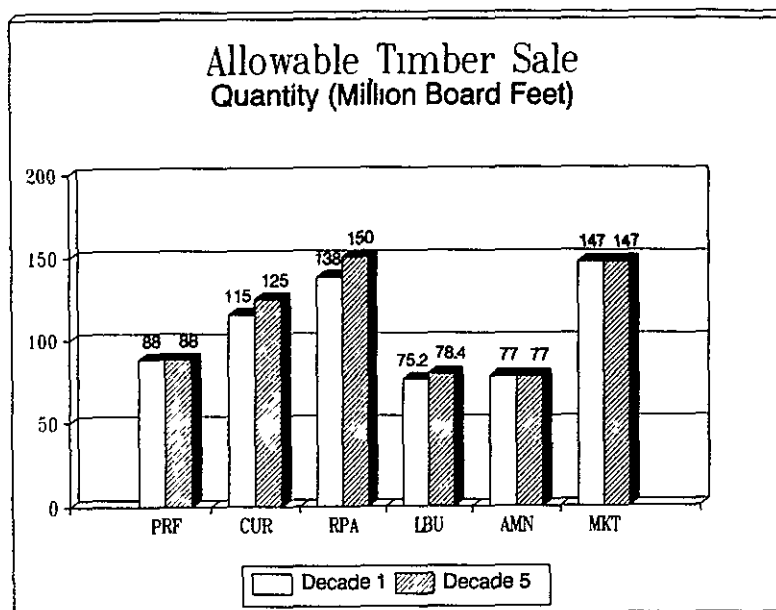
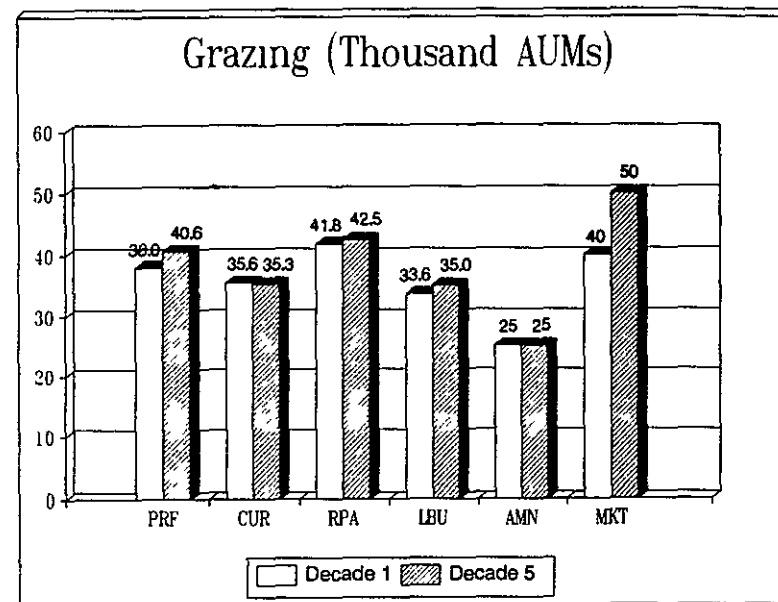
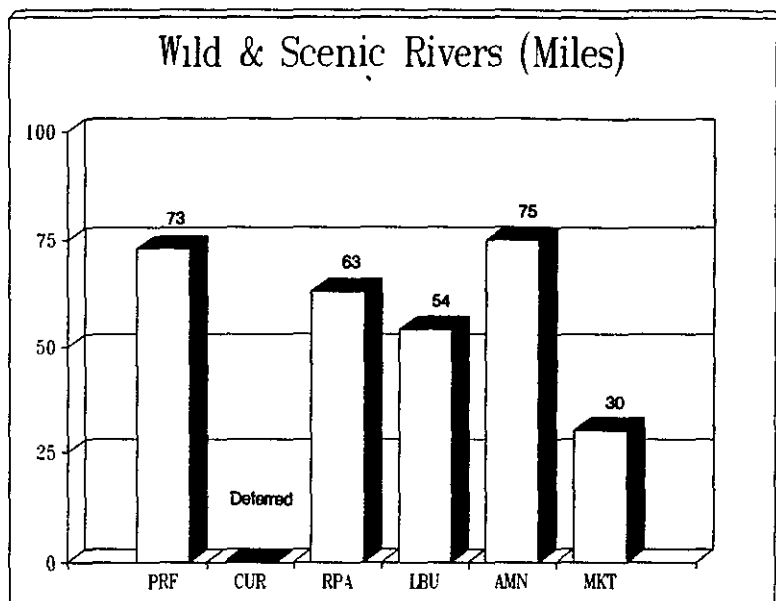
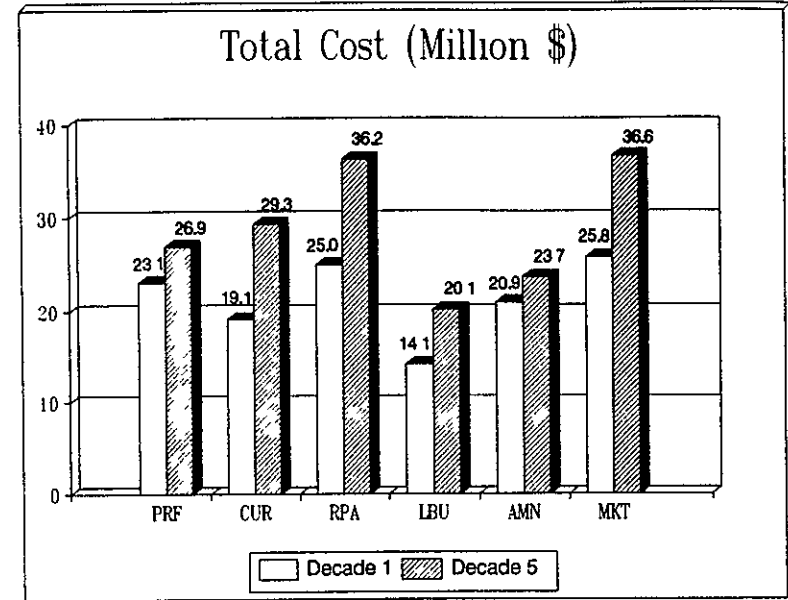
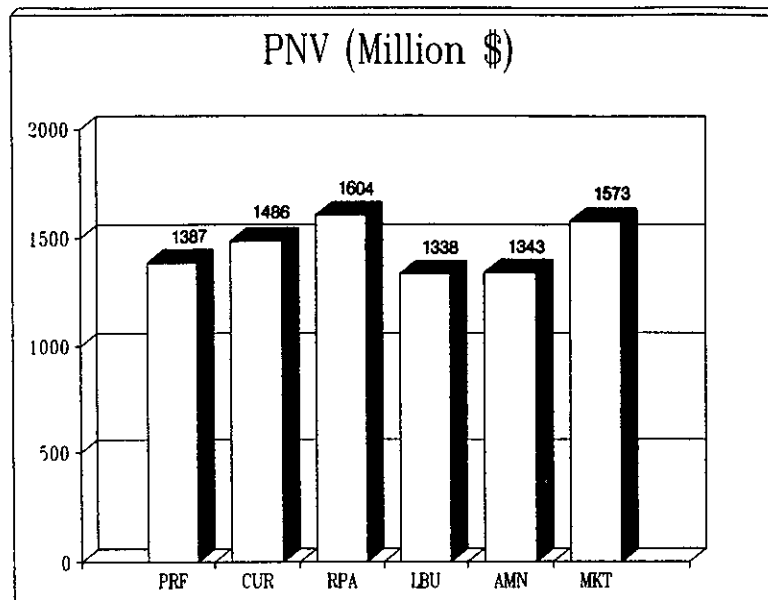
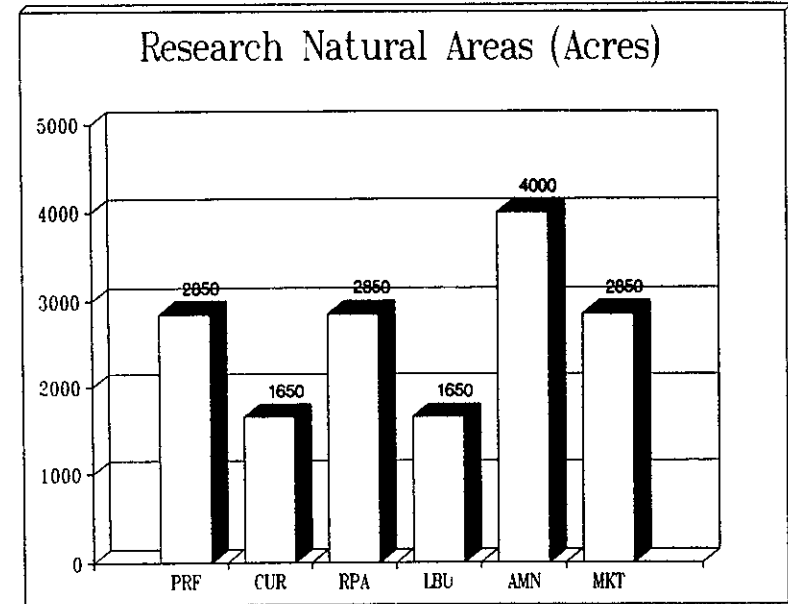
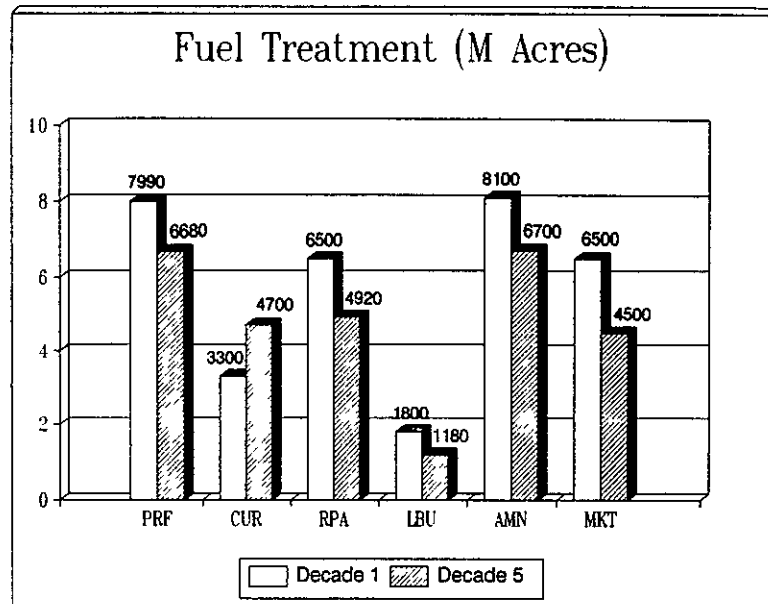


FIGURE 2 01 - COMPARISON OF AVERAGE ANNUAL OUTPUTS AND COSTS

(Continued)



2.3 THE BENCHMARKS

During the analysis of the management situation, resource supply potentials were determined by establishing minimum and maximum production levels for single resources. In addition, production capabilities were determined for a set of multiple resource outputs that maximize present net value. This "benchmark" analysis established the "decision space" within which alternatives could be developed. The benchmarks also form a basis for comparing alternatives.

Three types of benchmarks were developed for the Sierra National Forest.

1. Resource benchmarks - These benchmarks define the maximum potentials for timber, water, range, and wilderness.
2. Maximum present net value (PNV) benchmarks - These benchmarks maximize PNV while considering various combinations of market and nonmarket outputs and different mixes of minimum management requirements.
3. Minimum cost benchmark - This benchmark displays the minimum outputs associated with custodial management of the Forest and unavoidable costs and benefits of public ownership.

The benchmarks were not considered as alternatives in the planning process for a number of reasons. Many benchmarks were designed to show single resource potentials. As such, they did not respond to issues and concerns (such as scenery, recreation, wildlife habitat and community stability), meet realistic resource needs, or provide a balanced or integrated approach to Forest management. While the benchmarks display physical, biological, and technical capabilities, they are not limited by policy, budget, discretionary constraints, spatial feasibility, or program and staffing requirements which are integral parts in considering implementability.

Following are brief descriptions of the benchmarks and what significant findings were learned from each. Selected outputs from the benchmarks are displayed in Table 2.01. A more complete description of how each benchmark was modeled is contained in Appendix B. Dollar values used in the economic analysis are based on a "willingness to pay" for some resources, which differs from the price actually charged in some instances.

Minimum Level of Management (MLV)

The purpose of this benchmark is to estimate the costs and values of the background outputs that occur regardless of any Forest activities. Minimum level is thought of as an accounting analysis to determine the residual outputs and fixed costs associated with maintaining the Sierra National Forest. This benchmark is used as a base to compare other alternatives. Because

it is only an accounting analysis, the phase-in period needed, if minimum level is actually implemented, is ignored. This benchmark's main purpose is to illustrate which outputs, costs and values occur regardless of any management influences, and to later show which are actually induced by Forest Service activities.

This benchmark results in all commodity outputs on the Forest being reduced to zero (including timber, grazing and developed recreation). All public and private sector developed recreation facilities on National Forest land is closed and allowed to deteriorate. Wilderness areas are not administered or maintained. Their trail structure is allowed to deteriorate and the only use continuing is induced dispersed recreation. Dispersed recreation use that cannot be discouraged or controlled continues to occur. State and county roads remain open but most Forest roads are closed. Cultural resource management is at a minimum and primarily for the protection of cultural properties (especially in conjunction with minerals management or unauthorized recreation activities).

Vegetation follows natural succession. Habitat capability for management indicator species requiring both early and late seral stage habitat stabilize over time. The timber program is discontinued. All road development is halted. The soil and watershed conditions return to their natural state. Every subsequent benchmark and alternative must at least produce the same outputs as this minimum level benchmark.

Minimum level management can be achieved with a significant decrease in costs, but also with a significant decrease in PNV. Results are about as expected. Most of the issues will not be resolved with this kind of management.

Maximum PNV With Flow-LTSY Constraints Only (FLW)

This benchmark shows the most economically efficient level of resources with assigned values that can be provided without applying Minimum Management Requirements (MMRs), and harvest flow constraints. Only those constraints necessary to assure technical feasibility are included. Management activities are constrained only by production limitations. It is also used as the basis for evaluating the effect of MMR's on PNV.

This benchmark produces the highest PNV. It only requires 301M acres out of the possible 393M acres of CAS land to achieve maximum PNV. Timber yields in the first decade more than double current yields, but by the fifth decade the yield is slightly below the current level. Grazing outputs double and remain high. Water yields increase 9% due to the large amount of clearcutting, and recreational demands are met in all time frames. The budget needed to provide the high level of PNV is almost two and a half times current levels.

This benchmark does not meet legal requirements for water quality, riparian habitat, wildlife diversity, and some other ecological elements, nor does it recognize the need for visual quality maintenance. It displays the maximum PNV value and the associated outputs that can be produced regardless of the impacts on other resources. Only wildlife species that benefit from early successional stages are enhanced. The habitat required for spotted owls and goshawks are reduced below a viable level.

Since basic resource protection is not provided, it responds to few issues. Fluctuating timber outputs probably have adverse effects on community stability.

Maximum PNV Assigned Values (MMR)

This benchmark maximizes the present net values of all outputs having assigned monetary values. For the Forest these outputs include timber, grazing, developed recreation, wilderness and dispersed recreation, water, wildlife, and fish.

This benchmark shows that substantial increases in outputs from current levels can be achieved with a relatively high PNV and still meet all MMRs. This is accomplished by increasing the total cost by 50%. When compared to the FLW Benchmark, PNV is only reduced 2%. This demonstrates that imposing MMRs cause little economic consequences for the Forest. Some of the significant findings from this benchmark, which illustrate the most economic solution for the forest when compared to the base year (1982) include:

1. Grazing increases from 35M AUMs to an average of 70 M AUMs.
2. ASQ increases from 110 MMBF per year to 163.8 MMBF.
3. Water yield increases an average of 127 MM acre feet per year during the first decade.
4. All but 7,900 acres of suitable timber acreage are utilized.
5. Habitat capability for 52 pairs of spotted owls remains at the end of 50 years.

Maximum PNV Market Values Only (MKV)

This benchmark estimated the mix of resource uses and provided a schedule of outputs and costs that maximized the present net value of those outputs that have established market values. The values were removed from the non-market resources for the formulation of this benchmark. Only those values for timber, range and developed recreation were allowed to affect the land allocations and output production levels.

When compared to the MMR benchmark:

1. ASQ dropped 12.2 MMBF because an additional 7,700 acres went to Min-level to maximize Timber PNV.
2. The amount of clearcutting decreased due to the removal of water values.
3. The amount of water yield was reduced due to its value being removed.
4. Dispersed recreation was reduced due to the particular form of recreation being valued.
5. Wilderness use was reduced due to not being valued.
6. Developed recreation continued to be provided as in the MMR benchmark because it had an established value.
7. Wildlife and Fish User Days were reduced due to not being valued.
8. Total cost was reduced due to funds not being expended to produce non-market outputs such as wilderness, wildlife and fisheries.
9. The large drop in PNV that occurred indicated the relative importance of nonmarket resources on the Forest.

While the benchmark responds to issues related to the production of market outputs, it does not address issues related to non-market benefits such as wildlife, dispersed recreation and wilderness.

Maximum Timber Outputs - 1st Decade (TBR)

This benchmark maximizes the production of timber subject to minimum standards of laws and regulations and without impairing the productivity of the land. A single resource emphasis is used to determine the actual biological potential of the Forest to produce timber. The resulting schedule of timber flows over time is the maximum that can be produced in the first decade and still maintain a sustained yield of timber indefinitely. Various constraints are imposed to insure soil and water productivity is not impaired. All land area classified as capable, suitable, and available for timber production is included.

This benchmark is designed to show the maximum Long-term Sustained Yield (LTSY) possible, subject to MMRs. It results in a 2% PNV drop when compared to the FLW Benchmark, but is almost identical to the PNV in the MMR Benchmark. This indicates that maximizing the timber resource from the Forest has little impact on PNV.

This benchmark shows the maximum long-run yield attainable is 175 MMBF/ year with the minimum legal requirements met. This harvest level of 175 MMBF/year is the limit FORPLAN was allowed to harvest. This limit represents 90% of the optimum LTSY potential of the entire CAS acreage. Clearcut areas are approximately the same as the 65,000 acres MMR in the first decade. Over the first five decades, the TBR Benchmark clearcuts 24,000 acres more than the MMR Benchmark. In order to maximize PNV, the MMR Benchmark places 7,900 acres in Min-level.

Other resource outputs remain about the same, with recreation somewhat lower. Some issues are resolved, however there are concerns over visual quality and the amount of clearcutting that remain

Maximum Timber Outputs - 1st Decade Without Nondeclining Yield (TBD)

This is the same as TBR without the nondeclining yield restriction. This benchmark maximizes timber in the first decade (as does TBR, but without the nondeclining yield constraint). This has very little impact on PNV (less than 1%, lower than TBR and MMR). Timber outputs average 35.7 MMCF per year higher than TBR Benchmark in the first decade, but decline after that to approximately the same level as TBR. LTSY is the same for TBR and TBD. It responds to issues comparably with TBR, while producing significantly higher timber outputs in the first decade. This has a positive effect on local jobs and income, thus helping community stability.

Maximum PNV with Maximum Wilderness (WLN)

This benchmark maximizes PNV using MMRs and assigns the one further planning area on the Forest to wilderness.

Assigning the Kings River B Further Planning Area to wilderness lowers timber outputs (from MMR run) 1 MMBF/year, with no drop in PNV. Timber yields and timber PNV change less than 1% because of little CAS land in the further planning area.

All other outputs remain about the same as the MMR Benchmark. Wilderness acreage on the Sierra increases 24,368 acres. Dispersed recreation use decreases by 44 MRVDs per year the first decade and wilderness use increases by the same amount due to change of Kings River Further Planning Area to wilderness.

Maximum Range Outputs - Five Decades (RGN)

This benchmark maximizes production of livestock forage subject to minimum standards of laws and regulations without impairing the productivity of the land. A single resource emphasis is used to determine the actual biological potential of the Forest to produce livestock forage. The resulting schedule of forage levels over time is the maximum amount that can be produced over the

first five decades. All land areas classified as capable, suitable, and available for livestock forage production is included in the analysis.

Maximizing range resource shows a five-decade average of 71,000 AUM/year is possible. This benchmark also cuts a high amount of timber because of the transitory range benefits from cut-over areas. The PNV is 1% lower than the PNV in the MMR Benchmark.

The output of AUMs does not increase significantly because the MMR Benchmark is already near maximum AUM potential for the Forest. The allowable sale quantity increases 8.6 MMBF mainly because it assigns 7,900 more acres to timber harvest than the MMR Benchmark.

While most commodity-oriented issues are addressed under this benchmark, the nonmarket issues are given only minimum consideration. The visual resource is not considered.

Maximum Water Yields - Five Decades (H2O)

This benchmark maximizes the production of water subject to minimum standards of laws and regulations without impairing the productivity of the land. A single resource emphasis is used to determine the actual biological potential of the Forest to produce water yield. The resulting schedule of water yields over time is the maximum total amount that can be produced over the first five decades.

This benchmark shows the direct relation between timber harvest (particularly even-aged management) and water yield. In order to maximize water yield (five-decade average of 2.738 million acre-feet/year, or 80,000 acre-feet more than the MMR), timber is harvested at an annual level of 168 MMBF, with a corresponding drop in PNV (from MMR) of 1.1%. Allowable sale quantity increases 3% however, timber costs increase significantly when compared to benefits because of the large amount of poorly stocked and low site areas regenerated to maximize water yield.

Since TBR has a higher timber harvest and higher PNV, modifying harvest to produce water does not appear to be economically justified.

This benchmark meets concerns dealing with water yields and commodity outputs, but again only considers most nonmarket issues at minimum levels. Visual quality, as in other benchmarks, is not addressed.

2.3.1

Significant Findings and Conclusion from Benchmarks

The following statements describe the significant findings and conclusion drawn from the Benchmark Analysis process. The TBC Benchmark (Maximized timber for one period with MMR, NDY, and Utilization) was not

run because minimum merchantability standards were the same as in the TBD Benchmark, except for minor amounts of red fir.

The maximum resource potentials (for timber, range, and water) indicate upper production limits are possible for resource management, but unrealistic to achieve because of high costs, lower PNV, and unacceptable trade-offs with other resources.

MMRs are found to have low economic impacts in terms of PNV.

Substantial short-term increases in timber outputs can only be achieved with large budget increases.

The overall PNV varies less than 2% between benchmarks that value both market and nonmarket resources.

Unless constrained or not, valued Dispersed Recreation RVDs, Developed Recreation RVDs and WFUDs always go to the demand cutoff because benefit values far exceed

the costs of providing the use. When only market resources are valued, the PNV drops significantly.

Water yield does not vary significantly between the benchmarks. As long as water is valued, range outputs unless constrained, do not vary significantly between benchmarks and produce AUMs near maximum potential. Water values have a key effect on the amount of AUMs produced and acres selected for timber harvest.

The same fire program is selected in all benchmarks, except the min-level and maximum water benchmarks.

The disposition of the one remaining further planning area in the Forest has little effect on resource outputs or PNV.

The effects on the habitat capability for California spotted owls and goshawks do not vary significantly among the benchmarks, except for FLW-unconstrained.

TABLE 2.01 - COMPARISON OF BENCHMARKS BY OUTPUTS AND ACTIVITIES

Per Year Outputs (Units) Base Year (1982)	Decade	MLV Min Level	FLW Uncon- strained	TBR Max Timber	TBD Max w/D	WLN Max Wilderness	RGN Max Range	H ₂ O Max Water	MMR	MKV Market Value
Developed Site (M RVD/Yr) 1982 = 1580	1	0	1705.0	1705.0	1705.0	1705 0	1705 0	1705.0	1705.0	1705.0
	2	0	1875.0	1875.0	1875.0	1875 0	1875 0	1875.0	1875.0	1875.0
	3	0	2035.0	2035.0	2035.0	2035 0	2035 0	2035.0	2035.0	2035.0
	4	0	2215.0	2215.0	2215.0	2215.0	2215.0	2215.0	2215.0	2215.0
	5	0	2410.0	2410.0	2410.0	2410 0	2410 0	2410.0	2410.0	2410.0
Dispersed Recreation (M RVD / Yr) 1982 = 2033	1	1042.7	2095.8	2095.8	2095.8	2091 4	2095.8	2095.8	2095.8	1042.7
	2	1184.1	2384.7	2384.7	2384.7	2379 9	2384.7	2384.7	2384.7	1184.1
	3	1314.2	2652.4	2652.4	2652.4	2647 2	2652.4	2652.4	2652.4	1314.2
	4	1451.8	2936.8	2936.8	2936.8	2931 1	2936.8	2936.8	2936.8	1451.8
	5	1616.5	3330.7	3330.7	3330.7	3324 5	3330.7	3330.7	3330.7	1616.5
Wilderness Use (M RVD / Yr) 1982 = 220.0	1	231.4	462.8	462.8	462.8	467 2	462.8	462.8	462.8	231.4
	2	259.2	518.3	518.3	518.3	522.3	518.3	518.3	518.3	259.2
	3	283.8	567.6	567.6	567.6	572.8	567.6	567.6	567.6	283.8
	4	308.5	617.0	617.0	617.0	622.7	617	617.0	617.0	308.5
	5	308.5	617.0	617.0	617.0	623.2	617	617.0	617.0	308.5
Deer (M Animals) 1982 = 15.0	1	16.5	7.5	15.0	15.4	13.5	10.7	14.1	13.4	11.2
	2	16.5	5.3	13.5	14.6	12.5	9.8	12.9	12.4	8.6
	3	16.5	3.7	12.1	13.9	11.6	9.0	11.8	11.4	6.6
	4	16.5	2.6	10.9	13.9	10.7	8.2	10.8	10.4	5.1
	5	16.5	1.8	9.8	12.5	9.9	7.5	9.9	9.6	3.9
Potential Spotted Owls (Pairs) 1982 = 130 [1]	1	130	84	106	102	104	102	108	105	112
	2	138	61	89	89	90	86	88	90	98
	3	140	45	74	70	74	62	67	74	84
	4	139	21	57	57	58	47	50	58	70
	5	143	20	49	54	52	44	47	52	62
Goshawks (Pairs) 1982 = 50	1	50	44	50	50	50	50	50	50	50
	2	50	43	50	50	50	50	50	50	50
	3	50	37	50	50	50	50	50	50	50
	4	50	33	50	50	50	50	50	50	50
	5	50	31	50	50	50	50	50	50	50
[1] The number of owls was utilized as a relative index for comparison of alternatives. This value was derived by dividing the mean home range value into the acres of suitable habitat. This index was not adjusted for spacial distribution of habitat and other variables to attain an estimate of the potential population numbers.										

TABLE 2.01 - COMPARISON OF BENCHMARKS BY OUTPUTS AND ACTIVITIES

Per Year Outputs (Units) Base Year (1982)	Decade	MLV Min Level	FLW Uncon- strained	TBR Max Timber	TBD Max w/D	WLN Max Wilderness	RGN Max Range	H ₂ O Max Water	MMR	MKV Market Value
Peregrine Falcons (Breeding Pairs) 1982 = 0	1	3	3	3	3	3	3	3	3	3
	2	3	3	3	3	3	3	3	3	3
	3	3	3	3	3	3	3	3	3	3
	4	3	3	3	3	3	3	3	3	3
	5	3	3	3	3	3	3	3	3	3
Bald Eagles (Wintering Index) 1982 = 5-10	1	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
	2	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
	3	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
	4	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
	5	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10	5-10
Lahontan Cutthroat Trout (Population) 1982 = 2	1	2	2	2	2	2	2	2	2	2
	2	2	2	2	2	2	2	2	2	2
	3	2	2	2	2	2	2	2	2	2
	4	2	2	2	2	2	2	2	2	2
	5	2	2	2	2	2	2	2	2	2
Painte Cutthroat Trout (Population) 1982 = 2	1	2	2	2	2	2	2	2	2	2
	2	2	2	2	2	2	2	2	2	2
	3	2	2	2	2	2	2	2	2	2
	4	2	2	2	2	2	2	2	2	2
	5	2	2	2	2	2	2	2	2	2
Resident Fish (M Pounds) 1982 = 100	1	100	100	100	100	100	100	100	100	100
	2	110	95	100	100	100	100	100	100	100
	3	120	90	100	100	100	100	100	100	100
	4	135	85	100	100	100	100	100	100	100
	5	140	75	100	100	100	100	100	100	100
Wildlife & Fish User Days (M WFUD) 1982 = 471.0	1	218.9	486.5	487.5	465.5	487.5	487.5	487.5	486.5	256.2
	2	218.9	529.5	529.5	529.5	529.5	529.5	529.5	529.5	268.1
	3	218.9	572.0	572.0	572.0	572.0	572.0	572.0	572.0	276.3
	4	218.9	614.9	614.9	614.9	614.9	614.9	614.9	614.9	276.0
	5	218.9	657.7	657.7	657.7	657.7	657.7	657.7	657.7	270.5

TABLE 2.01 - COMPARISON OF BENCHMARKS BY OUTPUTS AND ACTIVITIES

Per Year Outputs (Units) Base Year (1982)	Decade	MLV Min Level	FLW Uncon- strained	TBR Max Timber	TBD Max w/D	WLN Max Wilderness	RGN Max Range	H ₂ O Max Water	MMR	MKV Market Value
Grazing (M AUM / Yr) 1982 = 35.0	1	0	71.6	70.1	70.4	70.2	71.5	70.4	70.2	41.3
	2	0	69.7	69.7	69.6	69.6	70.5	69.6	69.6	40.9
	3	0	69.5	69.7	70.0	69.6	71.3	70.1	69.6	41.0
	4	0	69.7	69.7	69.5	69.4	70.4	69.7	69.4	40.9
	5	0	69.3	69.4	69.5	69.3	71.4	70.0	69.3	40.9
Timber ASQ (M MBF / Yr) 1982 = 110.0	1	0	296.07	174.94	210.6	163.39	172.4	168.17	163.8	151.6
	2	0	240.11	174.94	175.0	163.39	172.4	168.17	163.8	151.6
	3	0	194.73	174.94	175.0	163.39	172.4	168.17	163.8	151.6
	4	0	157.93	174.94	175.0	163.39	172.4	168.17	163.8	151.6
	5	0	128.08	174.94	175.0	163.39	172.4	168.17	163.8	151.6
Clearcut Acres (Acres / Yr) 1982 = 2800	1	0	13030	6070	5870	6320	5510	7100	6320	2850
	2	0	2160	2950	3220	3310	3170	3730	3320	2290
	3	0	3180	3220	2950	3890	4220	5660	3900	2530
	4	0	2540	2010	2200	1610	1850	2570	1630	2070
	5	0	2440	2140	2270	980	2260	3970	990	2340
Shelterwood Seed Step (Acres / Yr) 1982 = 1800	1	0	11	196	1450	28	2424	508	27	1510
	2	0	2185	1383	810	629	221	389	629	464
	3	0	0	980	2940	14	2980	836	14	391
	4	0	1675	2119	1410	149	1070	1848	1473	380
	5	0	7	882	1170	123	5418	1896	1237	10
Commercial Thinning (MMBF / Yr) 1982 = 5.4	1	0	0	0.4	0.0	0.3	0.4	0.3	0.3	.5
	2	0	21.1	14.7	14.6	13.4	1.6	1.5	13.9	15.1
	3	0	24.2	24.2	6.1	22.6	1.6	1.5	23.2	22.5
	4	0	24.2	38.7	0.0	37.1	6.2	6.4	38.0	43.0
	5	0	45.6	86.9	24.1	84.9	25.9	7.6	86.0	90.2
Timber Suitable (M Acres)		0	301.2	393.7	393.7	384.8	393.7	393.7	385.8	378.1
Optimal LTSY (MMBF / Yr)		0	163.9	192.4	192.4	187.9	192.4	192.4	188.4	184.5
Optimal Ending Inv. (MMBF)		0	7558.1	9079.6	9079.6	8854.5	9079.6	9079.6	8876.2	8688.4

TABLE 2.01 - COMPARISON OF BENCHMARKS BY OUTPUTS AND ACTIVITIES

Per Year Outputs (Units)	Decade	MLV Min Level	FLW Uncon- strained	TBR Max Timber	TBD Max w/D	WLN Max Wilderness	RGN Max Range	H ₂ O Max Water	MMR	MKV Market Value
Base Year (1982)										
Wilderness Suitable (M Acres)		527.938	527.938	527.938	527.938	552 306	527.938	527 938	527.938	527.938
1982 = 300.2										
Water (MM Acre-Feet/Yr)	1	2.565	2 807	2 668	2,650	2 692	2 693	2 708	2,692	2,626
	2	2.565	2,722	2,682	2,644	2,685	2,680	2,697	2,685	2,633
	3	2.565	2 731	2,702	2 675	2 709	2 734	2,754	2,709	2,652
1982 = 2,565	4	2 565	2,702	2,688	2,672	2,679	2,689	2,717	2,680	2 647
	5	2.565	2,682	2 679	2 661	2 658	2 718	2 738	2 658	2,650
Fire Program / Option (FP Option)	1	A / Min	B / Current	B / Current	B / Current	B / Current	B / Current	C / +40	B / Current	B / Current
	2	A / Min	B / Current	B / Current	B / Current	B / Current	B / Current	C / +40	B / Current	B / Current
	3	A / Min	B / Current	B / Current	B / Current	B / Current	B / Current	C / +40	B / Current	B / Current
	4	A / Min	B / Current	B / Current	B / Current	B / Current	B / Current	C / +40	B / Current	B / Current
	5	A / Min	B / Current	B / Current	B / Current	B / Current	B / Current	C / +40	B / Current	B / Current
Burned Acres (Acres / Yr)	1	46,891	18,480	20,821	20,578	20,729	20,436	13,273	20 737	17,784
	2	47,581	19,118	21,648	21 476	21 627	21,479	14 151	21,637	18,943
	3	48,271	19,604	22 086	21,526	22,115	21 226	13,140	22,125	19,644
1982 = 2,279	4	48 846	20,119	22,805	22 365	23,055	22,225	13 797	23,065	20,718
	5	48,846	19,291	21 980	21,424	22,414	20 296	12,292	22,421	20 090
PNV (MM\$) 4%		3890.2	5688.0	5568 6	5561 6	5573.1	5511 6	5507 9	5573 4	4796 7
Discounted Value		4027.1	6642.5	6441.5	6473 3	6399.4	6413.3	6412.4	6400 8	5490.0
Discounted Costs		136.9	954.5	872.9	911.7	826.3	901.7	904.5	827.4	693.3
Budget (MM\$/Yr)	1	4.2	46.5	31.5	30 5	30.7	33.8	33 7	30.8	25.5
	2	4.2	42.2	35.2	29 8	33.3	34 5	36 0	33.4	28.1
	3	4.2	42.2	39.3	37.5	37.0	45.4	44.2	37.1	31.0
1982 = 18.9	4	4 2	41.9	43 8	36 1	39.4	41 9	45.8	39 5	33.6
	5	4.2	41 6	48.1	43.5	45 0	61.5	55.5	45.1	38.9

ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY

Two alternatives, the CEE and the WLI, were eliminated from detailed documentation in the DEIS, while three others, the CEF, PRO and CON were eliminated in the final analysis. They included Constrained Economic Efficient (CEE), Wilderness Emphasis with Capital Investment (WLI), Constrained Economic-Efficient Forest (CEF), High Production (PRO), and Conservation (CON). These alternatives were developed and analyzed using FORPLAN. Feasible solutions were found for each. A tabular display of resource outputs from the feasible solutions is presented in Table 2.02.

These five alternatives were considered for detailed study by the Forest's ID Team and Management Team before concluding they were not needed. They were found to be similar in nature to other alternatives, undesirable from a particular resource viewpoint or did not add to the range of reasonable alternatives. A discussion of each alternative follows.

Constrained Economically Efficient Alternative (CEE) was formulated to represent the most economically efficient distribution and schedule for meeting minimum management and minimum implementation requirements. It provided the means of measuring the drop in PNV caused by adding a scenic highway constraint to the minimum management requirements by being a base level without these constraints. While not carried forward in detail, it is used in several tables in the FEIS for comparison of discounted costs, discounted benefits and present net value among the various alternatives.

Because the scenic highway constraint only maintained foreground and middleground visual quality along State Highways 41, 49, 140, and 168, the CEE Alternative was rejected from detailed study. It was rejected in favor of the Market Alternative (MKT) that maintained additional visual quality along other major Forest highways and in heavily developed recreation areas at several reservoirs. The difference in ASQ was only 3 MM board feet.

Wilderness Emphasis With Capital Investment Emphasis to Mitigate for Land Out of Production (WLI) was developed to evaluate, through intensified management, the potential for maintaining or increasing commodity outputs on the non-wilderness portion of the Forest while recommending high wilderness-quality further planning areas.

With passage of the 1984 California Wilderness Act, all alternatives have substantial amounts of high-quality wilderness.

This alternative was eliminated from further detailed study because:

1. As a result of the 1984 California Wilderness Act, there was little difference in wilderness allocation between alternatives.
2. Alternative H provided similar commodity outputs with better resource protection.
3. Overall, the alternative did not address issues any better nor add to the reasonable range of alternatives already studied in detail.

Constrained Economic-Efficient Forest (CEF) was formulated to provide resource outputs using the most economically-efficient land areas and prescriptions while providing adequate protection to soils, water, wildlife and some protection to aesthetics. Developed recreation would be emphasized in existing high-use areas with dispersed recreation stressed on the remainder of the Forest.

This alternative was eliminated because of its similarity to Alternative H (MKT). These two alternatives were similar in developed recreation, dispersed recreation, visual quality index, budget, and new road construction. Alternative H varied only by having a small increase in miles of road construction in the fifth decade and an increase of 2% on ASQ (3 MM). Alternative H rather than CEF was retained because it was supported by most of the public favoring an increased ASQ.

High Production (PRO) was intended to meet the 1980 RPA High Productivity timber targets. All suitable timberland, except in existing classified wilderness, experimental forests, and special interest areas were to be managed for timber production. Range, developed recreation, and mineral resources would be managed and utilized above current levels. All other resources would be managed at minimum legal levels.

This alternative was eliminated because it was too extreme. While this alternative had very favorable economic effects, it had the lowest benefit/cost ratio. In addition, it had the highest budget; the lowest visual quality; the least deer carrying capacity, the greatest potential for impact to riparian areas, spotted owls, willow flycatchers, and sensitive plants; the highest potential for soil erosion, and impact to cultural resources, and the greatest decline in the fishery resource. Other alternatives provided a balance between commodity production and resource protection. The potential for resource damage in this alternative was unacceptable.

Conservation Alternative (CON) was formulated to represent the views of the local Tehipite Chapter of the Sierra Club and other conservation groups and organizations. This alternative promoted dispersed recreation and de-emphasizes timber production.

Key management direction was to:

- 1 Substantially increase trail maintenance and construction above that shown in the Preferred Alternative.
- 2 Increase the age at which timber was harvested to approximately 250 years (this also eliminated the need for herbicides).
- 3 Allow no timber harvesting in unroaded areas
- 4 Promote dispersed recreation
- 5 Maintain visual quality
- 6 Increase late seral stage habitat.

The result of this alternative was a reduction in ASQ to 30 4 MM board feet. This projected volume would have resulted in the loss of at least two of the four sawmills in the area

The general pattern of mill closure in California indicated mills located in mountain locations were at a competitive disadvantage to those located in the Central Valley. The two mountain community sawmills dependent on timber from the National Forest were located in Auberry and North Fork.

The Management Team determined the loss of at least two mills in local mountain communities was undesirable from a community stability standpoint. The Amenity Alternative was described in detail rather than the Conservation Alternative because it carried through similar objectives yet provided about 650 more timber related jobs.

Timber Alternative (TIM) was formulated by the Timber Association of California to represent an alternative providing the minimum volume needed to maintain the four saw mills dependent on the Forest for their raw material, while providing adequate protection to soils, water, wildlife and aesthetics

The key management direction in this alternative was

1. Rehabilitate all existing recreation facilities.
2. Expand the Forest trail system
3. Maintain or improve visual resources over the Forest
4. Increase direct wildlife and fish habitat improvement
5. Provide an ASQ of 131.6 MMBF through management of approximately 380M acres of CAS land

This alternative required modification of the ASQ to reflect increased riparian acreage. The DEIS included miles of stream outlined in blue on United States

Geological Survey (USGS) maps. Recent field reviews and a more detailed analysis of current maps resulted in the revised Forest riparian acreage. Riparian acreage on CAS land amounted to approximately 10 percent. Riparian acreage in the Timber Alternative was approximately 41,000 acreage, increased from 13,300 acres in the DEIS. The increased riparian acreage in this alternative reduced the ASQ to 131 6 MMBF.

This alternative was eliminated because of its similarity to the RPA Alternative. In both alternatives, the timber management concept was to expand the acres to be managed to the greatest extent possible. The RPA Alternative included timber management on all the suitable Forest Timber Base (393.7M acres). The TIM provided timber management on 380M acres (13.7M acres less than the suitable Forest Timber Base). Both RPA and TIM included approximately 131M acres in Regulation Class I. TIM included 11 6M acres more than RPA in Regulation Class II while RPA had 24 6M acres more in Regulation Class III. The RPA Alternative was 6 4MM board feet more than TIM. TIM included leaving 20 percent of the existing volume on 50M acres to provide multi-storied stands, snag retention, and continuous forest cover. This made TIM slightly preferable to RPA in providing more wildlife habitat, sensitive soil protection and visual quality maintenance. However, the differences between these alternatives were not significant enough to warrant considering, in detail, another fully developed alternative.

Uneven-aged Alternative (K) was formulated to examine the effects of uneven-aged management on tractor ground. In addition, this alternative included all provisions of the Preferred Alternative. This alternative was eliminated because of its similarity to the Amenity Alternative. Alternative K varied from the Amenity Alternative in two ways, by emphasizing dispersed recreation to a greater extent and eliminating grazing above 5000 feet elevation. It met the intent of most of the public favoring nonmarket values.

In addition to the five alternatives discussed here, several variations of the Preferred Alternative were run and analyzed to test Preferred Alternative's sensitivity. These variations included departure (a specialized variation) even though none of the circumstances requiring departure were triggered.

Because these variations did not provide significant changes to the Preferred Alternative or were not required, they are not discussed or displayed in this document. They are, however, part of the planning records located in the Forest Supervisor's Office.

**TABLE 2.02 - OUTPUTS AND ACTIVITIES OF ALTERNATIVES ELIMINATED FROM DETAILED STUDY
(AVERAGE ANNUAL BASIS)**

PAGE 1 OF 4

ACTIVITY/RESOURCE		ALTERNATIVE						
		CEE (J)	WLI (G)	CEF (F)	PRO (I)	UNE (K)	CON [1]	TIM [2]
Developed Recreation (MM RVDs)								
Base Year (1982)		1.580	1.580	1.580	1.580	1 580	1.580	1 580
Decade	1	1.705	1.705	1.705	1.705	1.705	1.705	1.705
	2	1.875	1.875	1.875	1.875	1.875	1.875	1.875
	3	2.035	2.035	2.035	2.035	2.035	2 035	2 035
	4	2.215	2.215	2.215	2.215	2.215	2 215	2 215
	5	2.410	2.410	2.410	2 410	2.410	2 410	2.410
Dispersed Recreation (M RVDs)								
Base Year (1982)		2.254	2 254	2.254	2.254	2 254	2.254	2 254
Decade	1	2.559	2 559	2.559	2 559	2 614	2.614	2 614
	2	2.903	2 903	2.903	2.903	2.952	2.952	2.952
	3	3.220	3 220	3.220	3 220	3 269	3.269	3.269
	4	3.554	3 554	3.554	3.554	3 554	3.554	3.554
	5	3.948	3 948	3.948	3 948	3 948	3.948	
Wilderness (M Acres)								
Base Year (1982)		300.2	300 2	300 2	300 2	300 2	300.2	300.2
Decade	1-5	527.9	527.9	527.9	527.9	527.9	552.3	527.9
Bald Eagles (Wintering Birds)								
Base Year (1982)		5-10	5-10	5-10	5-10	5-10	5-10	5-10
Decade	1-5	5-10	5-10	5-10	5-10	5-10	7-12	5-10
Base Year (1982)		0	0	0	0	0	0	0
Decade	1	3	3	3	3	3	3	3
	2-5	3	3	3	3	3	6	3
[1] Conservation Alternative [2] Timber Industry Alternative								

**TABLE 2.02 - OUTPUTS AND ACTIVITIES OF ALTERNATIVES ELIMINATED FROM DETAILED STUDY
(AVERAGE ANNUAL BASIS)**

PAGE 2 OF 4

ACTIVITY/RESOURCE		ALTERNATIVE						
		CEE (J)	WLI (G)	CEF (F)	PRO (I)	UNE (K)	CON [1]	TIM [2]
Mule Deer (Capacity)								
Base Year (1982)		15000	15000	15000	15000	15000	15000	15000
Decade	1	10100	13500	10100	9000	18400	15700	17600
	2	7800	10800	7800	6300	23000	16500	21100
	3	6100	8600	6100	4400	28000	17400	25400
	4	4700	6800	4700	3100	28000	15600	25400
	5	4200	6100	4200	2800	28000	15600	25400
Spotted Owls (Pairs)								
Base Year (1982)		130	130	130	130	130	130	130
Decade	1	107	109	106	107	108	130	112
	2	93	95	93	93	97	130	98
	3	78	82	78	78	86	130	88
	4	63	68	62	62	75	130	71
	5	57	64	58	57	69	130	65
Goshawks (Pairs)								
Base Year (1982)		50	50	50	50	50	50	50
Decade	1	50	50	50	50	50	50	50
	2	50	50	50	50	50	50	50
	3	50	50	50	50	50	50	50
	4	50	50	50	50	50	50	50
	5	50	50	50	50	50	50	50
Lahontan Trout (Populations)								
Base Year (1982)		2	2	2	2	2	2	2
Decade	1-5	2	2	2	2	2	2	2
Paiute Trout (Populations)								
Base Year (1982)		2	2	2	2	2	2	2
Decade	1-5	2	2	2	2	2	2	2
[1] Conservation Alternative [2] Timber Industry Alternative								

**TABLE 2.02 - OUTPUTS AND ACTIVITIES OF ALTERNATIVES ELIMINATED FROM DETAILED STUDY
(AVERAGE ANNUAL BASIS)**

PAGE 3 OF 4

ACTIVITY/RESOURCE		ALTERNATIVE						
		CEE (J)	WLI (G)	CEF (F)	PRO (I)	UNE (K)	CON [1]	TIM [2]
Resident Trout (M Lbs)								
Base Year (1982)		100	100	100	100	100	100	100
Decade	1	100	100	100	100	100	100	100
	2	100	100	100	100	100	100	100
	3	100	100	95	95	105	105	100
	4	100	100	95	90	110	110	105
	5	100	100	90	85	110	120	110
Wildlife & Fish Use (M WFUDs)								
Base Year (1982)		471.0	471.0	471.0	471.0	471.0	471.0	471.0
Decade	1	486.5	486.4	486.4	437.8	495.6	495.6	495.6
	2	529.3	529.2	529.2	476.3	543.7	543.7	543.7
	3	572.0	572.0	572.0	514.8	584.1	584.1	584.1
	4	614.9	614.9	614.9	553.4	626.6	626.6	626.6
	5	657.7	657.7	657.7	591.9	658.7	658.7	658.7
Grazing (M AUM)								
Base Year (1982)		35.0	35.0	35.0	35.0	35.0	35.0	35.0
Decade	1	70.1	38.0	37.0	44.9	38.0	25.0	38.0
	2	69.6	41.8	38.0	53.3	38.9	24.3	38.9
	3	69.5	42.0	39.0	53.4	40.3	24.2	40.3
	4	69.4	42.5	39.5	53.3	40.6	24.0	40.6
	5	69.2	43.0	40.0	54.0	40.6	25.0	40.6
Timber (MMBF)								
Base Year (1982)		110.0	110.0	110.0	110.0	110.0	110.0	110.0
Decade	1	163.2	153.1	157.2	195.8	112.0	30.4	131.6
	2	163.2	153.1	157.2	160.0	112.0	32.9	131.6
	3	163.2	153.1	157.2	190.0	112.0	35.6	131.6
	4	163.2	153.1	157.2	185.0	112.0	38.0	131.6
	5	163.2	153.1	157.2	180.0	112.0	40.3	131.6
[1] Conservation Alternative								
[2] Timber Industry Alternative								

**TABLE 2.02 - OUTPUTS AND ACTIVITIES OF ALTERNATIVES ELIMINATED FROM DETAILED STUDY
(AVERAGE ANNUAL BASIS)**

ACTIVITY/RESOURCE		ALTERNATIVE						
		CEE (J)	WLI (G)	CEF (F)	PRO (I)	UNE (K)	CON [1]	TIM [2]
Regenerated Acres								
Base Year (1982)		1.1	1.1	1.1	1.1	1.1	1.1 [3]	1.1
Decade	1	6.5	6.1	6.2	7.0	3.0	1.0 [3]	4.0
	2	3.9	3.6	3.8	3.8	2.8	0	3.3
	3	3.9	3.4	3.3	4.4	2.5	0	3.1
	4	3.0	2.5	2.6	4.1	1.9	0	2.4
	5	2.2	1.9	2.0	3.6	1.9	0	2.5
Water Yield (MM Acre-Ft.)								
Base Year (1982)		2.565	2.565	2.565	2.565	2.565	2.565	2.565
Decade	1	2.686	2.681	2.686	2.687	2.580	2.554	2.611
	2	2.680	2.671	2.676	2.665	2.579	2.554	2.626
	3	2.704	2.688	2.694	2.699	2.572	2.544	2.635
	4	2.671	2.658	2.668	2.685	2.567	2.544	2.623
	5	2.654	2.643	2.650	2.687	2.564	2.544	2.613
Total Cost (\$MM)								
Base Year (1982)		18.7	18.7	18.7	18.7	18.7	18.7	18.7
Decade	1	30.5	29.3	26.1	28.4	20.9	13.7	20.3
	2	33.1	31.7	27.6	28.3	22.8	13.4	22.7
	3	36.7	35.2	30.3	34.9	24.9	13.0	25.5
	4	39.0	37.0	31.5	36.8	25.7	13.7	27.4
	5	44.6	42.2	35.6	41.6	27.7	14.5	30.3
[1] Conservation Alternative. [2] Timber Industry Alternative. [3] Estimated acres to be regenerated the first decade.								

ALTERNATIVES CONSIDERED IN DETAIL

2.5.1

Introduction

This section describes in detail six alternatives for managing the Forest. It includes Alternative A, the proposed Forest Plan, which is the Forest's preferred alternative; a "no action" alternative Alternative B, which represents a continuation of present management emphasis; and four other alternatives within a broad range of management possibilities. The development of alternatives was discussed in the introduction of this chapter.

Directions common to all alternatives are summarized, management prescriptions are explained, and their relationship to management areas described.

Each alternative is displayed in the same format and treated equally. The "theme" of each alternative is described, followed by brief statements of the objectives and basic direction for the Forest's resources, and a description of the condition of the Forest in 2030. Tables show the application of the 16 management prescriptions and the major outputs and activities for each alternative. The alternatives are then compared both narratively and in tabular form and major differences highlighted. Maps for each alternative are in a packet accompanying this FEIS.

Any of the six alternatives could be implemented, and as a group, represent a broad range of reasonable alternatives.

2.5.2

Directions Common to All Alternatives

Higher level direction (laws, regulations, and national and regional policies) is part of the Forest's overall management direction and as such is common to all alternatives. Higher level direction is not repeated in this document unless used to emphasize a particular point.

Other directions common to all alternatives include Minimum Management Requirements, Minimum Implementation Requirements, and Forest Management Requirements. These requirements are limitations placed on management activities to assure minimum and/or desired levels of resource protection. These requirements were modeled during the analysis process and are described below. Discussions of the requirements and explanation of the modeling rules are located in Appendix B. The opportunity costs associated with these requirements are discussed later in this chapter.

Minimum Management Requirements (MMR) are designed to meet basic requirement taken from the NFMA Regulations (36 CFR 219.27) for the management of National Forest land. The Forest Service does not have the authority to change these requirements because they are based on statutes and regulations rather than agency policy.[1] They are in all alternatives and in most benchmarks. Below is a list of the MMRs. For a more complete description, see Appendix B, "Modeling and Analysis Process"

- 1) Suitable Land - Consider land available for timber production if:
 - a. The land is forested and is currently producing, or is capable of producing, crops of industrial wood.
 - b. The land has not been withdrawn from timber production by Congress, the Secretary of Agriculture or the Chief of the Forest Service
 - c. Technology and knowledge are available to ensure timber production without irreversible damage to soils, productivity or watershed conditions.
 - d. Existing technology and knowledge provide reasonable assurance that adequate restocking can be attained within five years after final harvest.
 - e. Adequate information is available to predict responses to timber management activities
- 2) Threatened and Endangered Species - Prevent the destruction or adverse modification of critical habitat for Threatened and Endangered species. Threatened and Endangered species known to exist in the Forest include bald eagle, peregrine falcon, Lahontan cutthroat trout and Paiute cutthroat trout. The five to ten individual bald eagles that inhabit the Forest during winter receive little management attention because they occupy the Forest when conflicts are limited and their habitat needs are met. The Forest has a goal of three pairs of peregrine falcons. Suitable peregrine falcon habitat has been identified in the Forest including cliffs for nesting, freedom from disturbance and an adequate prey base. Recovery efforts/objectives have been identified in the Federal "Recovery Plan for Paiute Cutthroat Trout" and in the State "Fishery Management Plan for Lahontan Cutthroat Trout". The two populations of Pautes are located in remote wilderness areas. Opportunities for habitat

[1] See "Pacific Southwest Region Land Management Planning Direction and Pacific Southwest Regional Guide," USDA - Forest Service, Pacific Southwest Region, 1984.

improvement projects are limited because the stream channel gradient is very steep and is a naturally limiting quality of habitat. The two streams supporting Lahontans are located in commercial Forest areas where timber has been intensively managed. The stream habitats have been degraded, limiting the species ability to proliferate to their potential. Habitat improvement measures in both drainages will help restore habitat.

- 3) **Viable Populations** - Provide adequate fish and wildlife habitat to maintain viable populations of existing native and desired non-native vertebrate species. For spotted owl, maintain habitat for at least 29 SOHAs. For goshawks, manage at least one goshawk nest territory per 18 square miles of suitable habitat.
- 4) **Diversity** - Manage to provide and maintain 5% of each vegetative-timber type/seral stage combination. The total existing area in each type in forested land is used as the base for this calculation.
- 5) **Riparian Areas** - Protect streams, streambanks, shoreline, lakes, wetlands and other areas in or near water.
- 6) **Soil and Water Productivity** - Conserve soil and water resources and do not allow significant or permanent impairment of the productivity of the land.

Minimum Implementation Requirements (MIR) are needed to ensure alternatives are minimally acceptable and implementable on the ground. Procedures for defining the MIRs were specified by the Region. They are within agency control, but there is little discretionary control regarding their application at the Forest level. MIRs do not apply to benchmarks but they are applied to all alternatives. Some examples of MIRs are scenic corridors for roads officially eligible for designation in the 1970 California State and County Scenic Highway System Master Plan, the maximum permitted regeneration acreage per decade (18%), and managing sensitive plants to ensure species do not become threatened or endangered because of Forest Service actions.

Forest Management Requirements (FMR) are needed to ensure implementability at the local level. They are based on Forest (rather than Regional) conditions in addition to the MMRs and MIRs. These requirements are not applied to all benchmarks, but are applied to all alternatives. FMRs include protection of viewsheds surrounding major recreational reservoirs, shelterwood regeneration requirements on 20% of mixed conifer stands due to the high percentage of fir in some stands, and constraints on clearcutting of red fir to no more than 2000 acres per decade until regeneration efforts are more successful.

2.5.3

Management Goals and Objectives/Standards and Guidelines Common to All Alternatives

The last area of direction common to all alternatives are the Forestwide Goals and Objectives and Standards and Guidelines. In addition to law and departmental policy, these provide the specific resource protection measures that will be used when implementing project activities in the Forest. Used in conjunction with the management practices for each management prescription (described later), they provide the means to mitigate or minimize adverse resource impacts.

The following is a summary of management goals and objectives and standards and guidelines that would be applicable to all alternatives. (A complete listing of management goals and objectives and standards and guidelines for the Preferred Alternative are found in Chapter 4 of the Forest Plan, a complete listing for the other alternatives are located in the planning files.) Management goals and objectives provide the direction necessary to begin moving toward the desired future condition.

Standards and guidelines are used to provide resource protection and mitigation of possible adverse impacts in conjunction with projects and activities and to assure that specific concerns are considered during project planning.

2.5.3.1

Goals and Objectives

1. Provide a broad spectrum of dispersed and developed recreational opportunities in accord with identified needs and demands and meet ROS class objectives shown on the ROS element maps.
2. Manage wilderness to meet recreational, scenic, educational, conservational and historic uses, as well as preserving the wilderness character.
3. Manage the most visually sensitive areas in the Forest by placing major roads, trails, streams and areas of concentrated visitor use in scenic corridors and managed viewsheds.
4. Identify and enhance low to moderate quality fish habitat that has the potential to improve from structural or nonstructural improvement.
5. Coordinate habitat management with other resource activities and programs to maintain or improve fish and wildlife habitats.
6. Manage fish, wildlife, and plant habitats to maintain viable populations of all resident or indigenous fish, wildlife and plant species.

7. Manage habitat for state and federally-listed threatened and endangered fish, wildlife, and plant species to meet objectives of species recovery plans
8. Emphasize habitat improvements for sensitive, threatened, endangered, and harvest species.
9. Manage habitat for Forest Service sensitive fish, wildlife, and plant species in a manner that prevents any species from becoming a candidate for threatened or endangered status. Manage botanical resources to maintain the present diversity of species.
10. Develop a Goshawk Network with at least one nest territory per 18 square miles of suitable habitat
11. Manage livestock to utilize available forage, while minimizing adverse impacts on soil, vegetation, water quality, wildlife habitat, fisheries, and riparian zones.
12. Manage chaparral vegetation to provide increased forage, water, wildlife habitat and vegetation diversity when practical.
13. Produce high yields of timber and forage, while minimizing adverse environmental impacts and protecting other resource values.
14. Annually market the allowable sale quantity as needed to meet local, regional and national demand for wood products.
15. Harvest timber, from future timber stands, in a manner that will permit continued non-declining harvest
16. Conduct the timber harvest program in a manner that will maximize net public benefit.
17. Manage plant communities so as to maximize diversity for plants and animals
18. Provide an integrated pest management program to minimize the adverse effects of insects, diseases, weeds, and other pests.
19. Maintain or improve soil productivity.
20. Produce water of sufficiently high quality to meet or exceed user quality requirements.
21. Encourage mineral exploration and development, while minimizing adverse environmental impacts of such activities
22. Identify Federal land suitable for land exchange to improve the management of Forest land
23. Inventory and manage cultural resources to prevent loss or damage
24. Develop an efficient and environmentally-sound transportation system, which provides access to Forest land and permits appropriate access to private land.
25. Manage existing transportation facilities to facilitate resource management, protect wildlife, meet water quality objectives, and provide recreational access
26. Manage Forest activities so that air quality is compatible with federal, state, and local laws.
27. Provide a cost-effective fire management program to protect forest resources, life, and property, utilizing prescribed fire and suppression strategies of confinement, containment, or control
28. Coordinate land and resource planning efforts with other federal, state, county, and local governments and adjacent private land owners
29. Encourage use of the Forest by disadvantaged, handicapped, and minority persons
30. Follow and pursue the intent of the Civil Rights Act to provide equal employment opportunities for all employees on the Sierra National Forest while increasing the average grade of women employees and the percentage of minority group representation; and ensure that no person is denied participation of benefits of any program or activity of the Forest Service
31. Maintain on a continuous basis the Watershed Improvement Needs Inventory (WIN).
32. Inventory and map riparian areas This effort allows for the identification of areas to be protected and identifies watershed restoration needs.

2.5.3.2 Standards and Guidelines

Recreation

1. Rivers are studied and inventoried for possible inclusion into the Wild and Scenic River System and protected until future status is determined
2. Seldomly-seen areas within Type III Visual Condition zones, where regulated timber harvest is practiced, may be managed for Type IV Visual Conditions.
3. Limit recreational events involving motorized vehicles to established or approved routes. Approve other types of events on a case-by-case basis, all to be authorized by special use permit

Fish, Wildlife and Sensitive Plants

- 1 Generally, riparian management areas extend 100 feet horizontally from the edge of perennial streams, lakes and reservoirs, except along those streams designated as essential habitat in the Interagency Agreement for Collomia rawsoniana, where the zone is 150 feet.
- 2 Maintain or increase current forestwide program of direct habitat improvement.
3. Annually submit requests for habitat improvement funds to: (1) appropriate county commissions that disperse fish and game fine money, and (2) State agencies that disperse Senate bill/state proposition money
4. Annually update 3-year habitat improvement plans for each Ranger District in cooperation with California Department of Fish and Game.
5. For fish and wildlife habitat projects funded through timber sales, give highest priority to meadows and riparian areas in sales areas
6. For habitat improvement projects funded from sources other than timber sales, focus on habitats outside the timber planning compartment.
- 7 For each Class 1 watershed, timber sales planning compartment and other appropriate land management areas, select fish and wildlife species or guilds that will become the area's target animals for management. Establish habitat objectives for all target species during the next planning cycle.
- 8 Seek flows and habitat conditions below new hydroelectric projects that maintain fishery and wildlife resources near naturally occurring (pre-project) conditions.
9. During relicensing of hydroelectric projects, seek flows and habitat more favorable to fish and wildlife on projects where they have obviously been degraded by the project. Adequate flow and habitat conditions will be defined in our 4e letter to the FERC, or during our effort to set Fish and Wildlife objectives for Class I watersheds, (whichever happens first)
10. When watering roads for dust abatement, protect fishery streams by:
 - a Allowing water drafting only when downstream discharge from the drafting site is maintained at 1.5 cfs or greater
 - b Establishing the objectives of water drafting to remove no more than 50% of any stream's ambient discharge at any time, after item a. is met.
 - c. Allowing no drafting in or above stream supporting pure populations of Lahontan cutthroat trout (See Section 4.5.16 and EIS Section 3.5.5.3)
11. Use the management plans for the North Kings, San Joaquin, Huntington, Oakhurst and Yosemite deer herds as deer habitat management guides.
- 12 Cooperate with private landowners to encourage resource protection on private land.
13. Protect nests and dens of all sensitive species until young are gone. Arrange harvest units and other management activity to preserve nests and dens where feasible
14. Protect Forest's 6 identified superior nest sites for peregrine falcons
15. Protect important roost trees and feeding areas for wintering bald eagles at Shaver, Redinger, and Bass Lakes, and Pine Flat Reservoir.
- 16 No new management activities will be approved within goshawk nest site areas until a Forest Goshawk Network is approved. Nest site areas may encompass up to 50 acres of suitable goshawk habitat. Occupied nest sites found within areas where management activities have already been authorized shall be protected as described in S&G #53 of the Plan.
- 17 Manage to provide and maintain at least 5 percent of each vegetative-timber type/seral stage combination
- 18 Within each timber compartment provide, maintain and manage for at least an average of 1.5 snags per acre
19. On CAS land, manage for no less than 10% and 5% crown closure in oaks in key deer areas and non-deer areas, respectively.
20. Establish a 200-foot zone on each side of all reaches of the tributaries to Portuguese Creek and Cow Creek where Lahontan cutthroat trout currently occur and on all Class I, II, and III tributaries above those reaches. Apply the following standards within this zone
 - a Recommendations of a fisheries biologist must be considered prior to removal of any vegetation;
 - b Trees must be felled and yarded away from the stream course,
 - c. No motorized vehicles will be allowed off permanent roads except as authorized by permit or contract;

- d. Slash and other debris will be kept out of stream courses except for the purpose of fish habitat improvement. Woody debris removed from stream courses will be disposed of by methods other than machine piling or broadcast burning;
- e. Dust abatement within 200 feet of stream courses will be made with materials other than petroleum products and recommended by a fisheries biologist,
- f. Ephemeral channels may only be crossed with equipment after consultation with a fisheries biologist; and
- g. Permit no water drafting from stream reaches described in #10 that can jeopardize the current status of pure Lahontan cutthroat trout populations.

- 21. Manage sensitive plant species to avoid future listing as threatened and endangered. Ensure maintenance of genetic and geographic diversity and viable populations.
- 22. Develop species management guides to identify population goals and compatible management activities that maintain viability.

Riparian

- 1. Give primary management emphasis in riparian areas to protect and enhance the riparian ecosystem
- 2. Riparian area protection and Streamside Management Zone determination will be based on methods described in FSH 2509 22, Forest Supplement 1 (8/89) which describes Streamside Management Zone widths and specific protective measures
- 3. In the absence of on-site riparian area protective width determinations, riparian areas extend 100 feet horizontally from the edge of perennial streams, lakes, and reservoirs. Deviations resulting from on-site evaluations will be documented in project environmental assessments.
- 4. When on-site project evaluations identify the need to afford protection to intermittent and/or ephemeral drainages, the protection zone widths will be defined in accordance with the Forest Streamside Management Zone determination process as described in the FSH 2509.22, Forest Supplement 1, (8/89)
- 5. Protect streamside zones by locating new roads outside of riparian areas, except at stream crossings
- 6. Avoid constructing new roads within the perimeter of meadows and other riparian areas where opportunities exist, relocate or obliterate existing roads.

Diversity

- 1. Provide vegetation diversity to maintain viable fish, wildlife and plant populations, scenic quality and to minimize loss from wildfire.
- 2. Manage chaparral primarily by prescribed burning.
- 3. Maintain at least five percent of each naturally occurring vegetative seral stage including annual grass, blue oak/savannah, digger pine/oak, chaparral, black oak woodland, ponderosa pine, mixed conifer, Jeffrey pine, red fir and subalpine forest.

Integrated Pest Management

- 1. Use an integrated pest management approach in the planning and implementation of all activities. Consider a full range of alternatives and base the selected alternative(s) on biological effectiveness, cost efficiency, and health and environmental safety
- 2. Treat all freshly cut stumps in developed recreation areas with borax (sodium tetraborate decahydrate, EPA Reg. No 1624-94; see FSM 2303.14 R-5 Supp. 164, 9/86).
- 3. Plant only sugar pine seedlings which are proven resistant to white pine blister rust, when available. If resistant stock is not available, plant no more than 10% untested seedlings

Soil and Water

- 1. Preclude the impacts of cumulative watershed effects by applying BMP and mitigation measures during project implementation. Utilize the Regional Cumulative Watershed Effects methodology, when refined for application in the Forest, to assess each project for potential to incur cumulative effects.
- 2. Insure availability of water for present and foreseeable future National Forest System uses.
- 3. Best Management Practices (BMP) will be implemented to meet water quality objectives and maintain and improve the quality of surface water in the Forest. Methods and techniques for applying BMP will be identified during project level environmental assessments and incorporated into the associated project plan and implementation documents (See Plan Appendix F)
- 4. Improve water quality and protect soil productivity, restore deteriorated watersheds on the basis of economic efficiency and severity of problem and impact on downstream beneficial uses.
- 5. Avoid development in floodplains, wetlands, and riparian areas, except where alternatives do not meet essential management objectives or purposes (i.e.,

- bridges, approaches, water diversion structures, and boat ramps).
- 6 Tractor logging on highly erodible soils, where sustained slopes exceed 35%, require on-site ID Team evaluation and guidelines.
 - 7 Allow no regeneration harvest on highly erodible soils where sustained slopes exceed 65%.
 - 8 Apply appropriate erosion prevention measures on all ground-disturbing activities (FSH 2409 23) prior to fall storms (October 1) and immediately upon completion of activity begun after November 1.
 9. Apply appropriate erosion prevention measures (FSH 2409 23) on high-erosion hazard soils under the following conditions.
 - a When exposed soils from an average of several 500-foot linear transects:
 - 1) Exceeds 150 feet on slopes of 15-35%,
 - 2) Exceeds 75 feet on slopes of 35-65%; or,
 - 3) Exceeds 25 feet on slopes over 65%; and,
 - b. On linear disturbances, such as skid trails and firelines, cross-drain area at the following intervals.

Intervals Between Cross-Drains (in feet)

%Slope	HEHR	VHEHR
0-15	150	125
15-35	75	45
35-65	35	20
65 +	15	15

Installation must utilize proper engineering techniques and recommendations for High (HEHR) and Very High (VHEHR) Erosion Hazard ratings, as defined in the Forest Soil Resource Inventory

10. Road construction on areas with High and Very High Erosion Hazard follow standards in FSH 2509 22, Sierra Supp. No. 1 which gives direction concerning soil stabilization and road surface drainage See Soils Element Map for primary locations of highly erodible soils and soils sensitive to loss of productivity (Also, see Appendix V)
11. Plan and execute activities such as timber harvesting, site preparation, and fuels reduction on soils sensitive to loss of productivity by using the following standards:
 - a. Avoid mixing or removing soils below the A horizon. Roads, skid trails, firelines, mining activities, and log landings are exceptions

- b. At the conclusion of a land disturbing project, leave an average cumulation of 50% protective ground cover in the 1-100 hour fuels with some 1000-hour fuels up to 10 inch in diameter for seedling protection.
 - c. On slopes over 35% with Very High and/or High Erosion Hazard soil, an ID team will evaluate ground cover needs and develop prescriptions.
- 12 Avoid new development in wetlands, wet meadows, and flood plains.
 13. Secure water rights and obtain water availability assurances for existing and foreseeable future Forest Service nonconsumptive and consumptive uses.

Lands

1. In areas where Forest land is the predominant ownership, use the following actions:
 - a. Emphasize acquisition of "inholding lands" to improve administration, reduce conflicts in use, and reduce costs related to rights-of-way acquisition and landline survey;
 - b. Emphasize landline surveys that support all resource programs and resolve trespass;
 - c. Emphasize acquisition of rights-of-ways for public access and to support resource programs,
 - d. Limit the use of National Forest land to benefit National Forest programs or when in the National interest; and
 - e. Emphasize acquisition of land in key areas to protect fish and wildlife habitat.
- 2 In areas where Forest land is in the minority
 - a. Exchange out of areas to meet private land and other ownership goals to resolve conflicts in use,
 - b. Emphasize cooperative landline survey programs with adjacent owners to reduce costs and resolve trespass;
 - c. Emphasize acquisition of right-of-ways to support resource programs but coordinate access with other landowners;
 - d. Give priority to use of National Forest land to serve private and other government (local and State) goals and to resolve conflicts; and
 - e. Cooperate with other landowners to encourage protection of fish and wildlife habitat on lands of other ownerships.

3. Discourage unwarranted community expansion of existing settlements on to National Forest System Land.
4. Take appropriate criminal and civil action and resolve cases of unauthorized occupancy and use within a reasonable time period.
5. Proposed sites for standard broadcast facilities, either FM or television, and radar stations will be separated from service-type radio facility sites by at least one mile (air distance).
6. Require developers who propose major projects to pay for desired services, if a short turn-around time is needed by said developer. Projects planned with adequate advance notice will be accomplished through the normal planning-budgeting process, as priorities and funds permit.
7. Encourage licensee acquisition of private land within areas withdrawn by FERC.
8. Improve administration and management efficiency through land ownership consolidation and acquisition of identified key parcels.
9. Utilize land exchange authority to acquire land, or interest in land, important for wilderness, wildlife, or recreation before considering purchase
10. Parcels of Forest land will be identified as suitable for exchange (in conformance with Sierra National Forest Land Adjustment Plan) and managed as potential land exchange base. These parcels will be managed for a range of multiple-use objectives and outputs with moderate timber, water, and forage yields. Investments will be limited and long-term encumbrances reduced by
 - a. Authorizing only temporary uses through special use permits;
 - b. As opportunities arise, existing permits, which encumber the land, will be terminated; and
 - c. These parcels will be managed for a range of multiple-use objectives and outputs, but investments limited

Transportation and Facilities

1. Improve the arterial and collector road system to emphasize economic efficiency, user safety and protection of adjacent resources.
2. Replace or rehabilitate major structures to support planned management activities or high-use areas.

Protection

1. Utilize natural fire to maintain wilderness ecosystems.
2. Unplanned lightning-caused ignitions, which occur where fire spread is effectively checked by natural barriers and where expected fire effects will not adversely affect the attainment of wilderness management objectives, can be managed under prescribed natural fire conditions. If fires have to be suppressed, they will be suppressed using either or all of the control, confine, or contain strategies
3. Prescribed fire can be utilized to enhance wilderness values.

2.5.3.3

Vegetation Management Policy

In August 1983, the Forest Service published a Draft Vegetative Management EIS. Subsequently, in 1986 the Forest Service published a Supplement to the 1983 Draft containing a worst case analysis in response to court findings and public comments. This supplement also included an amended assessment of risks to human health, soils, water quality, and wildlife. The Final Vegetative Management EIS and Record of Decision were issued on February 27, 1989.

This FEIS includes a detailed discussion and analysis of alternatives, including a preferred, emphasizing land management flexibility and the consequences of these alternatives on the environment. Other alternatives to the preferred include no vegetation management, no application of herbicides, no aerial application of herbicides, timber production emphasis, nontimber resource emphasis, cost effectiveness emphasis and employment opportunity emphasis. Based upon the selected alternative in the Vegetation Management for Reforestation Final EIS, modified in the Record of Decision, all alternatives in this Forest Plan FEIS are predicated on the continued use of a full range of treatment methods, including mechanical, prescribed fire, biological, and chemical methods

The Forest Plan (see Plan, Chapter 2) directs that the selection of any particular treatment method will be made at the project level. Selection is based on a site-specific analysis of the relative biological, physical, and economic effectiveness of the alternative methods. Herbicides will be used only if a) use is essential to meet management objectives, and b) monitoring and enforcement plans implement specific measures for site-specific projects described in the environmental assessment

If the regional policy becomes "No Herbicide or No Aerial Herbicide use" as determined by the Regional FEIS, the timber yields and vegetative management costs for each alternative presented in this Forest Plan EIS will most likely change as shown in Table 2.03 (See Appendix U, No Herbicide Use Analysis)

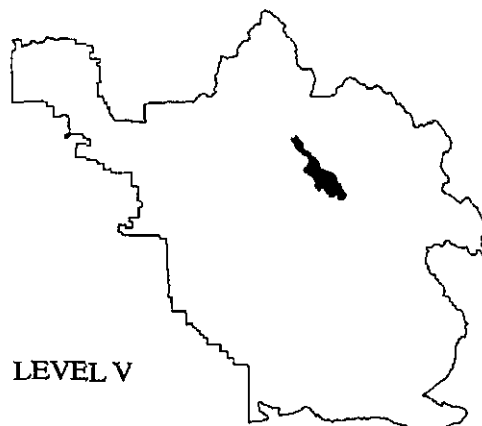
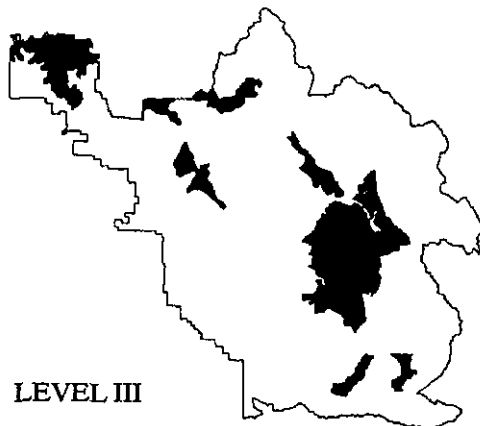
A detailed discussion on the effects, such as a policy change in the Preferred Alternative, can be found in Appendix U. This shows, with a no herbicide policy regime, the ASQ will decrease by 36% to 69 % MMBF per year with a substantial increase in costs

TABLE 2.03 - CHANGES IN TIMBER YIELDS AND COSTS BY VEGETATIVE TYPE

Vegetative	Change in Timber Yield	Change In Cost
No Vegetation Management	- 60%	- 68%
No Herbicides	- 36%	+ 27%
No Aerial Application	- 2%	None



FIGURE 2.02 DIRECTION TIERING PROCESS



LEVEL I Forestwide Management Goals and Objectives

Includes MMRs, MIRs, and FMRs as well as broad goals and objectives applicable to the Forest

LEVEL II Forestwide Standards and Guidelines

More specific in nature than Forestwide goals and objectives. Element maps are used when Forestwide standards and guidelines are applicable to specific, mapped locations.

LEVEL III Management Area Directions

Management areas consist of aggregates of analysis areas. Management Area direction includes the general prescription which were previously described plus the specific standards and guidelines appropriate for the area and the activities and practices scheduled within the area

LEVEL IV Grouped Analysis Area Direction

This direction consists of standards and guidelines that apply to more than one analysis area within a Management area, but not the entire Management Area.

LEVEL V Single Analysis Area Direction

These are standards and guidelines that apply to individual analysis areas within a Management Area

Management Prescriptions and Management Areas

A management prescription, as developed by Sierra National Forest, is an overall strategy for managing the resources of a specific area of land in order to address issues and obtain desired goals and objectives. The specific area of land to which prescriptions are tied is the Management Area. In the case of this Forest, more than one prescription can apply to a management area.

Management prescriptions are the same for all alternatives, however, alternatives differ in the number and distribution of acres in each prescription. The number of prescriptions and acres, to which prescription apply within each Management Area, are shown later in this chapter under the individual alternatives. The Forest Service has identified 16 general management prescriptions for use within the Forest. The prescriptions highlight resource emphasis and/or objectives to be accomplished

The practices and activities to be carried out under the management prescriptions are listed in Chapter 4 of the Plan under each Management Area description or, if forestwide, in Table 2.04. The practices and activities include those scheduled in FORPLAN and those assigned outside FORPLAN by the ID Team and Forest Management Team.

The general management prescriptions are subject to additional direction and/or constraints as shown on Resource Element Maps or through standards and guidelines. The element maps and applicable standards and guidelines provide more specifics to the general management prescriptions.

The melding of the general prescription with more site-specific direction occurs through a tiering process. Since more than one prescription can be applicable to a Management Area, this tiering process is a key element to generating prescriptions specific to different locations within a management area. Used in this way, it actually allows a variable management prescription within each Management Area depending on the location.

This process enables Management Areas to be quite large and continues the general philosophy that some parts of the Forest need to be planned to a greater detail and intensity than other parts. The direction tiering process goes from the very broad to the very specific.

Used in this context, a prescription for a location or project within a Management Area consists of the general management prescription, the activities and practices scheduled for that part of the Management Area as determined by a project environmental analysis, and the applicable combination of the following: broad forestwide goals and objectives, forestwide standards and guidelines; management area standards and guidelines, and finally, single or combination of analysis area

standards and guidelines. This process is graphically depicted in Figure 2.02. Element maps have been developed to show where certain standards and guidelines apply

The 16 general prescriptions for the Forest are summarized below. Additional information regarding these prescriptions can be found in Table 2.04, the accompanying Forest Plan, and the planning files.

2.5.4.1

Wilderness

This prescription will maintain and protect wilderness values. All National Forest land within designated wilderness will be managed in accordance with the Wilderness Act of 1964 (16 USC 1131-1136) and/or terms established in the legislative act. The areas will be free of roads. Motorized trail use will be prohibited. Pest management activities will be used to protect adjacent land from unacceptable pest-caused damages and prevent unnatural loss of the wilderness resource from exotic pests. Opportunities will be abundant for primitive and semiprimitive dispersed recreation such as hiking, horseback riding, camping, fishing, hunting, sightseeing and photography. No regulated or unregulated timber yields will be planned. Fire protection activities will be conducted to minimize suppression impacts and permit re-introduction of prescribed and naturally occurring fire. Livestock grazing will continue with approved Allotment Management Plans. In most wildlife populations, species composition and habitat will be allowed to change as part of natural processes. Wildlife objectives will focus on stands favoring late successional stage vegetation and species that prefer these habitats

2542

Wild and Scenic Rivers

This prescription will emphasize preservation of the free-flowing condition of selected rivers with various outstandingly remarkable features and notable values for eventual inclusion in the National Wild and Scenic River System. This prescription will manage recommended segments in accordance with the Wild and Scenic Rivers Act of 1968.

Wild segments will be managed to protect natural values while providing river-related outdoor recreational opportunities in a primitive setting, generally inaccessible, except by trail. Construction of dams or diversions will be prohibited. Wildlife objectives will focus on stands favoring late successional stage vegetation and species that prefer these habitats.

Scenic segments will allow motorized access in special locations. Nonintensive timber management to correct safety problems and control insect and disease outbreaks, inconspicuous fish and wildlife habitat improvement, and water management practices to correct resource

problems may occur as well as recreational pursuits along the river.

Recreational segments will allow recreational development along the river to provide opportunity to engage in activities enhanced by the river, as well as all the activities listed for Scenic segments. Recreational designation will not preclude consideration of dams and/or diversion in certain situations. Fish and wildlife projects will be permitted. Designated rivers that are within designated wilderness areas or special areas will be governed by the more restrictive act

2.5.4.3

Minimum-Level Management (Class IV)

This prescription will provide custodial protection to existing Forest resources. Management activities will be limited to monitoring for conditions that might adversely affect resources on such sites. Appropriate actions will be initiated when and where necessary to reduce threat to adjacent resources. Wildlife objectives will focus on stands favoring late successional stage vegetation and species that prefer these habitats. This prescription will apply to Mt. Raymond, Ferguson Ridge, Devils Gulch, Dinkey Lakes, Kings River Special Management Area, SOHAs (unless another prescription is authorized in the SOHAs management plan), portions of the Developed Recreation Area visible from Courtright and Wishon Reservoirs, the area between the Ansel Adams and Dinkey lakes Wildernesses leading to Edison and Florence Lakes and riparian areas

2.5.4.4

Limited-Timber Yield (Class III)

This prescription will protect sensitive and low productive soils and maintain visual quality in a nearly natural state. The prescription will permit limited timber harvest commensurate with other resource protection goals. Other commodity resources will be managed for a limited range of multiple-use objectives. Mineral exploration and development, OHV use, livestock grazing, fire suppression, and recreation development will be permitted when emphasis resource values such as visuals, soils and wildlife can be protected. This prescription will apply to areas which have retention as the visual quality objective such as the viewshed along major roads and highways, sensitive furbearer habitat areas and within and adjacent to major recreation areas. It also will apply to otherwise unencumbered (No other restrictions) sensitive furbearer habitat outside of SOHAs.

2.5.4.5

Modified-Timber Yield (Class II)

This prescription will provide moderate levels of timber outputs, while allowing significant considerations for wildlife habitat and visual quality. Where viewshed protection is planned, vegetation management may be evident, but will be subordinate. Wildlife objectives will

focus on providing balanced stands favoring early and mature successional stage vegetation and species that prefer these habitats.

Forest resources will be managed to provide a moderate range of multiple use objectives and outputs. Timber harvesting will be modified to improve or maintain wildlife habitat and visual quality. Forage will be managed for grazing of domestic livestock and wildlife use. Recreation opportunities will primarily be for dispersed activities in a roaded natural setting, OHV use will be permitted on designated routes or areas. Mineral exploration and/or development will be permitted where resource values can be protected. This prescription will apply to Shuteye, the area adjacent to Mammoth Pool, areas which have partial retention as the visual quality objective, and deer population centers and holding areas.

2.5.4.6

Full-Timber Yield (Class I)

This prescription will provide intensive management of selected forest resources, including timber, range, water, and wildlife habitat. The greatest production of goods will come from these areas. A full range of intensive pest management practices will be available to minimize pest damages. An efficient and economical transportation system will be developed for resource management. Dispersed recreational opportunities will exist in a roaded natural setting. OHV use will be permitted on designated routes or areas.

Forest resources will be managed to achieve a broad range of multiple-use objectives and outputs. Timber will be managed for maximum production using a full range of silvicultural methods. Forage will be managed for domestic livestock grazing. Vegetation modifications may visually dominate the landscape and mineral exploration and/or development will be permitted. Fire protection will be carried out at a level necessary to protect the Forest's ability to produce scheduled resource outputs. Wildlife objectives will focus on stands favoring early successional stage vegetation and species that prefer these habitats. This prescription will apply to all areas not described in Minimum-Level Management, Limited- and Modified-Timber Yield Prescriptions

2.5.4.7

Developed Recreation

This prescription will emphasize developed recreational opportunities at levels of development and intensities expressed by management direction and standards and guidelines. These opportunities will include public campgrounds, picnic areas, visitor information centers, vistas, resorts, organization camps, and recreation residences. Rural and roaded natural recreational opportunities will be stressed.

Regulated timber harvest will be prohibited within the actual developed site, but will be permissible outside the actual site when it is compatible with primary goals for the area. Diseased and hazardous trees will be removed from the developed sites. OHV use will be prohibited except for ingress and egress. Threatened and endangered and sensitive wildlife habitat and species will be protected.

Other important considerations will include water quality and intensive fire protection measures to protect the public and Forest improvements and resources.

2.5.4.8

Administrative Sites

This prescription will provide sites necessary for the administration of the Forest. These areas will generally be small (1/4 acre to 40 acres) and include facilities such as lookouts, work centers, and ranger stations. These areas presently exist or will be needed to provide planned management.

Forest resources will be managed to meet administrative objectives. OHVs will be restricted to roads. Vegetation and soil will be modified to accommodate facilities, but disturbances will be minimized. Timber will be harvested to salvage dead, diseased, or hazardous trees. No regulated timber yields will be planned. Grazing will be prohibited at most administrative sites. Mineral exploration and/or development will not be permitted. Fire protection measures will be planned to protect improvements.

2.5.4.9

Special Interest Areas

This prescription will protect and manage unique geological, historical, archaeological, botanical, and memorial features, and make educational opportunities available. A wide range of resource activities will be permitted on areas where features can be protected. Mineral exploration and/or development will not be permitted. Regulated timber yields will not be planned. Specific fire protection objectives will be established to protect special values. Wildlife objectives for species favoring late successional stage vegetation will be met.

2.5.4.10

Special Management Area

This prescription will emphasize dispersed recreation; protection of the area's natural archaeological and scenic resources; and management for fish and wildlife. Existing grazing and off road vehicle use will be permitted to the same extent as was before enactment. OHV use will be restricted to designated roads and trails.

Timber harvesting will be permitted only as required to control insect and disease attacks, salvage fire damaged timber, and conserve scenery or historical values.

Hunting and fishing will be permitted in accordance with State and Federal laws, with fish and wildlife values, and where public safety is not jeopardized. Land within the area will continue to be withdrawn from mineral entry. Outdoor recreation use and hiking trails will be permitted.

2.5.4.11

Experimental Forests

This prescription will provide research and development of silvicultural, wildlife, watershed, and other applied forest management practices. Management activities permitted in experimental forests will not conflict with objectives of ongoing research. A limited transportation system may be developed. Recreational opportunities will be limited and occur in nonroaded natural settings. OHV use will be prohibited. Mineral exploration and/or development will not be permitted. Livestock grazing may be permitted. Timber will be managed with appropriate silvicultural methods to achieve research goals, but no regulated timber yields will be planned. Fire protection will be carried out to protect research values and minimize acreage burned.

2.5.4.12

Experimental Ranges

This prescription will apply range and wildlife research in nonforested areas. Management activities on experimental ranges will not conflict with research objectives. The range of management activities permitted will be the same as those described for experimental forests, but recreational opportunities will be limited.

2.5.4.13

Research Natural Areas

This prescription will protect and manage research natural areas as potential components of the Forest Service RNA system. Dispersed nonmotorized recreation will be limited. Livestock grazing will be restricted or prohibited. Mineral exploration and/or development will be prohibited. No timber harvest will be planned. Specific fire protection objectives will be set for each area to protect the natural values. Pest management activities will be directed toward non-native pests. Wildlife objectives for species favoring late successional stage vegetation will be met.

2.5.4.14

Land Exchange

This prescription will improve National Forest land ownership patterns through land exchange. Emphasis will be directed toward cost effective cases which will reduce management costs, facilitate protection, and increase production of resource commodities.

Those isolated/scattered parcels of Federal land identified for disposal through exchange will be managed for a range of multiple-use objectives and outputs, but

investments will be limited. The objective will be to exchange these parcels for non-Federal land within the National Forest boundaries which will enhance public benefits and reduce administrative costs, such as boundary line establishment and maintenance, right-of-way acquisition, fire protection, and trespass Land that provides critical habitat for threatened and endangered species will not be identified for disposal.

Encumbrances such as special use permits, and investments such as roads, fences, cattleguards, fuelbreaks, wildlife habitat improvement projects, and developed recreational sites will be limited. Dispersed recreation in a roaded natural setting will be permitted, but not encouraged. Mineral exploration and/or development will be permitted Mineralized land will be exchanged only if the government can reserve the minerals. Limited fish and wildlife habitat improvements will be provided during other resource activities, but will not be emphasized. A full range of pest management practices will be used. Vegetation and soil stability will most likely be modified due to the predominance of privately owned land surrounding the Forest parcels. Fire protection will seek to minimize acreage burned and will usually be implemented by cooperating agencies.

2.5.4.15

Dispersed Recreation

This prescription will emphasize dispersed recreational opportunities, primarily in a semiprimitive, roaded natural and rural recreational opportunity-class setting. Emphasis will also be placed on wildlife management.

Visual Condition Type will normally be Type III or better. The levels of development and management will be expressed by management direction and standards and guidelines.

Although most of the areas given this prescription have limited suitability for timber, range, wildlife, and developed recreation due to topography, soils and/or climate, these projects and/or activities will be allowed on suitable land. Road construction will be held to a minimum with most roads closed to retain dispersed recreational opportunities in a semiprimitive nonmotorized or motorized setting after completion of management activities. OHV use of access routes into most of these areas will generally be allowed to continue. Semiprimitive non-motorized areas will be closed to OHV use.

2.5.4.16

Front Country

This prescription will emphasize wildlife and range management activities, with adequate protection of watershed values. Forage and range improvements will be provided as needed. Vegetative manipulation, such as prescribed burns and fuelbreaks will be used to promote early successional stage browse species and grasses for wildlife habitat improvement, increased livestock forage, natural fuels reduction, and watershed protection. Fire protection and natural fuels reduction will be very important. Multi-resource benefitting projects (wildlife, range, fuel management) will be the management objective.

TABLE 2.04 - SUMMARY COMPARISON OF FORESTWIDE MANAGEMENT PRESCRIPTIONS

PREScription NAME	VISUAL QUALITY OBJECTIVE	RECREATIONAL OPPORTUNITY	OFF HIGHWAY VEHICLE USE	RANGE MANAGEMENT	WILDLIFE INDICATOR SPECIES	TIMBER MANAGEMENT	ROADS & TRAILS	MINERAL LOCATION & LEASING
1. Wilderness	Preservation	Primitive, Semiprimitive Nonmotorized	None	Current Level	Mature Forest Species	None	Limited trail network	None
2. Wild & Scenic	Preservation, Retention, Partial Retention	Primitive, Semiprimitive Nonmotorized & Motorized, Roded Natural	Closed, Restricted	Limited	Mature Forest Species	None	Limited trail network	Open, Closed
3. Minimum Level Management	Retention	Primitive, Semiprimitive Nonmotorized	Restricted	Limited	Mature Forest Species	None	Limited trail network	Modified
4. Limited Timber Yield	Retention	Semiprimitive Motorized, Roded Natural, Rural	Restricted	Extensive	Mature Forest Species	All Age Management	Limited transport network	Modified
5. Modified Timber Yield	Partial Retention	Rural, Roded Natural	Restricted	Extensive & Intensive	Middle Succession Species	Evenage and Unevenaged Management, Extended Rotation	Full transport network	Open
6. Full Timber Yield	Modification	Rural, Roded Natural	Restricted	Extensive & Intensive	Early Succession Species	Evenage and Unevenaged Management, Extended Rotation	Full transport network	Open
7. Developed Recreation	Retention, Partial Retention	Rural, Roded Natural	Closed	Limited	N/A	All Age Management	Special Roads & Trails	None
8. Administrative Sites	Partial Retention	Rural, Roded Natural	Closed	Limited	N/A	Limited Roads	Special	None
9. Special Interest Area	Dependent upon objective for area	Dependent upon objective for area	Restricted	Open	Mature Forest Species	None	Restricted access	None
10. Kings River Special Management Area	Preservation, Retention, Partial Retention	Primitive, Semiprimitive Nonmotorized & Motorized, Roded Natural	Restricted	Current Level	Mature Forest Species	None	Limited trail network	Open, Closed

TABLE 2.04 - SUMMARY COMPARISON OF FORESTWIDE MANAGEMENT PRESCRIPTIONS

Page 2 of 2

PRESCRIPTION NAME	VISUAL QUALITY OBJECTIVE	RECREATIONAL OPPORTUNITY	OFF HIGHWAY VEHICLE USE	RANGE MANAGEMENT	WILDLIFE INDICATOR SPECIES	TIMBER MANAGEMENT	ROADS & TRAILS	MINERAL LOCATION & LEASING
11. Experimental Forest	Modification	Roaded Natural	Closed	Limited	Varies	Varies	Limited transport network	None
12. Experimental Range	Partial Retention, Modification	Rural, Roaded Natural	Closed Restricted	Intensive	Oak woodland species	None	Full transport network	None
13. Research Natural Areas	Preservation	Primitive, Semiprimitive Nonmotorized, Rural	Closed Restricted	Limited	N/A	None	None	None
14. Land Exchange	Varies	Varies	Open, Closed, Restricted	Open	Varies	Modified	Full transport network	None
15. Dispersed Recreation	Retention	Semiprimitive Nonmotorized & Motorized	Restricted	Extensive	Mature forest species	Modified	Limited transport network	Open
16. Front Country	Retention, Partial Retention, Modification	Semiprimitive Motorized & Roaded Natural	Restricted	Extensive & Intensive	Oak woodland Chaparral	Varies	Full transport network	Open

INDIVIDUAL ALTERNATIVE DESCRIPTIONS

The following pages give a detailed description of each alternative, including its basic theme, specific goals and management direction, and the expected future condition of the Forest. Tables for each alternative display outputs by decade and the distributions of management prescriptions by management areas.

2.6.1

Alternative A (Preferred)

2.6.1.1

Alternative Theme

The Plan represents a balanced management program with a decrease in some market resources over present levels. Dispersed recreational and wilderness uses are stressed, with opportunities for quality wilderness experiences enhanced. Timber benefits will be commensurate with costs, while recognizing essential balance with other uses and resource capabilities. Fish and wildlife habitats will be maintained near current levels.

2.6.1.2

Recreation

There will be a moderate increase in the number of developed sites to accommodate increasing recreation of approximately 5.8%/decade. Some of the new recreation development will be completed by licensees as a requirement for new or relicensed water projects. Licensee is obligated to assure that the project related recreation operation and maintenance is performed in conformance with Forest Service direction. Development emphasis will be in high use areas around the major reservoirs and in the Rural Recreation Opportunity Class zones. As a goal, at least 70% of the developed sites will be managed for standard service campground which is expected to be retained. There will be an adequate number of campground units to meet demand. Major recreational sites, having approximately 9,500 people at one time (PAOT), will be rehabilitated by 2,005 with rehabilitation performed by a combination of appropriated dollars and FERC licensees. OHV use, except for oversnow vehicles, will be limited to designated routes with permits being required for use of certain routes. OHV routes available for summer use will increase from 198 miles in 1990 to over 238 miles by 2030. Developments, such as parking, sanitation facilities, marked trails, and onsite supervision will be added to facilitate snow activities. Skiing at Sierra Summit will be allowed to expand to capacity of near 8,500 Skiers at one time (SAOT).

Dispersed recreation will provide a range of recreational opportunities as this use increases by approximately 7.8%/decade. Opportunities to recreate in a

semiprimitive environment outside of wilderness areas will be low.

The Forest Trail System will expand approximately 56 miles, with more intensive maintenance and management practices of the total system provided to meet dispersed recreational needs.

A full range of visitor information and interpretive services will be provided at major recreation use centers, with emphasis on dispersed recreation opportunities.

The visual resources will be managed for the highest quality in areas significant to recreational use. In high resource production areas, visual quality will be reduced. The landscapes will appear altered as the effect of management activities accumulate. Other management activities will provide opportunities to enhance visual variety in many areas.

Additional special interest areas will be recommended and established within the Forest. Establishment of additional botanical or research natural areas is a future option that may be used with selected plant species, in order to protect areas of special interest or to provide areas to conduct additional studies of sensitive or unique flora.

2.6.1.3

Wilderness

A total of 527,938 acres will be dedicated to wilderness. No additional wilderness will be recommended from roadless areas. Administration of wilderness will include limiting use to capacity levels through trailhead quotas, adding additional personnel to protect wilderness values and reducing conflicts. Trail rehabilitation will continue, with emphasis on high-use trails and those that disperse use. Rehabilitation will be completed by 2010. Approximately 30 miles of new trails will be added by 2030, but only as necessary to prevent resource damage or to aid in visitor dispersal.

Hydroelectric development may be proposed and allowed only by Presidential order in portions of the wilderness. Wilderness vegetation will be returned to a more natural condition through the use of prescribed or natural fire to reduce fuel levels, which have accumulated due to the past fire exclusion policy.

2.6.1.4

Wild and Scenic Rivers

The Nationwide Rivers Inventory (NRI) of January 1982 identified seven rivers within or surrounding the Forest that were suitable for inclusion in the Wild and Scenic River System. Rivers included were Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin, and Middle Fork Kings. These rivers flow through land administered by three National Forests, two National Parks, one

National Monument, Bureau of Land Management, State of California and private land.

In November 1987, Congress designated portions of Merced and all South Fork Merced and Middle Fork Kings as Wild and Scenic Rivers. This included 149 miles (47,680 acres) of the inventoried 224 miles (71,680 acres). Of the total designated, 47.5 miles will be administered by the Sierra. This will include 8.5 miles of the South Fork Kings and Kings Rivers within the Kings River Special Management Area.

This alternative will recommend Wild and Scenic River designation for 73 miles of Merced, San Joaquin, South Fork San Joaquin, North Fork San Joaquin and Middle Fork San Joaquin Rivers. Of the 73 miles, 37 miles will be administered by the Sierra National Forest, 15 miles by the Inyo National Forest, 8 miles of Segments 9 and 10 of Merced, approximately 30 miles of Segments 2 and 3 of Middle Fork San Joaquin and 10 miles of Segment 1 of South Fork San Joaquin by BLM. The BLM, as a cooperating agency, will make final recommendations on land they administer. The only segment not recommended will be two miles of the San Joaquin River where it flows into Mammoth Pool.

26.1.5

Wildlife, Fish, and Sensitive Plants

The Forest program of direct habitat improvement will annually treat 2,000 acres of wildlife habitat and 100 acres (or structures) of fish habitat. The National fisheries emphasis program, "Rise to the Future", has enabled the Forest to establish a solid fisheries program. Protection, restoration and enhancement of fish habitat will be a result of adequate biologist staffing, on-going fish habitat assessment, multi-year fishery program schedules, increased coordination within our agency with State agencies, and with our concerned publics. Habitat improvements for threatened and endangered species will continue near the present annual rate of 20 acres or less. A forestwide program will be implemented to identify target fish and wildlife species and long-term habitat objectives for each planning area.

The Forest will establish and maintain at least three breeding pairs of peregrine falcon in accordance with recovery plans. Habitat will be maintained for the current population of 5-10 wintering bald eagles and at least 29 California Spotted Owl Habitat Areas will be maintained in the Forest under Dispersed Recreation, Wilderness and Minimum-Level Management Prescriptions. Habitat will be maintained and protected for the threatened Lahontan and Paiute cutthroat trout populations. A goshawk network will be established with at least one territory per 18 square miles of suitable habitat. Osprey at Bass Lake will be maintained at current levels. Identified active willow flycatcher nest sites will be protected through fencing or other means. A network of seven sensitive furbearer habitat areas (62,140 acres) and linkages (4,182 acres) between habitat areas

adjacent to National Forests and Parks will be established. Prescriptions which will be implemented in the furbearer habitat areas are: Dispersed Recreation, Wilderness and Limited-Timber Yield Management. The prescription for the habitat linkage area will be Limited-Timber Yield. This alternative will also provide for 25,900 additional acres in Minimum-Level Management and 156,700 acres in Limited-Timber Yield Prescriptions. Within the commercial forest zone, timber harvest strategies will be modified to improve deer habitat in 75% of the identified deer population centers and holding areas while hardwoods will be managed for 20% crown closure.

Management of all perennial and many intermittent streams will emphasize maintenance of water quality, as well as preservation of riparian habitat values for fish and wildlife.

Hydroelectric developments can conflict with fish, wildlife, and sensitive plant resources. As these projects are proposed or when licenses are up for renewal, the Forest will determine mitigation measures needed to offset resource impacts caused by hydroelectric projects.

Special habitat components such as snags and down logs will decline from naturally occurring densities in intensively managed forests. Where the Full-Timber Yield Prescription applies, snags will be created beginning in the second decade because snags left in regeneration cuts are only expected to last ten years. In the second decade, for every acre cut during the first decade, 1.5 trees averaging 20" DBH will be left on each regeneration acre. These trees will be topped to extend the snag life to about 40 years. Late seral stage habitat will decline from present inventory levels during the first decade. However, by the end of the fifth decade, it will increase to 119,000 acres as 4B/C stands in wilderness areas, dispersed recreation areas with no timber harvest, SOHAs, goshawk nest territories, wild and scenic river corridors, riparian areas, special areas, retention areas and furbearer habitat areas become "old over-mature habitat". Hardwood stands will be maintained at current levels or higher on noncommercial land. For harvest units on commercial forest land, the abundance of hardwoods will include either (1) ten percent crown closure or one-quarter of the existing hardwood crown closure, whichever is greater, (2) retention of all hardwoods if hardwood crown closure is less than ten percent, or (3) within key deer areas, twenty percent hardwood crown closure or one-half of the existing crown closure, whichever is greater, is to be retained or retention of all hardwoods if hardwood crown closure is less than twenty percent. Hardwood stands will not be converted to conifers. Forest meadows and riparian areas will be improved by continuing habitat or watershed improvement projects. A moderate prescribed fire program of 2000 acres per year will focus on improving chaparral and some hardwood habitats.

Diversity of plant communities will be maintained and distributed forestwide and will provide habitat for those species requiring early, mid and/or late seral stages. Retention of at least five percent of each vegetation type and seral stage will be maintained over time (except where those seral stages do not currently exist and cannot be immediately treated. Aquatic habitat diversity will be maintained at current levels throughout the planning period.

Field surveys will be conducted to increase knowledge of sensitive plants. A moderate monitoring program, consisting of baseline data collection and regular surveys will evaluate the effects of Forest management on species and habitats of concern. Species Management Guides will be prepared for all Forest sensitive plants.

2.6.1.6

Riparian

The Forest will designate, as Riparian Management Areas (RMA), adjacent zones that measure approximately 100 feet from all perennial streams and lakes. In addition, about half of the Forest's intermittent streams will be designated as riparian. Of the 155,000 riparian acres in the Forest, about 33,000 acres are on CAS land. (CAS is 328.9M acres.) Fish habitat improvement will include 100 acres/structures per year. Timber in the RMA will be harvested only to remove incidental amounts of timber for roads and skyline corridors or improve the riparian ecosystem. The annual harvest from 33,000 acres of riparian will be 1.5 MMBF

2.6.1.7

Range

Permitted livestock use will increase to about 40,600 AUMs per year. This increase will be accomplished through improved management which includes intensification of grazing on annual grassland, prescribed burns and fuelbreaks in the chaparral zone, construction of water developments, additional fences and adjustment of seasons. Limited areas of primary range presently in poor condition will be managed to improve range condition.

The increased production in the annual grassland will be partially offset by discontinued use of low forage producing ranges at higher elevations and by grazing adjustments on some areas to maintain amenity values, such as dispersed recreation and wildlife resources.

2.6.1.8

Chaparral

Chaparral will be managed for multi-resource benefits, including reduced fire intensity, range, and wildlife. Wildlife and reduced fire intensity receive the largest benefits. Between 3,000-3,500 acres will be treated annually.

Treatment will be in the form of prescribed fire. Funding will come from various sources, including Federal appropriations and cooperative funds from State of California.

2.6.1.9

Timber

This alternative will provide for timber production at a level below normal demand of local manufacturing facilities for sawtimber. The ASQ will be 88 MMBF/year. The ASQ will be 25% below actual average annual harvest for the period 1980 thru 1989.

About 328,900 acres of timber land will be managed under one of three intensity levels (Regulation Classes) previously described. Timber harvest will be scheduled from Regulation Classes I through III land. No timber harvest will be scheduled from Regulation Class IV land. Within Regulation Classes, silvicultural systems will be selected for the specific management area and site resource objective. Projected future timber harvest will be equal to the preceding decade (nondeclining even-flow). On the full-timber yield land (Regulation Class I), outputs will be predicted primarily from the use of the even-aged silvicultural system. About 10% of the predicted yield from this land will come from using the uneven-aged silvicultural system. On modified-timber yield land (Regulation Class II), even-aged management will still predominate, however about 30% of the predicted timber yield is to be from uneven-aged silvicultural systems. Uneven-aged silvicultural systems and timber harvest not related to a silvicultural system will predominate on limited-timber yield land (Regulation Class III).

Modified-timber yield land will include: visually sensitive areas and key deer areas. Limited-timber yield land will include areas where the objective is to protect current visual values, zones adjacent to riparian areas, late seral stage habitat management areas, sensitive furbearer areas and sites having low timber productivity.

Minimum-level management land (Regulation Class IV) will include capable and suitable timber land where timber harvest is permissible but not scheduled. Examples of such land will include but not limited to: California spotted owl habitat areas, the road corridor between Wilderness areas from Kaiser Pass to Florence and Edison Lakes, Sierra Summit Ski Area, primitive nonmotorized dispersed recreation areas, economically inefficient areas and Teakettle Experimental Forest. Timber harvest that may be necessary for other land management objectives or resulting from a catastrophic event, such as fire, will be volume that becomes available in addition to the ASQ. There will be 64,800 acres in this regulation class.

2.6.1.10

Integrated Pest Management

Integrated pest management will be practiced on 328,900 acres. Intensive pest management activities will be concentrated in high-volume areas and in developed recreation areas. A low level of pest management will be used on acreage not suitable for timber management.

2.6.1.11

Soil and Water

There will be a moderate to high potential for reducing water quality and soil productivity. Mitigation measures described in BMP and specialist input will be used during project planning to maintain present levels of water quality and soil productivity. Ninety-eight percent of the water quality will meet State and Federal quality objectives.

Water yield will increase 1.8% by the end of the first decade because of timber harvest activities, especially from clear cuts and shelterwood techniques. Other resource projects such as fuelbreaks and prescribed wildlife burns will also increase yield, but be limited to on-site uses. Instream yields in any one drainage will be small due to the dispersed nature of timber harvesting.

Implementation of a soil and water enhancement program, to be initiated during the first five years of the Plan, will include provisions to correct identified water quality problems on 4520 acres. Approximately 2260 acres will be treated in the first decade.

Soil productivity will be improved on sites degraded by past management practices. Approximately 23% or 40,000 acres, programmed for disturbance by forest management activities, will be mapped at a high intensity (Order 2) soil survey level in the first decade.

2.6.1.12

Geology

Most earth construction materials will be supplied from existing sites and commercial sources. Forest Service use will likely increase slightly to 25,000 tons annually. One or two quarries will be developed or reopened to generate rock.

Ground water use will increase slightly from 1.9 to about 2.1 million gallons annually. This use will occur at existing wells and springs serving developed facilities. Drilling of one or two new wells will be expected.

2.6.1.13

Minerals

Opportunities for mineral exploration and development will improve as some unroaded land is entered for resource management purposes. With the emphasis being placed, by the current administration, on

decreasing National dependence upon foreign sources for strategic and critical minerals, it is likely exploration, development, and extraction of minerals will increase. As a result of this increased minerals activity, the cost of administering the minerals management program will increase.

Stricter compliance with operating plans for surface protection and reclamation will occur. Assistance in the planning for mineral extraction will take place to facilitate reclamation. Efforts to return disturbed areas to planned forest production will increase.

Rejustification of mineral withdrawals will result in some withdrawals being eliminated and others retained to protect key resource areas such as administrative sites and recreation developments.

2.6.1.14

Lands

The Real Estate Management program will be accelerated moderately. General priorities will be:

Priority 1 - (a) Acquire, through land adjustment, key tracts of non-Federal land (1000+ acres) to enhance management efficiency; (b) acquire "inholding land" to reduce costs related to right-of-way acquisition and landline survey; (c) perform special use permit administration to the extent necessary to protect public health and safety; (d) survey, mark and post property lines to standard with emphasis on those areas of potential occupancy trespass and the production of resource commodities; and (e) resolve unauthorized occupancies, when appropriate, through sale or interchange of Federal land in conformance with the Small Tracts Act.

Priority 2 - (a) Acquire tracts that because of location or character will become key tracts in the foreseeable future, but for which immediate action is not urgent; and (b) acquire land intermingled with or adjacent to National Forest land, and are primarily valuable for watershed purposes, timber production, or public recreation, and needed to adequately block in or consolidate National Forest land.

Priority 3 - Acquire the remaining land classified as desirable for National Forest status.

Increased efforts will be expended to respond to requests from private interests for use of National Forest land. Most of these externally imposed needs will be associated with accelerated hydroelectric developments and community expansion. As more private land within the Forest is developed, more demand will be placed on public land for community uses. Recent requests for community water systems and sewer plant effluent spray fields on forest land are examples of this apparent trend. Permits related to urban uses will not normally be

provided in areas where county zoning calls for limited urban development

2.6 1 15

Hydroelectric Development

There will be continued interest in maintaining or improving existing dam projects that store water for hydroelectric power and/or delayed release to downstream users. Other projects will be proposed that divert water from streams into penstocks and then return the water to the streams.

Proposed potential hydroelectric projects located entirely or in part within the Forest are shown on the Utility Dams/Hydroelectric Projects Resource Map.

Conflicts between proposed hydroelectric development, other resources, and the need for free flowing streams will occur. For rivers recommended for designation in the Wild and Scenic River System, hydroelectric development will be precluded if it is incompatible with the river's designation and classification.

Hydroelectric projects will be required to balance resource loss and recognize project mitigation as legitimate project costs. Projects that are unable to adequately mitigate resource loss will not be considered viable projects. Hydroelectric projects will be governed by National need and the project developer's ability to implement an economically viable project within the confines of resource agencies' policy and direction.

Efforts to reduce the acreage withdrawn for power purposes will continue if the acreage appears to be in excess of power needs.

2 6 1.16

Cultural Resources

Cultural resource management will emphasize site identification, evaluation, and management. A data-recovery program will be initiated on significant areas affected by land-disturbing activities. Significant sites, including areas of extreme importance to Native American groups, for which adequate mitigation of impacts is unlikely, will be protected in place. The procedures of 36 CFR 800 will be followed.



2.6 1 17

Special Areas

The following are established or recommended special areas:

	Established Acres	Recommended Acres
Special Interest Areas		
Kings Cavern Geological Area	388	
Courtright Intrusive Contact Zone Geological Area	11	
Dinkey Creek Roof Pendant Geological Area		640
Carpenteria Botanical Area	500	
Devils Peak Botanical Area		1600
McKinley Grove Botanical Area		520
Nelder Grove Historical Area		1434
Research Natural Areas		
Backbone Creek	430	
San Joaquin Experimental Range (Blue Oak-Digger Pine)	80	
Bishop Creek Pacific Ponderosa Pine	1140	
Home Camp Creek (Red Fir-White Fir)		1200
Experimental Forest		
Teakettle	3200	
Experimental Range		
San Joaquin	4580	
Special Management Area		
Kings River	48,668	

2.6.1.18

Transportation and Facilities

The present arterial system is adequate in terms of the current location. However, upgrading of road standards, such as paving or safety improvements, is required.

The collector road system will increase into areas that do not currently have adequate access. This increase will include relatively few miles, but these miles are more capital intensive than the development of the local road system.

Annual road maintenance will vary according to assigned maintenance levels and the frequency of activities scheduled in various areas. Maintenance activity intensity depends on the volume of timber harvest, recreation traffic, fire management, administrative traffic, and protection of adjacent resources and the capital investment.

Because 75% of existing buildings are presently over 36 years old, many will be eliminated or replaced by 2020. Maintenance of facilities will increase, emphasizing overall efficiency, health and safety.

The Forest may choose to accept some of the facilities that will be constructed as a result of hydroelectric projects.

2.6.1.19

Air

All State and Federal air quality objectives will be met.

2.6.1.20

Protection

The protection priority will increase moderately with emphasis on areas of high-value urban interface, critical watersheds, and commercial forest land. Major functional activities in the fire management program for this alternative will be 68% for initial attack and 20% for prevention, 1% detection, and 11% fuels management.

The accelerated fuels reduction program, which includes fuelbreak construction and maintenance and periodic burning of natural fuel, will substantially increase cost until prior activity fuel treatment is completed by 2015. By that year, the potential for losses to wildfire on commercial forest land will have increased significantly as the amount of plantations under 40 years reaches approximately 129,000 acres. There will be a gradual budgeting shift from fuel reductions programs to increased protection on commercial forest land. Whereas 50% of the budget increase is initially targeted for fuel reduction programs, by 2015 this activity will account for less than 20%.

After 2015 suppression costs in the front country will decline to less than 1982 levels. Prescribed burning will be continued in order to maintain reduced fuel levels.

Upon approval of this plan, a fire management action plan will be prepared. The fire management action plan will describe and plan the appropriate wildfire suppression response necessary for each area to allow other land management objectives to be met.

2.6.1.21

Environment to Be Created

By 2030, there will be a moderate increase in developed recreational sites within the Forest. Increases will be provided by expanding existing developments and new hydroelectric developments. Opportunities for dispersed recreation will also increase to balance recreational use. A moderate increase in the Forest's recreation trails will occur. Wilderness areas will be returned to more natural conditions through the introduction of prescribed fire and managed wildfires.

Land, where timber is intensively harvested, will take on a more managed appearance by 2030. Moderately intensive management of these areas will create more openings and reduce the number of large blocks of timber. Commercial late seral stage, mixed conifer forests will be reduced 62%, but mature stands of ponderosa pine will increase 33%. Foothill oaks will remain at the current density, but oaks within commercial forests will decline slightly.

Diversity of plant communities will be maintained and distributed forestwide and will provide habitat for those species requiring early, mid and/or late seral stages. Aquatic habitat diversity will be maintained at current levels throughout the planning period. Forest Service activities and programs will be managed to conserve and contribute toward the recovery of threatened, endangered, and sensitive plant and animal species and their habitats. Sensitive fish, wildlife, and plant species will be conserved and managed to ensure that species do not become federally-listed as threatened and endangered due to Forest Service actions.

Within 75% of the Forest's key deer areas, harvest unit prescriptions will contain provisions to provide suitable forage and cover for deer. Snags and down logs will undergo small reductions from naturally occurring numbers but snag standards will be implemented.

Many brush manipulation projects will provide a mosaic of structural diversity in the chaparral stands, and grazing of foothill grassland will increase to take advantage of increased forage. Grazing of forested areas will remain at the present level.

A large, well-maintained system of fuelbreaks will be in place by 2030. Considerable areas of chaparral and oak grassland will be burned each year through prescribed fire and managed wildfires.

The present arterial road system will not change in location, but will be paved. A minor increase in the collector road system will occur where areas of commercial timber need to be accessed or recreational demand accommodated. Most Forest facilities will be replaced with new facilities and maintained at a higher level

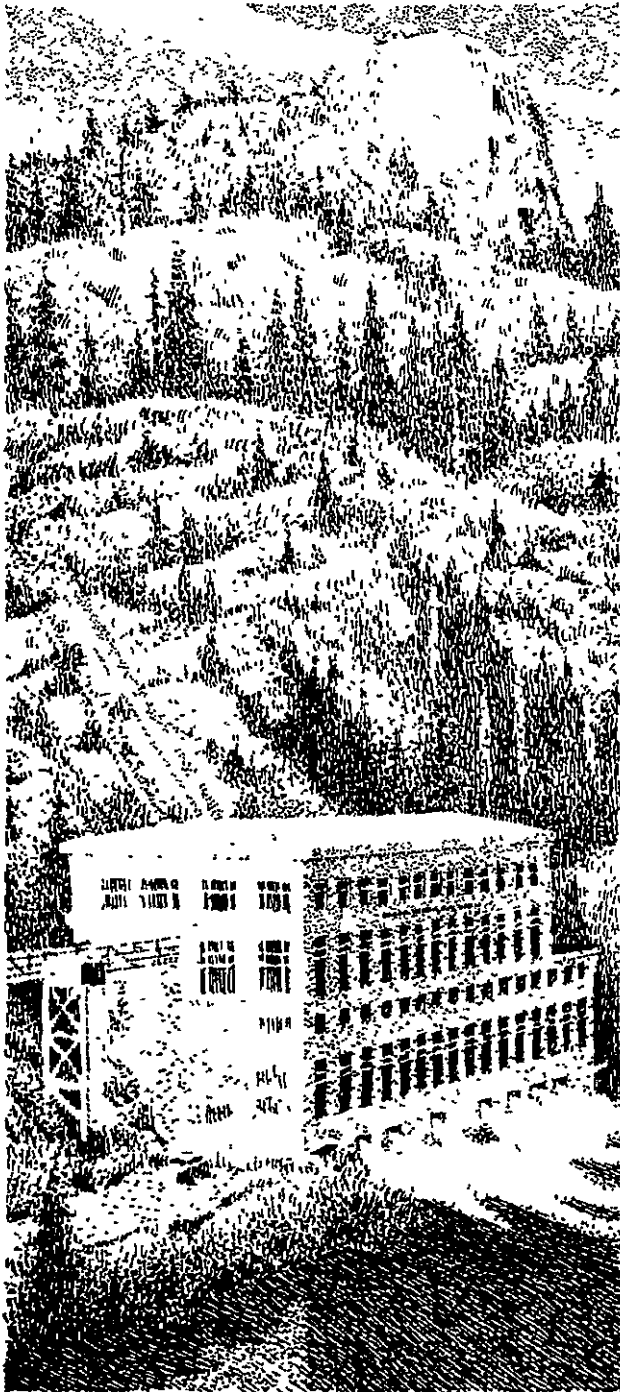


TABLE 2.05 - ALTERNATIVE A: AVERAGE ANNUAL OUTPUTS DURING FIRST FIVE DECADES Page 1 of 2

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2000 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
RECREATION								
Developed Public (M RVD)	750.0	1950.0	2880.0	781.7	407.1	441.6	478.4	519.8
Developed Private (M RVD)	830.0			923.3	1467.9	1593.4	1736.6	1890.2
Dispersed (M RVD)	2033.6	3360.0	4160.0	2095.8	2384.7	2652.4	2936.8	3330.7
Wilderness (M RVD)	220.0		462.8	518.3	567.6	617.0	617.0	617.0
Restricted, Useable OHV Areas (except Alt. B which is "open")								
Summer(M Acres) [2]	346.0			285.0	280.0	280.0	275.0	275.0
Winter (a) (M Acres) [2]	83.8			73.0	70.0	65.0	60.0	55.0
Winter (b) (M Acres) [2]	168.5			110.5	105.5	105.5	105.5	105.5
Roads and Trails Open Only to OHV								
Summer (Miles) [3]	249.0			198.0	208.0	218.0	228.0	238.0
Winter (Miles) [3]	30.0 [4]			32.0	37.0	42.0	47.0	52.0
Roads and Trails Closed Only to OHV								
Summer (Miles)	160.0			30.0	30.0	32.0	32.0	34.0
Winter (Miles)	160.0			20.0	20.0	20.0	20.0	20.0
Visual Quality Index (%)	93.0			93.8	92.9	92.0	91.2	91.2
WILDLIFE AND FISH								
Bald Eagles (Wintering Indiv.)	5-10			5-10	5-10	5-10	5-10	5-10
Peregrine Falcon (Pairs)	0			3	3	3	3	3
Deer (Number x 1,000)	15.0			18.4	23.0	28.0	28.0	28.0
Spotted Owls (Pairs)	130			108	97	86	75	94
SOHAs	Nonexistent until 1984			29	29	29	29	29
Goshawk (Pairs)	50			50	50	50	50	50
Lahontan Cutthroat Trout (Pops)	2			2	2	2	2	2
Paiute Cutthroat Trout (Pops.)	2			2	2	2	2	2
Resident Fish (M Pounds)	100			100	100	105	110	110
Wildlife User Days (M WFUD)	329.7			346.9	380.6	408.9	438.6	461.1
Fish User Days (M WFUD)	141.3			148.7	163.1	175.2	188.0	197.6
Direct Habitat Improvement								
Wildlife (M Acres)	2.6	12.7	5.45	2.0	2.0	2.0	2.0	2.0
Fish (Acres or Structures)	3.0			100.0	90.0	95.0	95.0	110.0
RANGE								
Grazing (M AUM)	35.0	38.1	40.2	37.5	38.0	40.0	40.6	40.6
TIMBER								
Allowable Sale Quantity (MMBF)	110.0	149.1	163.4	88.0	88.0	88.0	88.0	88.0
Allowable Sale Quantity (MMCF)	17.4	23.8	26.1	14.1	14.1	14.1	14.1	14.1
Reforestation (M Acres)	1.1	6.5	7.6	3.0	2.1	1.9	1.3	1.2
Timber Stand Improvement (M Acres)	0.5	4.9	5.0	4.1	4.1	4.4	3.2	2.6
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only.								
[2] Includes areas up to 30% slope located outside wilderness: (a) Winter = Areas suitable for 4WD and trailbike use, but not necessarily open to cross-country use; (b) Areas suitable for oversnow vehicle and open to cross-country use.								
[3] Average to be determined in Forest OHV Plan.								
[4] Does not include 45 miles of designated snowmobile routes and undesignated routes in areas where cross-country over the snow vehicle travel is permitted.								

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991- 2000	2001- 2010	2011- 2020	2021- 2030	2031- 2040
WOOD PRODUCTS OTHER THAN SAWTIMBER								
Fuelwood (M Cords)	22 5			22.5	22 5	22 5	22 5	22 5
Biomass (M MCF)	0			No Projection Made				
WATER								
Quality (MM Ac Ft. at Mtg Objectives)	2 514	1 882	1 903	2 599	2 555	2,552	2,544	2 538
Increased Quantity (MM Ac Ft)	2 565	270	310	060	.057	054	044	035
Watershed Improvement (Acres)				226	226	----	----	----
LANDS AND MINERALS								
Minerals (Operating Plans)	21	53	69	15	18	20	20	20
Land Acquisition (Acres)	0	500	0	250	250	200	0	0
TRANSPORTATION								
Trail Const /Reconst. (Miles)	26	54	42	47	37	27	0	0
Road Const (Miles)	36			17	6	2 5	1 5	0.5
Road Reconstruction (Miles)	41			7	7	16	5	4
Maintained Road System (Annual Miles)	2550			2630	2750	2790	2810	2820
FACILITIES								
Dams and Reservoirs								
Forest Service (Number)	0			0	0	0	0	0
Other Federal (Number)	0			0	0	0	0	0
Other State/Local (Number)	3			3	3	3	3	3
Private (Number)	25			25	25	25	25	25
Administrative Sites								
Forest Service Owned (Number)	26			20	20	20	20	20
Leased (Number)	6			6	5	5	5	5
PROTECTION								
Fuel Treatment (Acres)[2]	0	3000	2600	7990	7720	8720	7180	6680
(a) Fire-related Fuel Treatment				1000	1000	1200	1500	1500
(b) Timber-related Fuel Treatment				4990	4720	5520	3680	3180
(c) Fuel Treatment for Other Resources	2000			2000	2000	2000	2000	2000
Expected Acres Burned by Wildfire								
Intensity Level	1	36		46	48	51	54	53
	2	91		102	106	124	129	127
	3	221		91	95	110	115	113
	4	429		501	523	524	549	541
	5	577		330	344	564	591	582
	6	924		1093	1141	958	969	988
HUMAN RESOURCES								
Programs (Enrollees)	38	16	16	38	38	38	38	38
TOTAL BUDGET (\$MM)								
	18 7	18 9	20 8	23 1	23.8	24.9	25.3	26 9
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only								
[2] Combination of Wildlife and Protection (sum of a, b, and c)								

TABLE 2.06 - ALTERNATIVE A: DISTRIBUTION OF PRESCRIPTIONS BY MANAGEMENT AREAS [1]

PRESCRIPTION	MANAGEMENT AREAS											
	1	2	3	4	5	6	7	8	9	10	11	12
WILDERNESS			527,938									
WILD & SCENIC [2]	3,840	490	13,760							640	6,080	2,720
MINIMUM LEVEL MANAGEMENT [3]	14,430	650		23,800	4,070				330	290	20,030	1,200
LIMITED-TIMBER YIELD [3]	14,000	450		140,680	1,370				200			
MODIFIED-TIMBER YIELD [3]	7,670	1,030		50,640	5,760							
FULL-TIMBER YIELD [3]	3,030	640		101,170	2,260							
DEVELOPED RECREATION [4]	75,631	3		327	4							
ADMINISTRATION SITES	238	2		138	155	28	1	2			2	
SPECIAL INTEREST AREAS Botanical / Geological									5,093			
KINGS RIVER SPEC MGMT AREA												24,368
EXPERIMENTAL FOREST							3,200					
EXPERIMENTAL RANGE								4,580				
RNA			1,200					80		2,850		
LAND EXCHANGE												
Acquisition	80		560	2,150	1,350							
Base	3,200			11,640	26,320	310						
DISPERSED RECREATION [5]	56,887	33,609		200,760	11,292						57,758	24,368
FRONT COUNTRY					136,839	620						
[1] Numbers are approximate due to rounding [2] See Appendix for specific recommendations and designations [3] Includes only CAS land. [4] Includes water area also. [5] Includes both dispersed no harvest and dispersed with harvest												

2.6.2 Alternative B (Current)

2.6.2.1 Alternative Theme

This alternative represents no change, the continuation of the Forest's current programs and activities into the future. Emphasis will be to maintain a moderate level of timber production and forage utilization and an equal program of developed and dispersed recreational opportunities. Efforts to make optimum use of the Forest's land will continue. Adverse environmental impacts will be minimized, and the Forest's resources protected and conserved. Any deteriorated resources will be planned for rehabilitation. The budget is restricted to 1982 levels with adjustments for inflation.

2.6.2.2 Recreation

Emphasis will be placed on private capital providing necessary visitor facilities and services. With recreation increasing approximately 5.8% each decade, lower quality service will occur in those sites where funding for operation and maintenance is not provided by a licensee. Sites rehabilitated or expanded by license agreement will be completed by 2005. Sites rehabilitated by the Forest Service will generally be completed by 2015. A few special use public service facilities will be expanded and opportunities for additional developments offered. Standard services will be provided only in the major recreational use areas and generally in sites where operation and maintenance funds are provided by power licensees. A limited number of Forest Service campgrounds will be placed under concessionaire management due to budget and personnel limitations. Campgrounds are expected to be retained. There will be an adequate number of campground units to meet demand. Skiing activities at Sierra Summit will be allowed to expand up to 8,500 SAOT.

Dispersed recreation will accommodate a 7.8%/decade increase in use. Designated OHV routes will remain near 200 miles with cross-country travel permitted in most areas below 6800 feet. Construction of approximately 25 miles of trail will occur and trails will be rehabilitated only as necessary to minimize resource damage. Interpretive services at visitor centers will be at low levels. Visual quality levels will remain unchanged in wilderness and those parts of the Forest most significant for recreation use. In the remainder of the Forest, visual quality will be reduced to accommodate resource production where other values outweigh aesthetics.

2.6.2.3 Wilderness

A total of 527,938 acres will be dedicated to Wilderness. No additional areas will be added to wilderness from roadless areas. Administration of Wilderness will include

limiting use of capacity levels through trailhead quotas and using current levels of Wilderness ranges to protect wilderness values and reduce conditions

There will be limited, new trail construction up to 15 miles by 2030. High-use trails and those that promote dispersed use will be rehabilitated first. Trail rehabilitation will be completed by 2020. Prescribed fire and unplanned naturally-occurring fire will be used in wilderness areas to return wilderness to its pristine or near pristine condition.

2.6.2.4 Wild and Scenic Rivers

The Nationwide Rivers Inventory (NRI) of January 1982 identified seven rivers within or surrounding the Forest that were suitable for inclusion in the Wild and Scenic River System. Rivers included were Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin and Middle Fork Kings. These rivers flow through land administered by three National Forests, two National Parks, one National Monument, Bureau of Land Management, State of California and private land.

In November 1987, Congress designated portions of Merced and all South Fork Merced and Middle Fork Kings as Wild and Scenic Rivers. This included 149 miles (47,680 acres) of the inventoried 224 miles (71,680 acres). Of the total designated, 47.5 miles will be administered by the Sierra.

No additional rivers will be recommended for designation in the National Wild and Scenic River System. All studies and recommendations will be deferred to a later date and completed as proposed projects appear that can effect future designation. Meanwhile, the rivers will be managed to protect wild and scenic river values.

2.6.2.5 Wildlife, Fish, and Sensitive Plants

The Forest program of direct habitat improvement will annually treat 1,000 acres of wildlife habitat and 28 acres (or structures) of fish habitat. Habitat improvements for threatened and endangered species will continue at the present annual rate of 20 acres or less.

The Forest will establish and maintain at least three breeding pairs of peregrine falcons in accord with recovery plans. Habitat will be maintained for the current population of 5-10 wintering bald eagles. Habitat will be maintained and protected for the threatened Lahontan and Paiute cutthroat trout populations. A network of at least 26 California Spotted Owl Habitat Areas will be managed in the Forest. A goshawk network with at least one territory per 18 square miles of suitable habitat will be established. Ospreys at Bass Lake will be maintained at current levels. Identified active willow flycatcher nest sites will be maintained and protected.

through fencing and other means. Fisher, marten, and the Sierra Nevada red fox habitat will be maintained in the Wilderness, RNAs, SOHAs, SMZs, and on managed land with compatible prescriptions. This alternative will provide for 41,000 acres in Minimum-Level Management and 66,000 acres in Limited-Timber Yield prescriptions. Timber harvesting strategies will be modified to improve deer habitat in 50% of the identified deer population centers and holding areas within the commercial forest. Hardwoods will be managed at 20% crown closure within 50% of the identified key deer areas in the commercial forest zone.

Management of all perennial and some intermittent streams will emphasize maintenance of water quality as well as preservation of riparian habitat values for fish and wildlife.

When hydroelectric developments are proposed, the Forest will coordinate with project proponents and CDFG. This will insure associated fish and wildlife habitats and sensitive plant resources are maintained near current levels.

Special habitat components, such as snags and down logs, will decline from naturally occurring densities in intensively managed forests. Two snags and three down logs per acre will be provided for dependent species. However, by redistribution through management of these special habitat components, dependent species will be sustained near current levels forestwide. Other special habitat elements such as cliffs, caves, rock outcrops, seeps, marshes, ponds etc. will not be adversely affected. The Forest will meet the regional standard of 1.5 snags per acre. Topping trees to create snags may or may not be needed to maintain proper snag levels. Hardwood stands and late seral stage habitat will decline from present inventory levels in commercial forests. Late seral stage forest habitat will decline during the first decade. However, by the end of the fifth decade, it will increase to 83,000 acres or 4B/C stands in wilderness areas, dispersed recreation areas with no timber harvest, SOHAs, goshawk nest territories, wild and scenic river corridors, riparian areas, special areas (RNAs, SIAs) and retention areas become "older over-mature habitat". On commercial forest land, where crown closure is less than ten percent, all hardwood will be retained. Where crown closure is greater than ten percent, it will be reduced to ten percent during harvesting or through post sale treatment. A total of 1742 acres of hardwood stands will be converted to conifers. Forest meadows and riparian areas will continue to be improved by habitat enhancement projects. A small prescribed fire program of 1000 acres per year will focus on improvement of chaparral and some hardwood habitats. Field surveys will be conducted to increase knowledge of sensitive plants.

Diversity of plant and animal communities will be maintained at current levels. Retention of at least five percent of each vegetation type and seral stage will be maintained over time (except where those seral stage do

not currently exist and cannot be immediately created.) Emphasis will be to maintain riparian/streamside management areas, meadows and meadow edges, oak stands and special habitat elements such as snags, down logs, cliffs, caves, rock outcrops, seeps, ponds, etc..

Aquatic habitat diversity will be maintained at current levels. Threatened and endangered fish and wildlife will be protected. Sensitive plants will be conserved and managed to prevent them from becoming federally-listed as threatened and endangered. Species Management Guides will be developed for all Forest sensitive plants. Sensitive animals will be protected.

2.6.2.6 Riparian

The Forest will designate, as Riparian Management Areas (RMA), adjacent zones that measure approximately 100 feet from all perennial streams and lakes. In addition, a small number of the Forest's intermittent streams will be designated as riparian areas. Of the 155,000 riparian acres in the Forest, about 35,000 acres will be on CAS land. (CAS is 352.7M acres.) Fish habitat improvement will include 28 acres/structures per year. In the RMA, 5 percent of the standing inventory will be harvested each decade (Regulation Class III). The annual harvest from RMA will be 1.5 MMBF.

2.6.2.7 Range

Permitted livestock use will remain about 35,500 AUMs through the planning period. There may be a slight increase in AUM production as the cost/benefit ratio on annual grass treatment becomes more favorable and as chaparral management programs intensify. The range improvement maintenance program will remain at current levels. Increased forage production through chaparral treatment will be offset by reduction or discontinued use of low forage producing areas at high elevations and wet meadow allotments.

2.6.2.8 Chaparral

Most prescribed treatments will be to improve wildlife habitat. There will be some benefits for fire protection and range. Annually approximately 1000 acres will be treated. Prescribed fire will be the main manipulation method with funds supplied mainly by cooperators.

2.6.2.9 Timber

Timber production will occur at levels that will meet the minimum demand of local mill facilities for sawtimber. The ASQ will be 115.6 MMBF/year during the first decade, projected to rise to 125.0 MMBF/year during the

next four decades, as permitted by budget allocations. The maximum annual LTSY is 156.9 MMBF

About 352,700 acres of timber land will be managed for timber production under one of the four intensity levels previously described. Silvicultural systems will be selected to meet the specific resource objectives for each site. Projected timber harvest in each future decade will be equal or greater than the preceding decade (nondeclining even flow). On the full- and modified-timber yield land, even-aged silvicultural practice will predominate. Uneven-aged silvicultural systems and timber harvesting not related to a silvicultural system will predominate on the limited-timber yield land.

Modified-timber yield land will include visually sensitive areas, key deer areas, and California spotted owl habitat. Limited-timber yield land will include areas where protection of current visual values is emphasized and protection of soil and water resources is necessary. Minimum-level management will be followed on land where timber management is not cost effective in meeting management objectives under the limited budget of this alternative.

2.6.2.10

Integrated Pest Management

Integrated pest management will be practiced on 352,700 acres. Intensive pest management activities will be concentrated in high-volume areas and in developed recreation areas. A low level of pest management will be used on acreage not suitable for timber management.

2.6.2.11

Soil and Water

There will be moderate potential for reducing water quality and soil productivity. Mitigating measures described in Best Management Practices and specialist input into the project planning process will be used to maintain present levels of water quality and soil productivity. Water quality will meet state and federal objectives.

Water yield increases will result from timber harvest activities, especially from clearcuts and shelterwood techniques. Other resource projects such as fuelbreaks and wildlife burns will also increase yields but are limited to on-site uses. Stream yields on any one specific drainage will be small, due to the dispersed nature of timber harvesting. Based on historical averages, water yield at the end of the first decade will increase 0.9%.

Identified projects to improve water quality on 4520 acres of backlog will be implemented through K-V funds from timber sales. Approximately 1510 acres will be treated in the first decade. Projects not funded from K-V collections are not likely to be implemented.

Opportunities will be good to improve soil productivity on sites producing below their natural potential through site stabilization and reforestation. Approximately 20% or 32,000 acres, programmed for disturbance by forest management activities, will be mapped at a high intensity (Order 2) soil survey level in the first decade.

2.6.2.12

Geology

Earth construction material will come from developed sources within the Forest or from commercial sources. The recent rate of 20,000 tons annual production will continue. One new quarry will be developed as a rock source for road surfacing.

Ground water use will continue at the average rate of 1.9 million gallons annually. Existing wells and springs will be the source for most of the ground water used. One or two new wells will be drilled to convert existing facilities from surface water to ground water.

2.6.2.13

Minerals

Opportunities for mineral exploration and development will improve as some unroaded land is entered for resource management purposes. Minerals and energy source extraction will be encouraged and efforts to return disturbed areas to planned production will increase. The costs of administering the minerals management program will increase. Operating plans will be reviewed and administered to provide protection for surface resources during mineral exploration, development, production, and reclamation.

2.6.2.14

Lands

A moderately level land adjustment program will be maintained. Land important for wildlife or recreation purposes will be emphasized. Management efficiency of Forest land will be improved through consolidation of land and reduction of property boundaries.

Special use permits will be directed toward energy-related applications and those applications related to health and safety of the public. The reviews and adjustments will be conducted as required by the terms of the permit at scheduled intervals.

The LLL program will be integrated with the timber sale program with moderate emphasis on occupancy trespass and title claim resolution. The LLL program will emphasize "mark and post" surveying to aid the timber sale program. Approximately 90% of LLL will be directed toward timber, the rest toward resolution of occupancy trespass.

2 6 2 15

Hydroelectric Development

Development will occur according to schedules determined by the developer and FERC license procedures. As opportunities present themselves on existing projects, licensees will assume their share of project-related development. Modification of streams, water usage, transmission lines, and project facilities will be balanced against total Forest management priorities.

2 6 2 16

Cultural Resources

Cultural resource management will emphasize protection of all sites. Activities will mostly be limited to site identification and evaluation, with interpretive services and data recovery remaining at low levels. The procedures of 36 CFR 800 will be followed.



2.6.2.17

Special Areas

The following are established or recommended special areas.

	Established Acres	Recommended Acres
Special Interest Areas		
Kings Cavern Geological Area	338	
Courtright Intrusive Contact Zone Geological Area	11	
Carpenteria Botanical Area	500	
Research Natural Areas		
Backbone Creek	430	
San Joaquin Experimental Range (Blue Oak-Digger Pine)	80	
Bishop Creek Pacific Ponderosa Pine		1140
Experimental Forest		
Teakettle	3200	
Experimental Range		
San Joaquin	4580	
Special Management Area		
Kings River	48,668	

2 6 2.18

Transportation and Facilities

The present mix of road types will continue through the planning period. Continual improvements will be made by improving potentially hazardous sites, relocating unstable segments, upgrading surfaces on arterial and collector systems to improve overall economics.

The road system will, in response to resource management needs, be essentially completed by 2015 with minimal growth thereafter. Maintenance activities will emphasize upgrading and improving for safety, economy throughout the system, and protection of adjacent resources.

Maintenance of facilities will increase. Work centers will be located near projects. Uneconomical sites will be obliterated.

2.6.2.19

Air

All State and Federal air quality objectives will be met

2.6.2.20

Protection

A slight increase in protection, including law enforcement, will be needed to protect existing and future resources. This will be especially true in the middle and latter decades. The major functional activities for this alternative will be at current status, which is approximately 66% initial attack, 33% prevention, and 1% detection.

Activity fuels reduction will be commensurate with timber harvest. Natural fuels reduction and the fuelbreak system will be relegated to a maintenance status.

2.6.2.21

Environment to Be Created

By the year 2030, there will be a moderate increase in developed recreational sites within the Forest. Increases will be provided by private developers and new hydroelectric developments. Opportunities for dispersed recreation will slightly decline from the present level. A limited increase in the Forest's recreation trails will occur.

Land, where timber is intensively managed, will take on a more managed appearance by 2030. Moderately intensive management of these areas will create more

openings and reduce the number of large blocks of timber. Commercial late seral stage mixed conifer forests will be reduced 21%, but mature stands of ponderosa pine will increase 26%. Foothill oaks will remain at the current density, but oaks within commercial forests will decline slightly. Within 50% of the Forest's key deer areas, harvest unit prescriptions will contain provisions to provide suitable forage and cover for deer. Snags and down logs will undergo small reductions from naturally occurring numbers, but managed at two snag/acre and three logs/acre, etc.

Diversity of plants and animals will remain at current levels. Aquatic habitat diversity will be maintained at current levels. Threatened and endangered fish and wildlife will be protected. Sensitive plants will be conserved and managed to prevent them from becoming federally-listed as threatened and endangered. Sensitive animals will be protected.

Grazing of foothill grassland will be at the current level. Grazing of forested areas will remain at the present level.

The current system of fuelbreaks will remain in 2030. Limited acreages of chaparral and oak grassland will be burned each year through prescribed fire and managed wildfires.

The present arterial road system will not change significantly. The collector road system will increase slightly by 2015 to reach new areas of commercial timber or accommodate recreational demand. Facilities will deteriorate, though health and safety needs will be met. Few new buildings will be constructed.

TABLE 2.07 - ALTERNATIVE B: AVERAGE ANNUAL OUTPUTS DURING FIRST FIVE DECADES

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
RECREATION								
Developed Public (M RVD)	750.0	1950 0	2880 0	781 7	407.1	441 6	478 4	519 8
Developed Private (M RVD)	830.0			923 3	1467.9	1593.4	1736.6	1890.2
Dispersed (M RVD)	2033.6	3360.0	4160 0	2095.8	2384.7	2652.4	2936.8	3330.7
Wilderness (M RVD)	220.0			462 8	518.3	567.6	617 0	617 0
Restricted, Useable OHV Areas (except Alt. B which is "open")								
Summer (M Acres) [2]	346.0			292.7	290.7	288.0	286.0	284.0
Winter (a) (M Acres) [2]	83 8			83.8	73.8	73.8	63.8	63.8
Winter (b) (M Acres) [2]	168 5			115.5	115 5	115.5	115.5	115.5
Roads and Trails Open Only to OHV								
Summer (Miles) [3]	249			193	198	203	208	213
Winter (Miles) [3]	30 [4]			30	33	36	39	42
Roads and Trails Closed Only to OHV								
Summer (Miles)	160			30	32	34	36	38
Winter (Miles)	160			20	20	20	20	20
Visual Quality Index (%)	93.0			92.0	90 4	89.9	88.9	88.9
WILDLIFE AND FISH								
Bald Eagles (Wintering Indiv.)	5-10			5-10	5-10	5-10	5-10	5-10
Peregrine Falcon (Pairs)	0			3	3	3	3	3
Deer (Number x 1,000)	15 0			17.2	19.8	22 8	22 8	22 8
Spotted Owls (Pairs)	130			121	110	97	83	81
SOHAs	Nonexistent until 1984			26	26	26	26	26
Goshawk (Pairs)	50			50	50	50	50	50
Lahontan Cutthroat Trout (Pops.)	2			2	2	2	2	2
Paiute Cutthroat Trout (Pops)	2			2	2	2	2	2
Resident Fish (M Pounds)	100			100	100	100	100	100
Wildlife User Days (M WFUD)	329.7			345 5	383 2	418.7	448.1	480.2
Fish User Days (M WFUD)	141.3			148.1	164 2	179.5	192 0	206.6
Direct Habitat Improvement								
Wildlife (M Acres)	2.6	12.7	5 45	1.0	1.0	1 0	1 0	1 0
Fish (Acres or Structures)	3 0			28.0	30 0	36.0	38.0	42.0
RANGE								
Grazing (M AUM)	35.0	38 1	40 2	35 6	35 6	35 6	35.5	35 3
TIMBER								
Allowable Sale Quantity (MMBF)	110.0	149.1	163 4	115.6	125.0	125.0	125 0	125.0
Allowable Sale Quantity (MMCF)	17 4	23.8	26 1	19.8	19.8	19.8	19.8	19.8
Reforestation (M Acres)	1.1	6 5	7.6	2.8	3.0	2 8	2 3	1 6
Timber Stand Improvement (M Acres)	0.5	4.9	5.0	2.1	4.9	5.8	5.8	5 1
WOOD PRODUCTS OTHER THAN SAWTIMBER								
Fuelwood (M Cords)	22.5			22.5	22 5	22.5	22.5	22 5
Biomass (MMCF)	0			No Projection Made				
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only.								
[2] Includes areas up to 30% slope located outside wilderness: (a) Winter = Areas suitable for 4WD and trailbike use, but not necessarily open to cross-country use; (b) Areas suitable for oversnow vehicle and open to cross-country use								
[3] Average to be determined in Forest OHV Plan.								
[4] Does not include 45 miles of designated snowmobile routes and undesignated routes in areas where cross-country over the snowvehicle travel is permitted.								

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
WATER								
Quality (MM Ac.Ft. at Mtg Objectives)	2.514	1.882	1.903	2.571	2.561	2.583	2 596	2 590
Increased Quantity (MM Ac.Ft)	2.565			.058	.071	.084	.078	.078
Watershed Improvement (Acres)		270	310	151	151	151	---	---
LANDS AND MINERALS								
Minerals (Operating Plans)	21	53	69	15	18	20	20	20
Land Acquisition (Acres)	0	500	0	0	0	0	0	0
TRANSPORTATION								
Trail Const./Reconst. (Miles)	26	54	42	26	24	22	20	18
Road Const (Miles)	36			16	8	4	2	1
Road Reconstruction (Miles)	41			11	18	14	13	11
Maintained Road System (Annual Miles)	2550			2620	2745	2810	2840	285
FACILITIES								
Dams and Reservoirs								
Forest Service (Number)	0			0	0	0	0	0
Other Federal (Number)	0			0	0	0	0	0
Other State/Local (Number)	3			3	3	3	3	3
Private (Number)	25			25	25	25	25	25
Administrative Sites								
Forest Service Owned (Number)	26			21	21	20	20	20
Leased Number	6			5	5	4	4	4
PROTECTION								
Total Fuel Treatment (Acres) [2]	0	3000	2600	3300	3800	4100	4300	4700
(a) Fire-related Fuel Treatment				0	0	0	0	0
(b) Timber-related Fuel Treatment				2300	2800	3100	3300	3600
(c) Fuel Treatment for Other Resources				1000	1000	1000	1000	1000
Expected Acres Burned by Wildfire								
Intensity Level	1	36		53	55	52	52	60
	2	91		120	125	126	126	146
	3	221		166	172	111	112	129
	4	429		577	599	531	535	619
	5	577		578	589	569	575	665
	6	924		1046	1086	970	977	1130
HUMAN RESOURCES								
Programs (Enrollees)	38	16	16	38	38	38	38	38
TOTAL BUDGET (\$MM)	18.7	18.9	20.8	19.1	22.5	24.9	26 8	29.3
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only.								
[2] Combination of Wildlife and Protection (sum of a, b, and c).								

TABLE 2.08 - ALTERNATIVE B: DISTRIBUTION OF PRESCRIPTIONS BY MANAGEMENT AREAS [1]

PRESCRIPTION	MANAGEMENT AREAS											
	1	2	3	4	5	6	7	8	9	10	11	12
WILDERNESS			527,938									
WILD & SCENIC [2]												
MINIMUM LEVEL MANAGEMENT [3]		12,992		26,809	1,199							
LIMITED-TIMBER YIELD [3]	10,946	652		53,255	1,148				54			
MODIFIED-TIMBER YIELD [3]	17,802	2,563		93,469	1,262				403			
FULL-TIMBER YIELD [3]	11,195	3,065		147,180	10,220				186			
DEVELOPED RECREATION [4]	73,1011	2		312	3							
ADMINISTRATION SITES	238	2		138	155	28	1	2				
SPECIAL INTEREST AREAS Botanical / Geological									899			
KINGS RIVER SPEC. MGMT. AREA												24,368
EXPERIMENTAL FOREST							3,200					
EXPERIMENTAL RANGE								4,580				
RNA										1,650		
LAND EXCHANGE												
Acquisition	200		560	2,150	1,350						160	
Base	3,200			11,330	26,630							
DISPERSED RECREATION [5]	56,228	12,490		202,843	8,851						41,711	24,368
FRONT COUNTRY					130,180							
[1] Numbers are approximate due to rounding. [2] See Appendix for specific recommendations and designations. [3] Includes only CAS land. [4] Includes water area also [5] Includes both dispersed no harvest and dispersed with harvest												

2.6.3 Alternative C (RPA)

2.6.3.1 Alternative Theme

This alternative represents the role the Forest will have to play to best meet the 1980 RPA program. It will emphasize timber and range forage production, where benefits are commensurate with costs, and maintains the environment, including wildlife habitat, on all Forest land. Dispersed recreational opportunities will be stressed. Developed recreational opportunities will be maintained and new development opportunities for private capital investments on Forest encouraged. Wilderness management will be directed toward increasing opportunities for a high quality wilderness experience.

2.6.3.2 Recreation

There will be moderate increases in the number of developed sites to accommodate increasing recreation of approximately 5.8% each decade. Most of this increase will come from private capital investments, primarily hydroelectric development licensees on Forest land. Licensee will be obligated to assure that the project related recreation operation/maintenance is performed in conformance with Forest Service direction. Development emphasis will be in high-use areas and in the rural opportunity class zones. Campgrounds will be retained. There will be an adequate number of campground units to meet demand. Improvements to facilitate snowplay, snowmobiling and cross-country skiing will be provided. Sierra Summit ski area will expand to 8,500 SAOT. As a goal, most of the sites operated by the Forest Service will provide standard services. Major recreational sites having approximately 9,500 PAOT will be rehabilitated using a combination of appropriated dollars and FERC licensees. OHV use, except for snowmobiles, will be restricted to designated roads and trails. Over 238 miles of OHV routes will be designated for use by 2030. Dispersed recreation will be emphasized to provide a wide spectrum of recreational opportunities with most services provided at standard levels to assure a quality experience.

The Forest trail system will expand an additional 56 miles, with more intensive maintenance and management practices provided to meet dispersed recreational needs.

Interpretive service facilities will expand moderately. A full range of visitor information and interpretive services will be provided at major recreational use centers, with program emphasis on dispersed recreational opportunities.

The visual resources will be managed for the highest levels of quality in areas significant to recreational use. In some parts of the Forest, visual quality will be lowered to

accommodate resource production where other values outweigh aesthetics.

2.6.3.3 Wilderness

A total of 527,938 acres will be dedicated to wilderness. No additional acres will be added to wilderness from roadless areas. Administration of wilderness will include limiting use to capacity levels through trailhead quotas and adding additional personnel to protect wilderness values and reduce conflicts.

Trail rehabilitation will continue and be completed by 2010, with emphasis on high-use trails and those that disperse use. Rehabilitation will be programmed for the primary trail system. Approximately 30 miles of new trails will be added, but only as necessary to prevent resource damage or to aid in visitor dispersal. Prescribed fire and unplanned naturally occurring fires will be used in Wilderness to return Wilderness to its pristine or near pristine condition and to reduce fuel loading.

2.6.3.4 Wild and Scenic Rivers

The Nationwide Rivers Inventory (NRI) of January 1982 identified seven rivers within or surrounding the Forest that were suitable for inclusion in the Wild and Scenic River System. Rivers included were Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin and Middle Fork Kings. These rivers flow through land administered by three National Forests, two National Parks, one National Monument, Bureau of Land Management, State of California and private land.

In November 1987, Congress designated portions of Merced and all South Fork Merced and Middle Fork Kings as Wild and Scenic Rivers. This included 149 miles (47,680 acres) of the inventoried 224 miles (71,680 acres). Of the total designated, 47.5 miles will be administered by the Sierra.

This alternative will recommend Wild and Scenic River designation for all segments of San Joaquin River except Segment 2, all segments of North Fork San Joaquin, all segments of Middle Fork San Joaquin and all segments of South Fork San Joaquin except Segment 3.

2.6.3.5 Wildlife, Fish, and Sensitive Plants

The Forest program of direct habitat improvement will annually treat 2,000 acres of wildlife habitat and 120 acres (or structures) of fishery habitat. The national fisheries emphasis program, "Rise to the Future", has enabled the Forest to establish a solid fisheries program. Protection, restoration, and enhancement of fish habitat will be a result of adequate biologist staffing, on-going fish habitat assessment, multi-year fishery program schedules,

increased coordination within our agency with state agencies, and with our concerned publics. Habitat improvements for threatened and endangered species will increase to an annual rate of 20 acres or less. A forestwide program will be implemented to identify target fish and wildlife species and long-term habitat objectives for each planning area.

The Forest will establish and maintain at least 3 breeding pairs of peregrine falcons in accord with recovery plans. Habitat will also be maintained for the current population of 5-10 wintering bald eagles. Habitat for the threatened Lahontan and Paiute cutthroat trout will be maintained and protected. A network of at least 26 California Spotted Owl Habitat Areas will be managed in the Forest. A goshawk network will be established with at least one territory per 18 square miles of suitable habitat. Ospreys will be maintained at current levels at Bass Lake. Willow flycatcher habitat will be maintained and identified active nest sites will be protected. Fisher, marten, and Sierra Nevada red fox habitat will be maintained in the Wilderness, RNAs, SOHAs, SMZs, and in approximately 79,000 acres with a Limited-Timber Yield Prescription. Timber harvest strategies and prescriptions will be modified to improve deer habitat in 50% of the identified deer population centers and holding areas within the commercial forest zone. Hardwoods will be managed at 20% crown closure within 50% of the identified key deer areas in the commercial forest zone.

Management of all perennial and some intermittent streams will emphasize maintenance of water quality as well as preservation of riparian habitat values for fish and wildlife. When hydroelectric developments are proposed, or relicensing occurs on existing developments, the Forest will coordinate with project proponents and CDFG to insure that associated fish and wildlife habitats and sensitive plant resources are maintained near current levels.

Special habitat components such as snags and down logs will decline from naturally occurring densities in intensively managed forests. This alternative will meet the Regional standard of 1.5 snags per acre. Topping trees may or may not be needed to maintain proper snag levels. Late seral stage habitat will decline from present inventory levels during the first decade then increase to approximately 68,000 acres by the end of decade 5. Hardwood stands will be maintained at current levels on noncommercial land. On commercial forestland, where crown closure is less than ten percent, all hardwoods will be retained. Where crown closure is greater than ten percent, it will be reduced to ten percent during harvesting or post sale treatment. A total of 2000 acres of hardwood stands will be converted to conifers. Forest meadows and riparian areas will be improved by continuing watershed habitat enhancement projects. A moderate prescribed fire program of 2000 acres will focus on rejuvenation of chaparral and some hardwood habitats.

Diversity of plant and animal communities will be maintained slightly below current levels. Retention of at least five percent of each vegetation type and seral stage will be maintained over time (except where those seral stages do not currently exist and cannot be immediately created). Aquatic habitat diversity will be maintained at current levels. Threatened and endangered fish and wildlife will be protected. Species Management Guides will be prepared for all Forest sensitive plants. Sensitive plants will be conserved and managed to prevent them from becoming federally-listed as threatened and endangered. Sensitive animals will be protected.

Increased field surveys will be conducted to improve present knowledge of sensitive plants. A moderate monitoring program, consisting of baseline data collection and regular surveys, will evaluate the effects of Forest management on species and habitats of concern.

2.6.3.6 Riparian

The Forest will designate, as Riparian Management Areas (RMA), adjacent zones that measure approximately 100 feet from all perennial streams and lakes. In addition, a small number of the Forest's intermittent streams will be designated as riparian areas. Of the 155,000 riparian acres in the Forest, about 44,000 acres will be on CAS land. (CAS is 393.7M Acres.) Fish habitat improvement will include 120 acres/structures per year. In the RMA, 5 percent of the standing inventory will be harvested each decade (Regulation Class III). The annual harvest from RMAs will be 4.4 MMBF.

2.6 3.7 Range

Increases to about 41,800 AUMs in range forage base and implementation of grazing systems will allow the Forest to meet RPA goals by 2010. This will be accomplished through range improvement projects, early spring grazing, longer seasons and/or year-long grazing and increases in livestock numbers in the lower elevations. Grazing in the higher elevation allotments will remain at current levels. Some increased forage production and use will be realized through coordination with other resource projects.

2.6 3.8 Chaparral

Annually between 3,600 and 4,300 acres will be treated. Major benefiting resources are protection, wildlife, and range. Most of the chaparral will be treated with prescribed fire, with all functions contributing funding, including cooperators.

2 6.3.9

Timber

The level of timber production will increase to meet maximum demand of local manufacturing facilities as well as contribute a moderate amount to regional demand. At the same time, this alternative will meet RPA goals for amenity and market resources. The ASQ will be 138.0 MMBF/year during the first decade, and is projected to remain at that level for the next four decades. This will be less than the preceding Timber Management Plan approved in 1962, but more than the actual average annual harvest the last 10 years. The high timber production will be accomplished by extending timber management to all timber land. The maximum annual LTSY will be 173.1 MMBF.

About 393,700 acres of timber land will be managed for timber production under one of the three intensity levels previously described. Silvicultural systems will be selected to meet the specific resource objectives for each site. Projected timber harvest in each future decade will be equal or greater than the preceding decade (nondeclining even-flow). On the full- and modified-timber yield land, even-aged silvicultural practices will predominate. Uneven-aged silvicultural systems and timber harvesting not related to a silvicultural system will predominate on the limited-timber yield land. Modified-timber yield land will include visually sensitive areas and California spotted owl habitat. Limited-timber yield land will include areas where protection of current visual values are emphasized and protection of soil and water resources is necessary.

2 6.3.10

Integrated Pest Management

Integrated pest management will be practiced on 393,700 acres. Intensive pest management activities will be concentrated in high-volume areas and in developed recreation areas.

2 6 3 11

Soil and Water

There will be a high to moderate risk of reducing water quality and soil productivity. Complex and expensive mitigation measures such as mulching, seeding, YUM yarding, endlining logs, and hand piling slash will be necessary to maintain soil productivity. Water quality will be slightly lower than present, but still meet state and federal objectives.

As a result of intensive even-aged timber management, downstream water yield will increase 2.7% above base levels by the end of the first decade. On-site yields will be moderate due to vegetation conversion projects, fuel reductions, and fuelbreak projects. Identified projects for improving water quality on 4520 acres of backlog may be implemented through K-V funds collected from timber sales. Approximately 2260 acres will be treated in

the first decade. Projects not funded from K-V collections are not likely to be implemented.

Through site stabilization and reforestation efforts, opportunities will be good for improving soil productivity on sites producing below their natural potential. Approximately 20% or 39,243 acres, programmed for disturbance by forest management activities, will be mapped at a high intensity (Order 2) soil survey level in the first decade.

2 6 3 12

Geology

Earth construction materials will be required at an increased rate to 25,000 tons annually. Reopening existing quarries and development of one or two new quarries will occur to satisfy this increase.

Ground water use will slightly increase. It will probably average 2.1 million gallons annually. This will require drilling one or two new wells.

2.6 3 13

Minerals

Opportunities will increase moderately for improved access to mineral deposits. Mineral production and the minerals management program will remain near current levels and costs will remain static.

2.6 3 14

Lands

The land adjustment program will emphasize exchange of large holdings (non-Federal land generally in excess of 1,000 acres) to facilitate administration of Forest land. Consolidation of land and reduction of property boundaries will increase cost effectiveness. Acquisition priority will be for land important for wildlife, wilderness or recreation purposes.

Development opportunities for private capital investments will be enhanced through the permit process. Field examinations of proposed sites and preparation of environmental reports will be accomplished.

The LLL program will be directed toward property boundary determination, as mandated by the timber sale program.

2 6.3 15

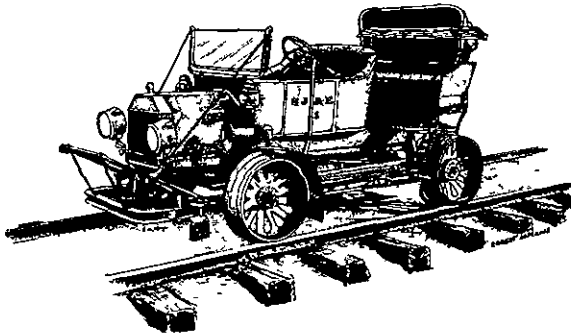
Hydroelectric Development

Hydroelectric development will be allowed only if compatible or can enhance management direction and needs. The Forest Service will take strong action to curtail marginal development in favor of RPA targets or commodity production. Development of hydroelectric facilities will proceed on a schedule proposed by developers.

26316

Cultural Resources

Cultural resource management will emphasize site identification, evaluation, and protection. Preservation of highly significant sites, including areas important to Native American groups, will take precedence over production and development activities. A planned data-recovery program will be initiated on other areas affected by development activities. Scientific studies and interpretive programs will increase moderately. The procedure of 36 CFR 800 will be followed.



263.17

Special Areas

The following are established or recommended special areas.

	Established Acres	Recommended Acres
Special Interest Areas		
Kings Cavern Geological Area	388	
Courtright Intrusive Contact Zone Geological Area	11	
Carpenteria Botanical Area	500	
Nelder Grove Historical Area		1,434
Research Natural Areas		
Backbone Creek	430	
San Joaquin Experimental Range (Blue Oak-Digger Pine)	80	
Bishop Creek Pacific Ponderosa Pine		1,140
Home Camp Creek (Red Fir-White Fir)		1,200
Experimental Forest		
Teakettle	3,200	
Experimental Range		
San Joaquin	4,580	
Special Management Area		
Kings River	48,668	

2.6.3.18

Transportation and Facilities

The Forest's road system development will essentially be completed by the year 2010, with some minor additions coming later. A relatively high-standard road system will be required.

Annual road maintenance will be directed to that portion of the system the public is encouraged to use and is necessary to support activities.

Modifications to the road system will be made by improving potentially hazardous sites, relocating unstable segments and upgrading surfaces to improve overall economics.

Construction of new or replacement of several major structures such as barracks, warehouses, and administration buildings will be accomplished by 2010.

Facilities maintenance activities will focus on health and safety items.

2.6.3.19

Air

All State and Federal air quality objectives will be met.

2.6.3.20

Protection

A slight increase in the fire management program, including law enforcement, will be needed to reduce the risk to Forest users and protect the resources from intolerable losses. The major functional activities for this alternative will be approximately 69% initial attack, 19% prevention, 11% fuels management, and 1% detection.

Activity fuels reduction will be intensified commensurate with timber harvest. The planned fuel break program will be completed in conjunction with the timber harvest and wildlife and range programs. Natural fuel reduction will increase in conjunction with range and wildlife habitat improvement.

2.6.3.21

Environment to Be Created

By 2030, there will be a moderate increase in developed recreational sites within the Forest. Increases will be provided in high-use areas. Opportunities for dispersed recreation will also increase to balance recreational uses. A moderate increase in the Forest's recreation trails will occur.

Land, where timber is intensively harvested, will take on a more managed appearance by 2030. Moderately intensive management of these areas will create more openings and reduce the number of large blocks of timber.

Commercial late seral stage mixed conifer forests will be reduced 52%, but mature stands of ponderosa pine will increase 26%. Foothill oaks will remain at the current density, but oaks within commercial forests will decline slightly. Within 50% of the Forest's key deer areas, harvest unit prescriptions will contain provisions to provide suitable forage and cover for deer. Snags will be moderately reduced and down logs will undergo small reductions from naturally occurring numbers, but managed at two snags and three down logs/acre.

Structural diversity of plant associations will increase due to increased activity from other resources. Aquatic habitat diversity will be maintained at current levels.

Grazing of foothill grassland will increase in intensity and duration. Grazing of forested areas will remain at present levels.

A large well-maintained system of fuelbreaks will be in place by 2030. Considerable areas of chaparral and hardwood will be burned each year through prescribed fire and managed wildfires.

The extent of the present arterial road system will not change significantly. A moderate increase in the collector road system will occur through the 1990's to reach areas of commercial timber or accommodate recreational demand. New facilities will be built to support resource goals. Existing buildings will be maintained at a higher level.

TABLE 2.09 - ALTERNATIVE C: AVERAGE ANNUAL OUTPUTS DURING FIRST FIVE DECADE

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031- 2040
RECREATION								
Developed Public (M RVD)	750 0	1950 0	2880 0	781.7	407 1	441.6	478 4	519 8
Developed Private (M RVD)	830 0			923.3	1467.9	1593.4	1736.6	1890 2
Dispersed (M RVD)	2033 6	2033.6	3360 0	4160.0	2095 8	2384.7	2936 8	3330 7
Wilderness (M RVD)	220.0			462.8	518 3	567.6	617 0	617.0
Restricted, Useable OHV Areas (except Alt. B which is "open")								
Summer(M Acres) [2]	346.0			285.0	280 0	280.0	275 0	275.0
Winter (a) (M Acres) [2]	83.8			73.0	70.0	65 0	60.0	55.0
Winter (b) (M Acres) [2]	168.5			110 5	105.5	105.5	105.5	105.5
Roads and Trails Open Only to OHV								
Summer (Miles) [3]	249			198	208	218	228	238
Winter (Miles) [3]	30[4]			32	37	42	47	52
Roads and Trails Closed Only to OHV								
Summer (Miles)	160			30	30	32	32	34
Winter (Miles)	160			20	20	20	20	20
Visual Quality Index (%)	93.0			91.9	90 7	89.5	88.4	88 4
WILDLIFE AND FISH								
Bald Eagles (Wintering Indrv.)	5-10			5-10	5-10	5-10	5-10	5-10
Peregrine Falcon (Pairs)	0			3	3	3	3	3
Deer (Number x 1,000)	15.0			17.6	21 1	25 4	25.4	25 4
Spotted Owls (Pairs)	130			112	98	88 5	71	65
SOHAs	Nonexistent until 1984			26	26	26	26	26
Goshawk (Pairs)	50			50	50	50	50	50
Lahontan Cutthroat Trout (Pops.)	2			2	2	2	2	2
Paiute Cutthroat Trout (Pops)	2			2	2	2	2	2
Resident Fish (M Pounds)	100			100	100	100	105	110
Wildlife User Days (M WFUD)	329 7			374 5	407.5	440 4	473.5	506 4
Fish User Days (M WFUD)	141 3			160.5	174 6	188 8	202 9	217.1
Direct Habitat Improvement								
Wildlife (M Acres)	2 6	12 7	5.45	2 0	2 0	2.0	2 0	2.0
Fish (Acres or Structures)	3 0			120 0	120.0	120.0	125	130
RANGE								
Grazing (M AUM)	35 0	38 1	40 2	41 8	41 8	41.9	41 9	42.5
TIMBER								
Allowable Sale Quantity (MMBF)	110 0	149 1	163.4	115 6	125.0	125.0	125 0	125.0
Allowable Sale Quantity (MMCF)	17.4	23 8	26.1	19 8	19 8	19.8	19 8	19.8
Reforestation (M Acres)	1.1	6.5	7 6	2 8	3 0	2.8	2 3	1 6
Timber Stand Improvement (M Acres)	0.5	4.9	5 0	2.1	4.9	5 8	5.8	5.1
WOOD PRODUCTS OTHER THAN SAWTIMBER								
Fuelwood (M Cords)	22.5			22 5	22.5	22.5	22 5	22 5
Biomass (M MCF)	0			No Projection Made				
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only. .								
[2] Includes areas up to 30% slope located outside wilderness: (a) Winter = Areas suitable for 4WD and trailbike use, but not necessarily open to cross- country use; (b) Areas suitable for oversnow vehicle and open to cross-country use								
[3] Estimated number of miles, actual miles to be determined in Forest OHV Plan.								
[4] Does not include 45 miles of designated snowmobile routes and undesignated routes in areas where cross-country over the snow vehicle travel is permitted.								

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
WATER								
Quality (MM Ac Ft. at Mtg Objectives)	2 514	1.882	1 903	2 617	2.609	2.620	2.599	2 588
Increased Quantity (MM Ac Ft.)	2.565			.105	.097	.108	.087	.076
Watershed Improvement (Acres)		270	310	226	226			
LANDS AND MINERALS								
Minerals (Operating Plans)	21	53	69	25	30	35	35	35
Land Acquisition (Acres)	0	500	0	500	100	0	0	0
TRANSPORTATION								
Trail Const./Reconst. (Miles)	26	54	42	47	37	27	0	0
Road Const. (Miles)	36			30	6	2	2	1
Road Reconstruction (Miles)	41			35	18	13	10	8
Maintained Road System (Annual Miles)	2550			2685	2870	2915	2940	2950
FACILITIES								
Dams and Reservoirs								
Forest Service (Number)	0			0	0	0	0	0
Other Federal (Number)	0			0	0	0	0	0
Other State/Local (Number)	3			3	3	3	3	3
Private (Number)	25			25	25	25	25	25
Administrative Sites								
Forest Service Owned (Number)	26			24	23	22	22	22
Leased (Number)	6			5	5	5	5	5
PROTECTION								
Total Fuel Treatment (Acres) [2]	0	3080	2600	6500	5300	5200	5100	4920
(a) Fire-related Fuel Treatment				1700	1600	1800	2000	2300
(b) Timber-related Fuel Treatment				2800	1700	1400	1100	620
(c) Fuel Treatment for Other Resources				2000	2000	2000	2000	2000
Expected Acres Burned by Wildfire								
Intensity Level	1	36		45	46	50	52	51
	2	91		99	104	121	126	122
	3	221		85	90	106	112	109
	4	429		484	507	509	535	522
	5	577		319	344	547	573	558
	6	924		1058	1105	932	978	952
HUMAN RESOURCES								
Programs (Enrollees)		38	16	16	38	38	38	38
TOTAL BUDGET (\$MM)								
	18.7	18.9	20.8	25.0	27.0	29.5	30.5	36.2
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only.								
[2] Combination of Wildlife and Protection (sum of a, b, and c).								

TABLE 2.10 - ALTERNATIVE C: DISTRIBUTION OF PRESCRIPTIONS BY MANAGEMENT AREAS [1]

PRESCRIPTION	MANAGEMENT AREAS											
	1	2	3	4	5	6	7	8	9	10	11	12
WILDERNESS			527,938									
WILD & SCENIC [2]			11,200							640		2,720
MINIMUM LEVEL MANAGEMENT [3]												
LIMITED-TIMBER YIELD [3]	13,029	1,934		62,384	2,393		6		54			
MODIFIED-TIMBER YIELD [3]	15,770	4,367		112,785	1,279		77		43			
FULL-TIMBER YIELD [3]	10,355	5,389		152,935	10,714				186			
DEVELOPED RECREATION [4]	73,101	3		327	4							
ADMINISTRATION SITES	238	2		138	155	28	1	2				
SPECIAL INTEREST AREAS Botanical / Geological									2,333			
KINGS RIVER SPEC. MGMT. AREA												24,368
EXPERIMENTAL FOREST							3,200					
EXPERIMENTAL RANGE								4,580				
RNA										2,850		
LAND EXCHANGE												
Acquisition	200		560	2,150	1,350						160	
Base	3,200			10,850	27,110							
DISPERSED RECREATION [5]	55,898	60,156		209,779	9,207						8,761	24,368
FRONT COUNTRY					129,870	620						
[1] Numbers are approximate due to rounding. [2] See Appendix E for specific recommendations and designations [3] Includes only CAS land [4] Includes water area also. [5] Includes both dispersed no harvest and dispersed with harvest.												

2.6.4 Alternative D (Low Budget)

2.6.4.1 Alternative Theme

This alternative represents a basic or low budget level of activities. It is near the minimum of activities and production prescribed by laws, regulations, and Forest Service management direction. It responds to the basic responsibilities of control, protection, and use of the Forest's air, land, and water resources. Production will be concentrated on existing roaded land base and activities will be dispersed as widely as practicable. Actions will be implemented primarily to protect and conserve resources and to rehabilitate resources where deterioration has occurred.

2.6.4.2 Recreation

There will be few capital investments to develop new recreational or trail facilities except through the private sector, primarily by licensees under Federal Power permit. Licensee will be obligated to assure project related recreation operation/maintenance is performed in conformance with Forest Service direction. Approximately 6,000 PAOT of rehabilitation in developed sites will be completed by 2005. Forest Service operated facilities, where power licenses do not cover rehabilitation and development, will be maintained for resource and facility protection and for visitor safety, or will be placed under concessionaire operation. Those facilities, where operation and maintenance are provided by power licensees, will remain open with most services provided at standard level. Even though some campgrounds may be closed, campgrounds constructed and maintained by licensees and others maintained by concessionaires shall accommodate projected demand. OHV use, except snowmobiles, will be restricted to designated roads and trails which will remain near the present level of 193 miles. Dispersed recreation will not be encouraged, including snow activities, and only those that required minimum administration at low-standard levels and make the least impact on resources will be stressed. No new trails will be built. Interpretive services will be at low levels with emphasis on resource protection. Existing visual quality levels will remain unchanged in areas significant to recreational uses. Within intensive timber management areas, lower visual quality levels will be acceptable in order to accommodate resource production where these production values outweigh aesthetics.

2.6.4.3 Wilderness

A total of 527,938 acres will be dedicated to wilderness. There will be 48,668 acres of new wilderness with the addition of the Kings River Special Management Area to wilderness (formally called the Kings River B Further

Planning Area). This will include 24,368 acres in the Sierra National Forest and 24,300 acres in the Sequoia National Forest.

Administration in wilderness will limit use to capacity levels through trailhead quotas, intensified publicity, and reservations. Patrol and maintenance activities will be reduced from current levels and consist only of activities necessary for visitor safety and resource protection. Trails requiring a high maintenance investment will be closed. No new trails will be built. Wilderness vegetation will not be returned to a more natural condition as in other alternatives because natural fires will normally be extinguished. There will not be a prescribed burn program.

2.6.4.4 Wild and Scenic Rivers

The Nationwide Rivers Inventory (NRI) of January 1982 identified seven rivers within or surrounding the Forest that were suitable for inclusion in the Wild and Scenic River System. Rivers included were Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin and Middle Fork Kings. These rivers flow through land administered by three National Forests, two National Parks, one National Monument, Bureau of Land Management, State of California and private land.

In November 1987, Congress designated portions of Merced and all South Fork Merced and Middle Fork Kings as Wild and Scenic Rivers. This included 149 miles (47,680 acres) of the inventoried 224 miles (71,680 acres). Of the total designated, 47.5 miles will be administered by the Sierra.

This alternative will recommend Wild and Scenic River designation for all segments of San Joaquin River except Segment 2, all segments of Middle Fork San Joaquin except Segment 4, all segments of South Fork San Joaquin except Segment 4 and all segments of Middle Fork Kings except Segment 2.

2.6.4.5 Wildlife, Fish and Sensitive Plants

The annual Forest program of direct habitat improvement will be reduced from the current level to 500 acres or less of wildlife habitat and 17 acres (or structures) for fish habitat. Habitat improvements for threatened and endangered species will average about 20 acres/year.

The Forest will establish and maintain at least three breeding pairs of peregrine falcons. Habitat will also be maintained for the current population of 5-10 wintering bald eagles. Habitat will be maintained and protected for the threatened Lahontan and Paiute cutthroat trout populations. A network of at least 34 Spotted Owl Habitat Areas will be managed in the Forest. A goshawk

network will be established with at least one territory per 18 square miles of suitable habitat. The osprey population at Bass Lake will be maintained at current levels. Reduced timber harvest will make more snags available for additional osprey nests. Habitat for willow flycatcher will be maintained and active nest sites will be protected through fencing or other means. Reduction of livestock grazing will be beneficial for expansion of willow flycatcher habitat and populations. Fisher, marten and Sierra Nevada red fox habitat will be maintained in the Wilderness, RNAs, SOHAs, SMZs, and on land with compatible prescriptions. This alternative will provide for 114,200 acres in Minimum-Level Management and 52,000 acres in Limited-Timber Yield prescription. Timber harvest strategies and prescriptions will be modified to improve deer habitat requirements in 75% of the identified deer population centers and holding areas within the commercial forest zone. Within 75% of the identified key deer areas in the commercial forest zone, hardwoods will be managed for 20% crown closure.

Management of all perennial and many intermittent streams will emphasize maintenance of water quality, as well as preservation of riparian habitat values for fish and wildlife. When hydroelectric developments are proposed or relicensing occurs on existing developments, the Forest will coordinate with project proponents and CDFG. This insures that associated fish and wildlife habitats and sensitive plant resources will be maintained near current levels.

Special habitat components such as snags and down logs will decline from naturally occurring densities within intensively managed forests. This alternative will meet regional standards of 1.5 snags per acre. Topping trees to create snags will not be needed because the amount of commercial forest landbase is small in this alternative providing many opportunities to create snags. Retention of at least five percent of each vegetation type and seral stage will be maintained over time except for seral stage 1, 2 and 3a which will have 4 percent. Hardwood stands and late seral stage habitat will decline from present inventory levels where forests are intensively managed. However, overall, late seral stage inventory levels will increase from present levels to approximately 79,000 acres as stands of 4B/C seral stage habitat outside intensively managed areas grow to maturity. On commercial forestland, where crown closure is less than 10%, all hardwoods will be retained. Where crown closure is greater than 10%, it will be reduced to 10% through harvesting or post sale treatment. A total of 1410 acres of hardwood stands will be converted to conifers. Hardwood stands will be maintained at current levels on noncommercial land. Forest meadows and riparian areas will be maintained at current conditions. There will be a limited prescribed fire program for wildlife habitat improvement.

Sensitive plants will be managed to prevent them from becoming federally-listed as threatened or endangered. Species Management Guides will be developed for all

Forest sensitive plants. Plant and animal diversity will be maintained and will favor mid to late seral stage habitat dependent species in forested areas and early to mid-seral stage dependent species in the chaparral areas.

Field surveys will be conducted to increase knowledge of sensitive plants that are jeopardized by pending projects. A limited monitoring program consisting of baseline data collection and periodic surveys will evaluate the effects of Forest management on species and habitats of concern.

2.6.4.6 Riparian

The Forest Service will designate, as Riparian Management Areas (RMA), adjacent zones that measure approximately 100 feet from all perennial streams and lakes. In addition, a small number of the Forest's intermittent streams will be designated as riparian areas. Of the 155,000 riparian acres in the Forest, about 27,000 will be on CAS land. (CAS is 279.5 M acres.) Fish habitat improvement will include 17 acres/structures per year. In the RMA, 5 percent of the standing inventory will be harvested each decade (Regulation Class III). The annual harvest from RMA will be 2.7 MMBF.

2.6.4.7 Range

Grazing will remain static and be limited to more productive annual grass-woodland ranges and productive montane meadow areas that are easily accessible and managed. There will be very few new structural or nonstructural range improvements. Use of low forage-producing areas will be discontinued. Older treated chaparral areas and transitory ranges will revert to unproductive brushland, however, existing range improvements probably will be maintained. Only basic permit administration will be implemented. Forage use at high elevations will be limited to recreational pack and saddle stock.

2.6.4.8 Chaparral

Annually approximately 500 acres will be treated. Major benefiting resource will be wildlife. Prescribed fire will be the major treatment method. Funding will come from cooperating agencies.

2.6.4.9 Timber

Timber harvest will decline significantly. The ASQ will be 75.2 MMBF/year during the first decade. Projections for the next three decades will be about the same. Decade 5 will raise to approximately 78 MMBF/year. This will be less than the actual average annual harvest during the past 5 years. The maximum annual LTSY will be 126.1 MMBF.

In this alternative, 279,500 acres of timber land will be managed for timber production under one of the four intensity levels previously described. Silvicultural systems will be selected to meet the specific resource objectives for each site. Projected timber harvest in each future decade will be equal or greater than the preceding decade (nondeclining even-flow). On the full- and modified-timber yield land, even-aged silvicultural practices will predominate. Uneven-aged silvicultural systems, and timber harvesting not related to a silvicultural system, will predominate on the limited-timber yield land.

Modified-timber yield land will include visually sensitive areas, key deer areas, and spotted owl habitat. Limited-timber yield land will include areas where protection of current visual values is emphasized and protection of soil and water resources is necessary. Minimum-Level Management will be followed on land where timber management is not cost effective for timber production under the limited budget of this alternative. Mitigation measures will be employed in key areas to protect other resources.

2 6 4.10

Integrated Pest Management

Integrated pest management will be practiced on 279,500 acres. Intensive pest management activities will be concentrated in high-volume areas. There will be no pest management on acreage not suitable for timber management.

2.6 4 11

Soils and Water

There will be a lower potential for reducing water quality and soil productivity than the current level due to a reduction in total timber harvest. Fewer mitigation measures will be necessary to maintain water quality at a slightly higher level than presently. Marginal timber-producing areas, which are generally subject to loss of soil productivity and are sources of sediment, will have limited harvesting activities. Water yield increases will be low. Based on historic averages, yields at the end of the first decade will increase only 0.1%.

Identified projects for improving water quality on 4520 acres of backlog may be implemented through K-V funds collected from timber sales. Approximately 910 acres will be treated in the first decade. Projects not funded from K-V collections are not likely to be implemented.

On sites producing below their natural potential, opportunities for improving soil productivity will be poor. About 26% or 26,000 acres, programmed for disturbance by forest management activities, will be mapped at a high intensity (Order 2) level soil survey in the first decade.

2 6.4.12

Geology

Consumption of earth construction material will drop to a rate of 5,000 tons/year. Commercial sources, supplemented by stockpiled supplies within the Forest, will satisfy this lower demand. No quarry development will occur.

Ground water use will decline to an average annual rate of 0.5 million gallons. No new wells will be drilled.

2 6 4.13

Minerals

A reduced rate of road development will serve to discourage mineral activities in presently unroaded areas. Administrative costs will be reduced because fewer areas will have developed access and there will be an overall de-emphasis in the minerals management program.

Management activities will be limited to review and administration of operating plans to provide protection of surface resources during mineral exploration, protection, and reclamation.

2 6 4.14

Lands

The land adjustment program will be limited to those proposals involving large intermingled ownerships, which will result in improved management efficiency and increased commodities. Emphasis will be placed on energy related applications (FERC licenses and hydroelectric projects) and those applications related to health and safety of the public. Fee reviews and adjustments will be performed at scheduled intervals only as required by the terms of the permit.

The landline location program will be limited to the resolution of occupancy trespass and title claims cases having potential for litigation and minimal support to the timber sale program.

2 6.4 15

Hydroelectric Development

By emphasizing aggressive Forest management, hydroelectric developers will be asked to carry major recreation developments and resource protection programs. New hydroelectric development will only proceed as requested by developers. Transmission corridors and stream development will be given slight preference over recreation and visual quality, but not timber production.

2.6.4 16
Cultural Resources

Cultural resource management will emphasize inventory, evaluation, and protection activities. Data recovery will be limited to those sites that cannot be avoided by planned projects. Cultural resource interpretive programs will not be undertaken. The procedure of 36 CFR 800 will be followed.

2.6.4.17
Special Areas

The following are established or recommended special areas:

	Established Acres	Recommended Acres
Special Interest Areas		
Kings Cavern Geological Area	388	
Courtright Intrusive Contact Zone Geological Area	11	
Carpenteria Botanical Area	500	
Research Natural Areas		
Backbone Creek	430	
San Joaquin Experimental Range (Blue Oak-Digger Pine)	80	
Bishop Creek Pacific Ponderosa Pine		1,140
Experimental Forest		
Teakettle	3,200	
Experimental Range		
San Joaquin	4,580	
Special Management Area		
Kings River	48,668	



2.6.4 18
Transportation and Facilities

The arterial/collector system will remain relatively unchanged though deterioration in standards may result as some maintenance activities are not accomplished. Reconstruction efforts will emphasize resource protection, but will decline to approximately 50% of present levels.

The local road system, primarily serving high timber-production areas, will be at Level 2 maintenance where continuous management entry is required. The rest of the local road system will be maintained at Level 1 (See Glossary for the definitions of road maintenance levels). The local road system will grow only in response to new harvesting opportunities within high productivity areas. Only that portion of the road system supporting activities will be maintained annually, and emphasis will be on drainage and erosion control. Portions of the road system will deteriorate as some maintenance activities are not accomplished, especially those aimed at driver comfort.

The number of facilities will decrease from the present level and the Forest will only replace facilities at established and needed work center sites. Several sites will be obliterated. Maintenance activity will focus on Health and Safety items.

2.6.4.19
Air

All State and Federal air quality objectives will be met.

2.6.4.20
Protection

Fire program management, including law enforcement, will remain at current (actual FY 1982 budget) levels to prevent present and future resources from unacceptable loss. Acres lost and suppression cost will remain at current levels. The major functional activities for this alternative will be approximately 66% initial attack, 33% prevention, and 1% detection.

Reduction of activity fuels will be commensurate to timber harvest. Natural fuel reduction will continue at current levels. There will be no natural or prescribed fire activity in wilderness. All fires in wilderness will be considered wildfire and be suppressed.

2.6.4.21
Environment to Be Created

By 2030, there will be a small number of developed recreational sites within the Forest. Most existing sites will be closed or maintained at a level that protects visitor safety. No additional dispersed recreational opportunities will be created and existing dispersed recreation will be administered for resources and visitors.

protection and safety. They will generally be open for use on a self-serve basis. The majority of the Forest's recreation trails will not be maintained

Lightly applied intensive management in commercial forest stands will create more openings and slightly reduce the number of large blocks of timber. However, commercial late seral stage mixed conifer forests will increase 40% and mature stands of ponderosa pine will increase 44%. Late seral stage forest habitats will increase significantly in wilderness areas, SMZs, Special areas, SOHAs, goshawk territories and retention areas. Foothill oaks will remain at current density, but oaks within commercial forests will increase slightly. Within 75% of the Forest's key deer areas, harvest unit prescriptions will contain provisions to provide suitable forage and cover for deer. Snags and down logs will remain near naturally occurring numbers over most of the Forest. At least two snags/acre and four down logs/acre will be maintained for snag and down log dependent species.

Diversity of plant communities will remain at current levels. Structural diversity will remain the same as current levels. At least five percent of each vegetation type and seral stage will be maintained over time

Threatened and endangered species will be protected. Older brush treatment project areas will revert to natural chaparral conditions and grazing of foothill grasslands will significantly decline. Grazing of montane areas will continue but will be limited to reduced cattle numbers and pack and saddle stock.

The current system of fuelbreaks will be in place by 2030. Considerable areas of chaparral and oak grasslands will be burned each year through wildfires.

The present arterial road system will not change significantly. About 140 miles of collector roads system will be allowed to deteriorate as a result of reduced commercial timber landbase and reduced recreational use. Buildings will deteriorate, some will be demolished. No new buildings will be constructed.

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031- 2040
RECREATION								
Developed Public (MRVD)	750 0	1950.0	2880.0	781 7	407.1	441 6	478.4	519.8
Developed Private (MRVD)	830 0			923 3	1467.9	1593.4	1736 6	1890 2
Dispersed (MRVD)	2033.6	3360 0	4160.0	2091.4	2379.9	2647.2	2931 1	3324 5
Wilderness (MRVD)	220 0			462.8	522 3	578.8	622 7	623.2
Restricted, Usable OHV Areas (except Alt. B which is "open")								
Summer(M Acres)[2]	346 0			292 7	290.7	288.0	286 0	284 0
Winter (a) (M Acres)[2]	83 8			83 8	73 8	73 8	63 8	63.8
Winter (b) (M Acres)[2]	168 5			115.5	115 5	115 5	115 5	115 5
Roads and Trails Open Only to OHV								
Summer (Miles)[3]	249			193	208	193	193	193
Winter (Miles)[3]	30 [4]			30	30	30	30	30
Roads and Trails Closed Only to OHV								
Summer (Miles)	160			30	30	30	30	30
Winter (Miles)	160			20	20	20	20	20
Visual Quality Index (%)	93 0			92 5	91.9	91.4	90 9	90 9
WILDLIFE AND FISH								
Bald Eagles (Wintering Indiv.)	5-10			5-10	5-10	5-10	5-10	5-10
Peregrine Falcon (Pairs)	0			3	3	3	3	3
Deer (Number x 1,000)	15 0			15.7	16 5	17 4	15 6	15.6
Spotted Owls (Pairs)	130			129	123	117	107	105
SOHAs	Nonexistent until 1984			34	34	34	34	34
Goshawk (Pairs)	50			50	50	50	50	50
Lahontan Cutthroat Trout (Pops)	2			2	2	2	2	2
Paiute Cutthroat Trout (Pops)	2			2	2	2	2	2
Resident Fish (M Pounds)	100			100	105	110	115	115
Wildlife User Days (M WFUD)	329.7			255.4	277 8	300 3	322 4	345 3
Fish User Days (M WFUD)	141 3			109 5	119 1	128 7	138 7	148 0
Direct Habitat Improvement								
Wildlife (M Acres)	2.6	12.7	5 4	.5	.5	5	5	.5
Fish (Acres or Structures)	3 0			17.0	17 0	20 0	22.0	24.0
RANGE								
Grazing (M AUM)	35.0	38.1	40.2	33.6	33.4	35.0	35 0	35.0
TIMBER								
Allowable Sale Quantity (MMBF)	110.0	149.1	163 4	75 2	75.2	75 2	75 2	78.4
Allowable Sale Quantity (MMCF)	17 4	23 8	26 1	11 9	11.9	11 9	11.9	12 5
Reforestation (M Acres)	1 1	6 5	7 6	2 2	1.5	1.5	1.6	1.1
Timber Stand Improvement (M Acres)	0 5	4.9	5 0	1 7	4.5	3.7	3.0	3 0
WOOD PRODUCTS OTHER THAN SAWTIMBER								
Fuelwood (M Cords)	22.5			16 0	16 0	16 0	16 0	16.0
Biomass (M MCF)	0			No Projection Made				
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only.								
[2] Includes areas up to 30% slope located outside wilderness. (a) Winter = Areas suitable for 4WD and trailbike use, but not necessarily open to cross-country use, (b) Areas suitable for oversnow vehicle and open to cross-country use.								
[3] Average to be determined in Forest OHV Plan.								
[4] Does not include 45 miles of designated snowmobile routes and undesignated routes in areas where cross-country over the snow vehicle travel is permitted.								

RESOURCE ELEMENT		BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
			1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
WATER									
Quality (MM Ac Ft. at Mtg Objectives)	2 514	1.882	1.903	2 551	2 553	2 561	2 563	2.557	
Increased Quantity (MM Ac Ft.)	2 565			.038	.040	.048	.050	.044	
Watershed Improvement (Acres)		270	310	91	91	91	91	91	
LANDS AND MINERALS									
Minerals (Operating Plans)	21	53	69	10	10	11	11	12	
Land Acquisition (Acres)	0	500	0	0	0	0	0	0	
TRANSPORTATION									
Trail Const /Reconst. (Miles)	26 0	54	42	13.0	12.0	11 0	10.0	9.0	
Road Const. (Miles)	36			1	1	1	1	1	
Road Reconstruction (Miles)	41			7	9	5	2	2	
Maintained Road System (Annual Miles)	2550			2556	2570	2580	2595	2610	
FACILITIES									
Dams and Reservoirs									
Forest Service (Number)	0			0	0	0	0	0	
Other Federal (Number)	0			0	0	0	0	0	
Other State/Local (Number)	3			3	3	3	3	3	
Private (Number)	25			25	25	25	25	25	
Administrative Sites									
Forest Service Owned (Number)	26			16	11	10	10	10	
Leased (Number)	6			6	6	5	3	3	
PROTECTION									
Total Fuel Treatment (Acres)[2]	0	3000	2600	1800	1500	1350	1450	1180	
(a) Fire-related Fuel Treatment (Acres)						0	0	0	
(b) Timber-related Fuel Treatment (Acres)				13000	1000	850	950	680	
(c) Fuel Treatment for Other Resources				500	500	500	500	500	
Expected Acres Burned by Wildfire									
Intensity Level	1	36		64	66	71	74	72	
	2	91		158	158	184	190	188	
	3	221		368	379	303	313	311	
	4	429		761	373	870	848	840	
	5	577		1172	1206	951	983	974	
	6	924		1561	1602	1416	1463	1449	
HUMAN RESOURCES									
Programs (Enrollees)	38	16	166	38	38	38	38	38	
TOTAL BUDGET (\$MM)									
	18.7	18.9	20 8	14 1	16.1	17 4	18.6	20 1	
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only									
[2] Combination of Wildlife and Protection (sum of a, b, and c)									

TABLE 2.12 - ALTERNATIVE D: DISTRIBUTION OF PRESCRIPTIONS BY MANAGEMENT AREAS [1]

PRESCRIPTION	MANAGEMENT AREAS											
	1	2	3	4	5	6	7	8	9	10	11	12
WILDERNESS			552,306 [2]									
WILD & SCENIC [3]	3,840		9,300									
MINIMUM LEVEL MANAGEMENT [4]		2,774		90,463	555						19,758	
LIMITED-TIMBER YIELD [4]	10,874			38,907	1,595				54			
MODIFIED-TIMBER YIELD [4]	18,225			85,535	2,851				536			
FULL-TIMBER YIELD [4]	10,053			99,388	11,438				52			
DEVELOPED RECREATION [5]	73,101	2	297	3								
ADMINISTRATION SITES	238			138	157	28	1	2				
SPECIAL INTEREST AREAS Botanical / Geological									899			
KINGS RIVER SPEC. MGMT. AREA							3,200					
EXPERIMENTAL FOREST												
EXPERIMENTAL RANGE								4,580				
RNA										1,650		
LAND EXCHANGE												
Acquisition												
Base	3,200			11,330	26,630							
DISPERSED RECREATION [6]	55,898	20,061		201,507	10,520						89,288	24,368
FRONT COUNTRY					119,500							
[1] Numbers are approximate due to rounding. [2] Includes both dispersed no harvest and dispersed with harvest. [3] See Appendix E for specific recommendations and designations. [4] Includes only CAS lands. [5] Includes water area also. [6] Includes both dispersed no harvest and dispersed with harvest												

2.6.5 Alternative E (Amenity)

2.6.5.1 Alternative Theme

Management under this alternative will emphasize nonmarket (amenity) values such as dispersed recreation, wilderness, wildlife and fish habitat, and environmental quality, with fish and wildlife and wilderness having the primary emphasis. Timber harvest volumes will be reduced from current levels. An uneven-aged harvest system will be implemented on all tractor ground. Commodity resources will be managed to avoid conflicts with or enhance amenity values such as visual resources, wildlife and fish. Developed recreation will remain near present levels.

2.6.5.2 Recreation

Use of many developed sites will grow very slowly due to low standard services and some closures. Standard service will be provided at sites rehabilitated by power licensees. The Forest Service will provide standard services at other developed recreational sites from operation and maintenance funds. Even though some campgrounds may be closed, campgrounds constructed and maintained by licensee and others maintained by concessionaires will accommodate projected demand. Rehabilitation of approximately 6,000 PAOT of developed sites will be completed by power licensees by 2005, with rehabilitation performed by a combination of appropriated dollars and FERC licensees. Commercial recreational facilities will not be expanded beyond their current permit boundaries. Sierra Summit ski area will be allowed to expand to 5,500 SAOT. New commercial facilities will not be permitted on Forest land except those developed by license agreement in conjunction with major power developments. Interpretive services will be at higher levels with emphasis on information necessary to manage dispersed recreational use.

Dispersed recreation will be emphasized. OHV use, except for snowmobiles, will be restricted to designated roads and trails to protect other nonmarket values. There will be over 260 miles of designated routes available for summer OHV use, one of the highest mileages available under any alternative. Improvements to facilitate dispersed snow activities, such as cross-country skiing, will be provided.

The visual resource will be managed intensively for the highest quality in areas significant to recreation uses. Existing visual quality will remain substantially unchanged or slightly improved due to emphasis on amenity values.

2.6.5.3 Wilderness

A total of 527,938 acres will be dedicated to wilderness. Almost one-third of the area in further planning status will be distributed to Wilderness, with the addition of approximately 14,490 acres of the Kings River Special Management Area (formally called the Kings River B Roadless Area). This includes 9,890 acres in the Sierra National Forest and 4,600 acres in the Sequoia National Forest. Emphasis on amenity values will create a need for additional personnel and funding to protect wilderness values, reduce conflicts and assure opportunities for a variety of wilderness experiences.

Extensive trail system rehabilitation/construction will be necessary. Approximately 30 miles of new trails will be added in the Wilderness areas by 2030. Prescribed fire and unplanned naturally occurring fires will be used in Wilderness to return it to its pristine or near pristine condition and to reduce fuel loading.

2.6.5.4 Wild and Scenic Rivers

The Nationwide Rivers Inventory (NRI) of January 1982 identified seven rivers within or surrounding the Forest that were suitable for inclusion in the Wild and Scenic River System. Rivers included were Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin, and Middle Fork Kings. These rivers flow through land administered by three National Forests, two National Parks, one National Monument, Bureau of Land Management, State of California and private land.

In November 1987, Congress designated portions of Merced and all South Fork Merced and Middle Fork Kings as Wild and Scenic Rivers. This included 149 miles (47,800 acres) of the inventoried 224 miles (71,680 acres). Of the total designated, 47.5 miles will be administered by the Sierra.

All 65 miles of inventoried river segments that remain will be recommended for Wild and Scenic designation.

2.6.5.5 Wildlife, Fish, and Sensitive Plants

The Forest program of direct habitat improvement will annually treat 3,000 acres (or structures) of wildlife habitat and 150 acres of fish habitat. The National fisheries emphasis program "Rise to the Future", has enabled the Forest to establish a solid fisheries program. Protection, restoration, and enhancement of fish habitat will be a result of adequate biologist staffing, on-going fish habitat assessment, multi-year fishery program schedules, increased coordination within our agency with State agencies, and with our concerned publics. Habitat improvements for threatened and endangered species will average 40 acres per year. A forestwide program will be

implemented to identify target fish and wildlife species and land management units will be developed to accommodate objectives for target species.

The Forest will establish and maintain at least six breeding pairs of peregrine falcons. A small program will be developed to improve habitat for 7-12 wintering bald eagles. Increased habitat improvement for the threatened Lahontan cutthroat trout will be completed to allow expansion of population numbers. Habitat will be maintained and protected for Paiute cutthroat populations in the wilderness. A network of at least 29 California Spotted Owl Habitat Areas will be managed in the Forest. Timber harvest prescriptions and strategies will benefit non-network SOHAs and goshawk territories. A goshawk network will be established with at least one territory per 18 square miles of suitable habitat. The osprey population at Bass Lake and other reservoirs throughout the Forest will increase through installation of artificial nest platforms or topping of selected trees. Willow flycatcher habitat will be enhanced by establishing willow assemblages in meadows which currently do not support willows. They will also benefit from reduced grazing above 5000 foot elevation. Reduction of timber ASQ and modifications of timber harvest strategies to favor amenity values will be beneficial to furbearers. A network of 8 furbearer habitat areas (77,410 acres) and habitat linkage (7,127 acres) will be established. This alternative will also provide for 65,200 additional acres in Minimum-Level Management and 116,400 acres in Limited-Timber Yield prescriptions. Timber harvest prescriptions will be modified to optimize deer habitat quality in all identified key deer areas within the commercial forest zone. Hardwoods will be managed at existing densities in all identified key deer areas in the commercial forest zone.

Management of all perennial and intermittent streams will emphasize maintenance of water quality as well as preservation of riparian habitats for fish and wildlife. When hydroelectric developments are proposed or relicensing occurs on existing developments, the Forest will coordinate with project proponents and CDFG to insure that associated fish and wildlife habitats and sensitive plant resources are maintained near historical levels.

Special habitat components such as snags and down logs will be managed near naturally occurring levels. Where the Full-Timber Yield Prescription applies, snags will be created beginning in the second decade because snags left in the first decade are only expected to stand ten years. In the second decade, for every acre cut during the first decade, 1.5 trees averaging 20" DBH and 0.5 trees averaging 26" DBH will be left on each cut acre. These trees will be topped to extend the snag life to about 40 years. Retention of at least 5 percent of each vegetation type and seral stage will be maintained over time except for seral stages 1, 2 and 3a, which will be 4 percent at end of fifth decade. Hardwood stands will be maintained at

or above existing inventory levels and no hardwood stands will be converted to conifers. Late seral stage habitat will increase to approximately 117,000 acres by the end of the fifth decade. A prescribed fire program of 3,000 acres will be developed to enhance chaparral and front country habitats to benefit early seral stage chaparral dependent species.

An intensive field survey program will develop information about Forest sensitive plants. A moderate monitoring program will evaluate the effectiveness of habitat objectives for target fish and wildlife species.

Species Management Guides will be prepared for each Forest sensitive plant. Sensitive plants will be managed to prevent them from becoming federally-listed as threatened and endangered. Viable populations of federally-listed threatened, endangered, and candidate species, and Forest Service listed sensitive species will be maintained.

2.6.5.6 Riparian

The Forest will designate, as Riparian Management Areas (RMA), adjacent zones that measure 100 feet from all perennial streams and lakes. In addition, all of the Forest's intermittent streams will be designated as riparian areas. Of the 155,000 riparian acres in the Forest, about 33,000 acres will be on CAS land. (CAS is 281.7 M acres.) Fish habitat improvement will include 150 acres/structures per year. Timber in the RMA will be harvested only to remove incidental amounts of timber for roads and skyline corridors or to improve the riparian ecosystem. The annual harvest from 33,000 acres of riparian will be 1.5 MMBF.

2.6.5.7 Range

Commercial livestock use of land above 5,000 feet will decline sharply as grazing is reduced or discontinued. This reduction will occur primarily in dispersed recreational areas, key deer ranges (including winter ranges), and important riparian habitat areas. New structural and nonstructural range improvements will not be made in areas where they can conflict with amenity values. Existing range improvements will be maintained at present levels. However, those which are identified as being in conflict with amenity values, will be removed or not maintained.

2.6.5.8 Chaparral

Annually between 4,500 and 5,000 acres will be treated. Benefits will occur for wildlife and protection. Prescribed fire will be the treatment method.

Timber

This alternative will provide for timber production at a level below the normal demand of local sawtimber manufacturing facilities. The ASQ will be 77.0 MMBF. The ASQ will be about 32 percent below the 1980 through 1989 harvest history.

About 281,700 acres of timber land will be managed for scheduled timber yields under one of the three intensity levels (Regulation Classes) previously described. Volume harvested following catastrophic event will be in addition to the scheduled harvest. No timber harvest will be scheduled from Regulation Class IV land. Uneven-aged management using the group selection system (small openings 2 acres or less) will be practiced on all tractor ground Regulation Class I and II land (full- and modified-timber yields). Even-aged management using clearcutting will be used on steeper slopes where group selection system is not feasible. On Regulation Class III land, even-aged management using tree selection will predominate.

265.10

Integrated Pest Management

Integrated pest management will be practiced on 281,700 acres. Intensive pest management activities will be concentrated in high-volume areas, and where public health and safety or amenities are threatened. A low level of pest management will be used on acreage not suitable for timber management.

265.11

Soil and Water

There will be a moderate potential of increasing water quality and soil productivity. Additional mitigation measures due to increased road maintenance described in BMP and coordinated specialist input into the project planning process will be used to maintain and improve present levels. Water quality will be at a high level and exceed State and Federal objectives.

Water yield increases will be low. Based on historical averages, by the end of the first decade, the increase will be only 0.7%.

Identified projects for improving water quality on 4520 acres of backlog will likely be implemented from other than timber-collected funds. Specific water quality improvement projects will be initiated. Approximately 226 acres will be treated each year.

On sites producing below their natural potential, opportunities for improving soil productivity will be good when connected with water quality improvement projects, but poor through reforestation efforts. Approximately 20% or 38,000 acres, programmed for disturbance by forest management activities, will be mapped at a high

intensity (Order 2) soil survey level in the first decade. Additional mitigation may be necessary to meet regional soil quality standards.

265.12

Geology

Both commercial and Forest sources will be used to supply earth construction materials. Consumption will average 20,000 tons annually. This will require limited redevelopment in some existing quarries and opening of one new quarry.

Ground water use will average 1.9 million gallons annually. This demand will draw from existing wells. No new wells will be drilled.

265.13

Minerals

Mineral exploration and development will be intensively managed within wilderness areas, with emphasis on reclamation. The Forest Service will monitor operating plans more frequently to insure compliance and to work with miners to make necessary revision. Claims with notice of intent will be checked more frequently. Little or no road development in presently unroaded areas will discourage mineral development. Forestwide, administration costs will drop due to fewer active claims. However, the costs associated with individual claims will rise due to the emphasis on reducing the conflict with amenity values.

265.14

Lands

The land exchange program will emphasize the acquisition of land most suitable for the enhancement of fish and wildlife, recreation, and wilderness resources.

Special use permit preparation and administration will operate at a high level, with an emphasis toward energy-related demands.

The LLL program will be fully (not exclusively) integrated with the timber sale program, resolution of occupancy trespass, and wildlife projects.

265.15

Hydroelectric Development

Licensees will be asked to consider visual implications for new development and mitigations for existing special concerns. New development will not be allowed to change the existing recreation priorities or uses. Power development will not be an acceptable trade-off for resources or experiences that can not be replaced in kind.

2.6.5.16

Cultural Resources

Cultural resource management will emphasize preserving and protecting significant sites. Interpretive programs will be expanded. Efforts will be made to ensure Native American groups have continued access to and use of traditional areas. Inventory and evaluation work will take place on all land-disturbing projects. The procedures of 36 CFR 800 will be followed.

2.6.5.17

Special Areas

The following are established or recommended special areas:

	Established Acres	Recommended Acres
Special Interest Areas		
Kings Cavern Geological Area	388	
Courtright Intrusive Contact Zone Geological Area	11	
Crater Lake Meadow Geological Area		120
Dinkey Creek Roof Pendant Geological Area		640
Carpenteria Botanical Area	500	
Devils Peak Botanical Area		1,600
McKinley Grove Botanical Area		520
Nelder Grove Historical Area		1,434
Research Natural Areas		
Backbone Creek	430	
San Joaquin Experimental Range (Blue Oak-Digger Pine)	80	
Bishop Creek Pacific Ponderosa Pine		1,140
Home Camp Creek (Red Fir-White Fir)		1,200

Heitz Meadow
(Mixed Conifer)

1,200

Experimental Forest

Teakettle 3,200

Experimental Range

San Joaquin 4,580

Special Management Area

Kings River 48,668

2.6.5.18

Transportation and Facilities

The arterial/collector road system components will be maintained, with some portions reconstructed to provide for lower maintenance costs and greater resource protection. The road closure plan will integrate OHV, wildlife, and dispersed recreational uses. The road system serving timber production areas will be maintained for continuous re-entry to facilitate intensive management.

This alternative will emphasize relocation or obliteration of roads in ecologically sensitive and geologically unstable areas, development of the aesthetic aspects of the recreational land base, and reclamation of borrow and quarry sites after project use. Road maintenance activities will emphasize protection of adjacent resources.

Energy conservation will be realized by closing uneconomical work centers and by locating employee housing close to project activities.

Facilities maintenance activities will focus on the health and safety items.

2.6.5.19

Air

All State and Federal air quality objectives will be met.

2.6.5.20

Protection

Traditional fire protection organization will be maintained. Emphasis will be on initial attack and fire prevention. Law enforcement needs will increase to protect the amenity values. Overall budget needs will be slightly above current levels. The major functional fire activities for this alternative will be approximately 66% initial attack, 22% prevention, 11% fuels management, and 1% detection.

The emphasis toward uneven-aged timber management will have a substantial change in the activity fuels program. There will be increased fuel treatment costs and fuel reduction collections. Total acres treated will decrease, but the cost per acre will increase because the need to protect existing residual timber stands

2.6 5.21

Environment to Be Created

By 2030, there will be a small increase in developed recreational sites within the Forest. Most increases will be provided by private developers and new hydroelectric developments. Opportunities for dispersed recreation will greatly increase above the present level. A large increase in the Forest's recreation trails will occur. Wilderness areas will be returned to more natural conditions through the introduction of prescribed fire and managed wildfires.

Land, where timber is intensively harvested, will take on a more managed appearance by 2030. Timber management practices in these areas will stress achieving desirable visual and wildlife habitat objectives. Commercial late seral stage mixed conifer forests will be reduced 30%, but mature stands of ponderosa pine will increase 34%.

Foothill oaks will remain at the current density as well as oaks within commercial forests. Within 100% of the Forest's key deer areas, harvest unit prescriptions will contain provisions to provide suitable forage and cover for deer. Snags and down logs will remain at naturally occurring numbers.

Plant and animal diversity will be maintained and will favor mid to late seral stage habitat dependent species in the forested area and early to mid-seral stage dependent species in the lower elevation chaparral zones.

Grazing of foothill grasslands will remain at the current level. Grazing of forested areas above 5,000 feet will decline sharply.

The current system of fuelbreaks will decline by 2030. Large areas of chaparral and oak grasslands will be burned each year through prescribed fire and managed wildfires.

The present arterial road system will not change significantly. Some minor segments of the collector road system may be relocated to avoid sensitive soils and habitats. A few new buildings will be built to support amenity goals. Some older buildings will be demolished.

TABLE 2.13 - ALTERNATIVE E : AVERAGE ANNUAL OUTPUTS DURING FIRST FIVE DECADES Page 1 of 2

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
RECREATION								
Developed Public (MRVD)	750.0	1950.0	2880.0	723.6	342.9	342.9	342.9	342.9
Developed Private (MRVD)	830.0			856.4	1237.1	1237.1	1237.1	1237.1
Dispersed (MRVD)	2033.6	3360.0	4160.0	2095.8	2384.7	2652.4	2936.8	3330.7
Wilderness (MRVD)	220.0			462.8	518.3	567.6	617.0	617.0
Restricted, Usable OHV Areas (except Alt. B which is "open")								
Summer(M Acres)[2]	346.0			285.0	280.0	280.0	275.0	275.0
Winter (a) (M Acres)[2]	83.8			73.0	70.0	65.0	60.0	55.0
Winter (b) (M Acres)[2]	168.5			110.5	105.5	105.5	105.5	105.5
Roads and Trails Open Only to OHV								
Summer (Miles)[3]	249			200	220	240	250	260
Winter (Miles)[3]	30[4]			40	50	60	70	80
Roads and Trails Closed Only to OHV								
Summer (Miles)	160			25	20	20	20	20
Winter (Miles)	160			20	20	20	20	20
Visual Quality Index (%)	93.0			92.9	91.1	91.3	90.4	90.4
WILDLIFE AND FISH								
Bald Eagles (Wintering Indiv.)	5-10			7-12	7-12	7-12	7-12	7-12
Peregrine Falcon (Pairs)	0			3	6	6	6	6
Deer (Number x 1,000)	15.0			20.2	27.3	36.9	36.9	36.9
Spotted Owls (Pairs)	130			124	116	109	96	103
SOHAs				29	29	29	29	29
Goshawk (Pairs)	50			50	50	50	50	50
Lahontan Cutthroat Trout (Pops.)	2			2	2	2	2	2
Paute Cutthroat Trout (Pops.)	2			2	2	2	2	2
Resident Fish (M Pounds)	100			100	100	105	110	120
Wildlife User Days (M WFUD)	329.7			425.6	463.0	500.6	538.0	548.1
Fish User Days (M WFUD)	141.3			182.4	198.4	214.5	230.6	274.0
Direct Habitat Improvement								
Wildlife (M Acres)	2.6	12.7	5.5	3.0	3.0	3.0	3.0	3.0
Fish (Acres or Structures)	3.0			150.0	130.0	140.0	140.0	160.0
RANGE								
Grazing (M AUM)	35.0	38.1	40.2	25.0	24.3	24.2	24.0	25.0
TIMBER								
Allowable Sale Quantity (MMBF)	110.0	149.1	163.4	77.0	77.0	77.0	77.0	77.0
Allowable Sale Quantity (MMCF)	17.4	23.8	26.1	12.3	12.3	12.3	12.3	12.3
Reforestation (M Acres)	1.1	6.5	7.6	2.3	2.0	1.7	1.2	1.1
Timber Stand Improvement (M Acres)	0.5	4.9	5.0	2.6	2.3	2.6	1.6	1.0
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only. [2] Includes areas up to 30% slope located outside wilderness: (a) Areas suitable for 4WD and trailbike use, but not necessarily open to cross-country use; (b) Areas suitable for oversnow vehicle and open to cross country use [3] Estimated number of miles, actual miles to be determined in Forest OHV Plan. [4] Does not include 45 miles of designated snowmobile routes and undesignated routes in areas where cross-country over the snow vehicle travel is permitted.								

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
WOOD PRODUCTS OTHER THAN SAWTIMBER								
Fuelwood (M Cords)	22.5			22.5	22.5	22.5	22.5	22.5
Biomass (M MCF)	0			No Projection Made				
WATER								
Quality (MM Ac Ft at Mtg Objectives)	2 514	1 882	1 903	2,530	2 529	2 523	2 517	2 513
Increased Quantity (MM Ac Ft)	2 565			015	014	.007	.002	001
Watershed Improvement (Acres)		270	310	226	226			
LANDS AND MINERALS								
Minerals (Operating Plans)	21	53	69	10	10	11	11	12
Land Acquisition (Acres)	0	500	0	200	400	0	0	0
TRANSPORTATION								
Trail Const /Reconst (Miles)	26	54	42	68	47	0	0	0
Road Const (Miles)	36			16	8	2	1	1
Road Reconstruction (Miles)	41			20	14	16	16	14
Maintained Road System (Annual Miles)	2550			2620	2750	2805	2815	2820
FACILITIES								
Dams and Reservoirs								
Forest Service (Number)	0			0	0	0	0	0
Other Federal (Number)	0			0	0	0	0	0
Other State/Local (Number)	3			3	3	3	3	3
Private (Number)	25			25	25	25	25	25
Administrative Sites								
Forest Service Owned (Number)	26			15	14	14	14	14
Leased (Number)	6			4	4	4	4	4
PROTECTION								
Total Fuel Treatment (Acres) [2]	0	3000	2600	8100	7600	8700	7300	6700
(a) Fire-related Fuel Treatment (Acres)				1500	1500	1800	2000	2000
(b) Timber-related Fuel Treatment (Acres)				3600	3100	3900	2300	1700
(c) Fuel Treatment for Other Resources				3000	3000	3000	3000	3000
Expected Acres Burned by Wildfire								
Intensity Level	1	36		45	48	52	54	53
	2	91		102	107	126	131	128
	3	221		89	93	111	116	113
	4	429		501	529	532	557	554
	5	557		328	348	571	596	581
	6	924		1091	1152	973	1017	992
HUMAN RESOURCES								
Programs (Enrollees)	38	16	16	38	38	38	38	38
TOTAL BUDGET (\$MM)								
	18.7	18.9	20.8	20.9	21.6	22.3	22.5	23.7
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only.								
[2] Combination of Wildlife and Protection (sum of a, b, and c)								

TABLE 2.14 - ALTERNATIVE E: DISTRIBUTION OF PRESCRIPTIONS BY MANAGEMENT AREAS [1]

PRESCRIPTION	MANAGEMENT AREAS											
	1	2	3	4	5	6	7	8	9	10	11	12
WILDERNESS			537,306 [2]									
WILD & SCENIC [3]	3,840		11,800							640	565	2,720
MINIMUM LEVEL MANAGEMENT [4]	14,780	650		70,360	4,070				530	290	20,030	1,200
LIMITED-TIMBER YIELD [4]	13,560	450		101,020	1,370							
MODIFIED-TIMBER YIELD [4]	7,670	1,030		82,240	5,760							
FULL-TIMBER YIELD [4]	3,030	640		62,670	2,260							
DEVELOPED RECREATION [5]	75,631	2		297	3							
ADMINISTRATION SITES	238	2		138	155	28	1	2				
SPECIAL INTEREST AREAS Botanical / Geological									5,213			
KINGS RIVER SPEC. MGMT. AREA												14,478
EXPERIMENTAL FOREST							3,200					
EXPERIMENTAL RANGE								4,580				
RNA										4,050		
LAND EXCHANGE												
Acquisition	200	80	560	2,150	1,350						160	
Base	3,200			9,770	26,970							
DISPERSED RECREATION [6]	55,898	87,548		197,110	9,205						27,701	14,478
FRONT COUNTRY					127,260							
[1] Numbers are approximate due to rounding [2] Includes only acreage on Sierra National Forest. [3] See Appendix E for specific recommendations and designations. [4] Includes only CAS land. [5] Includes water area also [6] Includes both dispersed no harvest and dispersed with harvest.												

2.6.6
Alternative H (Market)

2.6.6.1
Alternative Theme

This alternative will more fully utilize the Forest's productive capacity. It was formulated to portray market opportunities. Though production will be emphasized, environmental quality will be a major concern. Timber, range, mineral resources, and developed recreation will be emphasized. Nonmarket resources will be managed at economically efficient levels.

2.6.6.2
Recreation

Recreation in developed settings will increase significantly. Developed sites will be rehabilitated to meet demand and provide quality facilities at a standard level of operation and maintenance. Approximately 6,000 PAOT of the existing capacity will be rehabilitated by 2005, with rehabilitation being performed using a combination of appropriated dollars and FERC licensees. In high-use areas near reservoirs, most of the expansion of facilities will also be done by licensees. Forest visitors will have a full range of well maintained campgrounds to choose from. Resorts, downhill ski areas, organization camps, and other public service-related permits will be encouraged to expand to full potential and additional development will be encouraged in most urban and rural recreational opportunity class zones. Sierra Summit ski area will be allowed to expand to 8,500 SAOT. Interpretive services will include more information station outlets and more visitor programs and contacts.

Dispersed recreation opportunities will increase as a result of improved standards and management of the Forest road system and major improvement and expansion of the trail system to 30 miles. OHV use, except for snowmobiles, will be restricted to designated roads and trails. However, designated OHV routes will be expanded to 260 miles by 2030. Improvements to facilitate snowsurface activities will be provided. Opportunities to recreate in primitive and semiprimitive environments will decline. Demand for dispersed recreational opportunities will be met in the first 10-year planning period and the following four projected planning periods, with services generally provided at less than standard levels.

Visual resources will be managed intensively for the highest quality in areas of greatest significance for recreation. Visual quality will remain unchanged in areas not subjected to production goals. In much of the Forest, where other values outweigh aesthetics, visual quality will be reduced to accommodate resource production.

2.6.6.3
Wilderness

A total of 527,938 acres will be dedicated to wilderness. No additional wilderness will be established from roadless areas. Wilderness will be managed at economically efficient levels that maintain wilderness values and provide moderate increases in the opportunities for public use, enjoyment, understanding, and unique experiences dependent upon a wilderness setting.

The trail system will be maintained to protect basic resources, eliminate safety hazards, and disperse the increasing numbers of wilderness visitors. Approximately 15 miles of new trail will be built by 2030. Prescribed fire and unplanned naturally occurring fires will be used in Wilderness areas to return it to its pristine or near pristine condition and to reduce fuel loading.

2.6.6.4
Wild and Scenic Rivers

The Nationwide Rivers Inventory (NRI) of January 1982 identified seven rivers within or surrounding the Forest that were suitable for inclusion in the Wild and Scenic River System. Rivers included were Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin, and Middle Fork Kings. These rivers flowed through land administered by three National Forests, two National Parks, one National Monument, Bureau of Land Management, State of California and private land.

In November 1987, Congress designated portions of Merced and all South Fork Merced and Middle Fork Kings as Wild and Scenic Rivers. This included 149 miles (47,680 acres) of the inventoried 224 miles (71,680 acres). Of the total designated, 47.5 miles will be administered by the Sierra.

This alternative recommends Wild and Scenic designation for Segment 1 North Fork, San Joaquin, Segments 1 and 2 South Fork San Joaquin, Segments 1, 2 and 3 Middle Fork San Joaquin.

2.6.6.5
Wildlife, Fish, and Sensitive Plants

The Forest's program of direct habitat improvement will annually treat 1,000 acres of wildlife habitat and 30 acres (or structures) for fishery habitat. Habitat improvements for threatened and endangered species will average about 15 acres annually. A forestwide program will be implemented to identify target fish and wildlife species and long-term habitat objectives for each planning compartment.

The Forest will establish and maintain at least three breeding pairs of peregrine falcon in accord with recovery plans. Habitat also will be maintained for the

current population of 5-10 wintering bald eagles. Habitat for the threatened Lahontan and Paiute cutthroat trout will be maintained and protected. A network of at least 26 Spotted Owl Habitat Areas will be managed in the Forest. A goshawk network will be established and maintained with at least one territory per 18 square miles of suitable habitat. Osprey will be maintained at current levels at Bass Lake. Willow flycatcher habitat will be identified and maintained. Fisher, marten, and Sierra Nevada red fox habitat will be maintained in the Wilderness, RNAs, SOHAs, SMZs, and on land with compatible prescriptions. This alternative will provide for 6,000 acres in Minimum-Level Management and 64,900 acres in Limited-Timber Yield prescriptions. Timber harvest strategies will not be modified to enhance deer habitat in deer population centers and holding areas within the commercial forest. Hardwoods will be managed at ten percent crown closure in key deer areas.

Management of all perennial streams will emphasize maintenance of water quality as well as preservation of riparian habitats for fish and wildlife. When hydroelectric developments are proposed, the Forest will coordinate with project proponents and CDFG to insure that associated fish and wildlife habitats and sensitive plant resources are maintained above viable population levels.

Special habitat components, such as snags and down logs, will decline from naturally occurring densities in intensively managed forests. This alternative will meet regional standards of 1.5 snags per acre. Topping trees to create snags may or may not be needed. Late seral stage habitats will decline from present inventory levels during the first decade and then increase to approximately 61,000 by the end of the fifth decade. Hardwood stands will be maintained at less than ten percent canopy closure on commercial forest land while hardwoods on non-commercial land will be maintained at current levels. A total of 2000 acres of hardwood stands will be converted to conifers. Meadows and riparian areas will be a major focus of habitat improvement work. However, these areas will receive considerable mitigation measures to offset potential impacts of intensive commodity resource management. A large fuels management program, intended to improve lower elevation range conditions for livestock, will also improve wildlife habitat in the front country.

Diversity of plant and animal communities will be maintained below current levels. Retention of at least five percent of each vegetation type and seral stage will be maintained over time (except where those seral stages do not currently exist and cannot be immediately created). Emphasis will be to maintain riparian/streamside management areas, meadows and meadow edges and special habitat elements such as cliffs, caves, rock outcrops, seeps, ponds, etc. Hardwood stands will decline from naturally occurring densities. Aquatic habitat diversity will be maintained at current levels.

Threatened, endangered and sensitive fish and wildlife will be protected. Sensitive plants will be conserved and managed to prevent them from becoming federally-listed as threatened and endangered. Species Management Guides will be prepared for all Forest sensitive plants. Sensitive animals will be protected.

Sensitive plant surveys will be limited to species threatened by pending projects. A moderate monitoring program, consisting of baseline data collection and regular surveys, will evaluate the effects of forest management on species and habitats of concern.

2.6.6.6

Riparian

The Forest will designate, as Riparian Management Areas (RMA), adjacent zones that measure approximately 100 feet from all perennial streams and lakes. In addition, a small number of the Forest's intermittent streams will be designated as riparian areas. Of the 155,000 riparian acres in the Forest, about 42,000 acres will be on CAS land (CAS is 387.7 M acres.) Fish habitat improvement will include 30 acres/structures per year. In the RMA, 5 percent of the standing inventory will be harvested each decade (Regulation Class III). The annual harvest from RNA will be 4.2 MMBF.

2.6.6.7

Range

There will be a significant forestwide increase in permitted grazing due to more intensive management which includes additional fences, water developments, prescribed burns of front country chaparral, early spring grazing, longer seasons and year-round grazing. Stocking rates will also increase. Consideration will be given to grazing on vacant high elevation wilderness allotments. Old harvest units will also provide an increased transitory forage base.

2.6.6.8

Chaparral

Annually between 3,500 and 3,900 acres will be treated. Protection, grazing, and wildlife will be the benefiting resources. Prescribed fire will be the primary method of treatment.

2.6.6.9

Timber

This alternative will emphasize production of market goods over nonmarket goods. The ASQ will be 147.5 MMBF/year during the first decade, which is higher than the current planned ASQ. The projected production over the following four decades will be similar to the first decade. The maximum annual LTSY will be 172.9 MMBF. In this alternative, 387,700 acres of timber land will be managed for timber production under one of the four intensity levels previously described. Silvicultural

systems will be selected to meet the specific resource objectives for each site. Projected timber harvest in each future decade will be equal to or greater than the preceding decade (nondeclining even flow). In the Full- and Modified-Timber Yield land, even-aged silvicultural practices will predominate. Uneven-aged silvicultural systems and timber harvesting not related to a silvicultural system will predominate on the Limited-Timber Yield land.

Modified-Timber Yield land will include key deer areas and spotted owl habitat. Limited-Timber Yield land will include areas where protection of current visual values is emphasized and protection of soil and water resources is necessary. Minimum-level management will be applied where timber harvest is not cost effective in meeting management objectives.

2 6.6.10

Integrated Pest Management

Integrated pest management will be practiced on 387,700 acres. Intensive pest management activities will be concentrated in high-volume areas and in developed recreation areas. A low level of pest management will be used on acreage not suitable for timber management.

2 6.6.11

Soil and Water

There will be a high to moderate potential of reducing water quality and soil productivity.

Complex and expensive mitigation measures, such as mulching, seeding, YUM yarding, end-lining logs, and hand piling slash will be necessary to maintain soil productivity. Water quality will be lower than present, but will meet state and federal objectives

As a result of intensive even-aged timber management, downstream water yields will increase above existing levels. Significant increases will be realized downstream from projects such as timber harvests, fuel breaks, and watershed improvements. Based on historic averages, by the end of the first decade, yields will increase 2 9%

Identified projects for improving water quality on 4520 acres of backlog are likely to be implemented through K-V funds collected from timber sales for resource protection and reforestation. Specific watershed quality improvement projects will also be implemented. By the end of the first decade, 2260 acres will be treated.

Opportunities for watershed and soil productivity improvement projects, site stabilization and reforestation will be good on sites presently yielding less than their natural potential. Approximately 20% or 43,000 acres, programmed for disturbance by forest management activities, will be mapped at a high intensity (Order 2) soil survey level in the first decade.

2.6 6 12

Geology

Earth materials for construction will be used at an annual rate of 30,000 tons. Reopening of existing quarries and development of two or three new ones will be necessary to provide sufficient rock.

Ground water use will increase to an average annual rate of 2.1 million gallons. Additional wells will be drilled to supplement those currently in use and to serve areas being developed.

2.6 6 13

Minerals

Exploration for and development of mineral resources will be enhanced as a result of increased access. Administrative costs for minerals management will increase. Disturbed areas will be rehabilitated as soon as possible

2 6.6 14

Lands

The land adjustment program will be accelerated to a high level. Land ownership patterns will be improved, with an emphasis on cost effective proposals, which will increase the production of resource commodities

Emphasis will be placed on energy related applications (FERC licenses and hydroelectric projects) and applications related to health and safety to the public

The LLL program will be accelerated and fully integrated with the timber program

2 6.6 15

Hydroelectric Development

Hydroelectric projects can be developed in all areas, but will be heavily constrained by all other management concerns. Visual, recreation, commodities, and other resources will be equal in value to hydroelectric development

2 6.6.16

Cultural Resources

Emphasis of cultural resource management will be placed on developing a major interpretive program and working closely with Native American groups to protect and ensure continued access to and use of traditional areas. High production goals, along with increased development and use, will require an intensive cultural data recovery program at significant sites. Projects will be inventoried for cultural resources and known sites will be evaluated. The procedures of 36 CFR 800 will be followed

2.6.6.17 Special Areas

The following are established or recommended special areas

	Established Acres	Recommended Acres
Special Interest Areas		
Kings Cavern Geological Area	388	
Courtright Intrusive Contact Zone Geological Area	11	
Carpenteria Botanical Area	500	
Research Natural Area		
Backbone Creek	430	
San Joaquin Experimental Range (Blue Oak-Digger Pine)	80	
Bishop Creek Pacific Ponderosa Pine		1,140
Home Camp Creek (Red Fir-White Fir)		1,200
Experimental Forest		
Teakettle	3,200	
Experimental Range		
San Joaquin	4,580	
Special Management Area		
Kings River	48,668	



2.6.6.18 Transportation and Facilities

The road system will be expanded to access previously unaccessed marketable resources. The road investment ratio will average 1:3 (construction/reconstruction) because of the need to reconstruct the existing road system to higher standards. Emphasis will be on maintaining segments of the road system serving production activities.

Most facilities scheduled for construction or replacement by 2010 will be major structures, such as barracks, warehouses, public contact offices, and ranger stations. Condemnable structures will be replaced thereafter. Maintenance of facilities will increase, emphasizing economic efficiency, health and safety items.

2.6.6.19 Air

All State and Federal air quality objectives will be met.

2.6.6.20 Protection

Fire management program, including law enforcement, will increase slightly to give the greatest protection to resources, facilities, and communities in least-risk areas. Major functional activities for this alternative will be 66% initial attack, 21% prevention, 11% fuels management, and 1% detection.

Activity fuels reduction will be intensified. The planned fuel break program will be completed in conjunction with the timber program.

2.6.6.21 Environment to Be Created

By 2030, there will be a very large increase in developed recreational sites within the Forest. Increases will be provided by private developers of resorts, ski areas, and new hydroelectric developments. Opportunities for dispersed recreation will also increase above the present level. A major increase in the Forest's recreation trail system will occur.

Land, where timber is intensively harvested, will take on a more managed appearance by 2030. Intensive management of these areas will create many openings and greatly reduce the number of large blocks of timber. Commercial late seral stage mixed conifer forests will be reduced 54%, but mature stands of ponderosa pine will increase 23%.

Plant and animal diversity will be maintained below current levels. Structural habitat diversity will favor early and mid-seral stage dependent species. Threatened and endangered species will be protected. Sensitive plants

will be conserved and managed to prevent them from becoming threatened or endangered.

Foothill oaks and oaks within commercial forests will decline significantly. Within the Forest's key deer areas, harvest unit prescriptions will not include provisions that provide suitable forage and cover for deer. Snags and down logs will undergo small reductions from naturally occurring numbers.

A large number of prescribed burn treatment projects will be implemented in chaparral stands. Grazing of foothill grasslands will greatly exceed current level. Grazing of montane areas will also exceed the present level.

A large system of well-maintained fuelbreaks will be in place by 2030. Moderate areas of chaparral and oak grasslands will be burned each year through prescribed fire and managed wildfires.

The present arterial and collector road system will increase moderately by 2030 to reach new areas of commercial timber or accommodate recreational demand. New buildings will be constructed to support increased project workload. Buildings will be maintained at an economically efficient level.

TABLE 2.15 - ALTERNATIVE H : AVERAGE ANNUAL OUTPUTS DURING FIRST FIVE DECADES Page 1 of 2

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
RECREATION								
Developed Public (MRVD)	750.0	1950.0	2880.0	781.7	407.1	441.6	478.4	519.8
Developed Private (MRVD)	830.0			923.3	1467.9	1593.4	1736.6	1890.2
Dispersed (MRVD)	2033.6	3360.0	4160.0	2095.8	2384.7	2652.4	2936.8	3330.7
Wilderness (MRVD)	220.0			462.8	518.3	567.6	617.0	617.0
Restricted, Usable OHV Areas (except Alt. B which is "open")								
Summer (M Acres) [2]	346.0			275.0	270.0	270.0	265.0	265.0
Winter (a) (M Acres) [2]	83.8			68.0	64.0	60.0	56.0	52.0
Winter (b) (M Acres) [2]	168.5			107.0	102.0	102.0	102.0	102.0
Roads and Trails Open Only to OHV								
Summer (Miles) [3]	249			200	220	240	250	260
Winter (Miles) [3]	30 [4]			40	50	60	70	80
Roads and Trails Closed Only to OHV								
Summer (Miles)	160			25	20	20	20	20
Winter (Miles)	160			20	20	20	20	20
Visual Quality Index (%)	93.0			91.5	90.0	88.6	87.1	87.1
WILDLIFE AND FISH								
Bald Eagles (Wintering Indiv.)	5-10			5-10	5-10	5-10	5-10	5-10
Peregrine Falcon (Pairs)	0			3	3	3	3	3
Deer (Number x 1,000)	15.0			13.1	12.1	11.2	10.4	9.6
Spotted Owls (Pairs)	130			107	93	78	62	57
SOHAs				26	26	26	26	26
Goshawk (Pairs)	50			50	50	50	50	50
Lahontan Cutthroat Trout (Pops.)	2			2	2	2	2	2
Paiute Cutthroat Trout (Pops.)	2			2	2	2	2	2
Resident Fish (M Pounds)	100			100	100	100	100	95
Wildlife User Days (M WFUD)	329.7			306.5	333.4	360.4	387.4	414.3
Fish User Days (M WFUD)	141.3			131.5	142.9	154.4	166.0	177.6
Direct Habitat Improvement								
Wildlife (M Acres)	2.6	12.7	5.45	1.0	1.0	1.0	1.0	1.0
Fish (Acres or Structures)	3.0			30.0	28.0	30.0	31.0	34.0
RANGE								
Grazing (M AUM)	35.0	38.1	40.2	39.9	44.8	45.0	46.9	50.0
TIMBER								
Allowable Sale Quantity (MMBF)	110.0	149.1	163.4	147.5	147.5	147.5	147.5	147.5
Allowable Sale Quantity (MMCF)	17.4	23.8	26.1	23.5	23.5	23.5	23.5	23.5
Reforestation (M Acres)	1.1	6.5	7.6	5.7	3.8	3.6	2.7	2.1
Timber Stand Improvement (M Acres)	0.5	4.9	5.0	3.1	9.2	10.0	7.5	6.4
WOOD PRODUCTS OTHER THAN SAWTIMBER								
Fuelwood (M Cords)	22.5			22.5	22.5	22.5	22.5	22.5
Biomass (M MCF)	0			No Projection Made				
[1] Decade 1 is the planning period 1991-2000. Decades 2-5 are projections only.								
[2] Includes areas up to 30% slope located outside wilderness: (a) Winter = Areas suitable for 4WD and trailbike use but not necessarily open to cross-country use; (b) Areas suitable for oversnow vehicle and open to cross-country use.								
[3] Estimated number of miles, actual miles to be determined in Forest OHV Plan.								
[4] Does not include 45 miles of designated snowmobile routes and undesignated routes in areas where cross-country over the snow vehicle travel is permitted.								

RESOURCE ELEMENT	BASE YEAR 1982	1980 RPA Goals for		DECADES [1]				
		1990	2030	1991 - 2000	2001 - 2010	2011 - 2020	2021 - 2030	2031 - 2040
WATER								
Quality (MM Ac Ft. at Mtg Objectives)	2.514	1 882	1.903	2.622	2.615	2 635	2 605	2.591
Increased Quantity (MM Ac.Ft.)	2.565			.110	.103	.124	.093	.079
Watershed Improvement (Acres)		270	310	226	226			
LANDS AND MINERALS								
Minerals (Operating Plans)	21	53	69	20	22	25	25	2
Land Acquisition (Acres)	0	500	0	200	400	0	0	0
TRANSPORTATION								
Trail Const./Reconst (Miles)	26	54	42	42	37	32	0	0
Road Const (Miles)	36			26	6	2	1	1
Road Reconstruction (Miles)	41			78	33	33	24	27
Maintained Road System (Annual Miles)	2550			2665	2830	2875	2890	2890
FACILITIES								
Dams and Reservoirs								
Forest Service (Number)	0			0	0	0	0	0
Other Federal (Number)	0			0	0	0	0	0
Other State/Local (Number)	3			3	3	3	3	3
Private (Number)	25			25	25	25	25	25
Administrative Sites								
Forest Service Owned (Number)	26			16	14	14	14	14
Leased (Number)	6			5	5	5	5	5
PROTECTION								
Total Fuel Treatment (Acres) [2]	0	3000	2600	6500	5700	4500	4800	4500
(a) Fire-related Fuel Treatment (Acres)				1700	1900	1700	1600	1500
(b) Timber-related Fuel Treatment (Acres)				2800	1800	1700	1200	1000
(c) Fuel Treatment for Other Resources				2000	2000	2000	2000	2000
Expected Acres Burned by Wildfire								
Intensity Level	1	36		44	45	49	51	50
	2	91		98	102	118	124	120
	3	221		85	89	105	110	108
	4	429		481	504	502	527	512
	5	557		317	331	538	563	548
	6	924		1051	1097	918	960	935
HUMAN RESOURCES								
Programs (Enrollees)	38	16	16	38	38	38	38	38
TOTAL BUDGET (\$MM)								
	18.7	18.9	20.8	25 8	28 0	31 1	32 2	36 6
[1] Decade 1 is the planning period 1991-2000 Decades 2-5 are projections only.								
[2] Combination of Wildlife and Protection (sum of a, b, and c).								

TABLE 2.16 - ALTERNATIVE H: DISTRIBUTION OF PRESCRIPTIONS BY MANAGEMENT AREAS [1]

PRESCRIPTION	MANAGEMENT AREAS											
	1	2	3	4	5	6	7	8	9	10	11	12
WILDERNESS			527,938									
WILD & SCENIC [2]			2,220									
MINIMUM LEVEL MANAGEMENT [3]			3,827	2,173								
LIMITED-TIMBER YIELD [3]	13,074	635		48,289	2,921							
MODIFIED-TIMBER YIELD [3]	15,782	1,385		56,256	4,649							
FULL-TIMBER YIELD [3]	10,295	2,675		221,063	10,484				192			
DEVELOPED RECREATION [4]	73,101	4		342	5							
ADMINISTRATION SITES		238		138	157	28	1	2				
SPECIAL INTEREST AREAS Botanical / Geological									899			
KINGS RIVER SPEC MGMT. AREA												24,368
EXPERIMENTAL FOREST							3,200					
EXPERIMENTAL RANGE								4,580				
RNA										2,850		
LAND EXCHANGE												
Acquisition	200		560	2,150	1,350						160	
Base	3,200			11,640	26,320							
DISPERSED RECREATION [5]	55,898	41,016		209,780	20,700						17,941	24,368
FRONT COUNTRY					134,050							
[1] Numbers are approximate due to rounding [2] See Appendix E for specific recommendations and designations. [3] Includes only CAS land. [4] Includes water area also. [5] Includes both dispersed no harvest and dispersed with harvest.												

2.7 COMPARISON OF ALTERNATIVES

2.7.1 Overview

This section compares and highlights major differences between alternatives. Outputs, costs, responses to issues, environmental effects, and the ability to meet RPA targets are factors used to compare alternatives. These factors are summarized here from detailed discussions found in Chapters 3 and 4. These comparisons present relevant, specific, and detailed information previously expressed in more general terms in the alternative descriptions.

For purposes of orientation, the different alternatives are listed here.

<u>Alternative Emphasis</u>	
A	Preferred (PRF)
B	Current (CUR)
C	Resource Planning Act (RPA)
D	Low Budget (LBU)
E	Amenity (AMN)
H	Market (MKT)

2.7.2 Recreation and Wilderness

Alternative E will provide a program emphasizing dispersed recreation and wilderness and de-emphasizing developed site recreation, except for those facilities that provide strong support to dispersed recreation. In this alternative, 14,490 acres of the Kings River Special Management Area including 9,890 acres of the Sierra National Forest and 4,600 acres of the Sequoia National Forest, will be recommended for wilderness. Developed recreation will be lowest in this alternative with low standard service provided in most of the facilities remaining open. Dispersed recreation opportunities will be provided and administered at standard levels.

Alternative D will emphasize developed recreation over dispersed recreation. Day use in developed sites will be allowed to meet demand at low standard levels, except for some privately operated facilities. Dispersed recreation will be at the lowest level of any alternative and administered at low standard levels. No restrictions will be placed on wilderness use, but only low standard service will be provided. In this alternative, 24,368 acres of the Kings River Special Management Area on the Sierra National Forest and 24,300 acres of the Sequoia National Forest will be recommended for wilderness.

Alternatives C and H will emphasize developed recreation with standard services provided at recreational sites. Dispersed recreation and Wilderness opportunities will be provided with varying levels of service, depending

on economic considerations related to the location of the facilities and areas. Over half of the sites and areas will receive standard service. Recreation will be allowed to increase to demand levels.

Alternative B will provide a balanced emphasis between developed site and dispersed recreational use, but all service will be at current levels. Recreation will be allowed to go to demand levels.

Alternatives A will emphasize dispersed recreation. Standard service will be provided in most dispersed and wilderness use areas and developed sites. Recreation in all areas will be allowed to meet demand.

The California Wilderness Act of 1984 severely impacted the opportunities and reduced the range of options for development of new OHV routes in the Forest. Several existing routes were closed and some OHV route proposals were eliminated because of Wilderness Designation. Most remaining opportunities for new OHV routes now will lie in roaded natural areas as very little semi-primitive ROS Class areas remain outside wilderness. The quality and types of OHV experiences will change as a result. Due to the situation, the range of change in area acreages and miles of routes is relatively narrow between alternatives.

OHV routes and OHV opportunities will be the greatest in Alternatives E and H; slightly less in Alternatives A and C; and lowest in Alternatives B and D.

2.7.3 Wild and Scenic Rivers

Alternatives A and E will provide a program emphasizing the Wild and Scenic River system within and outside the Forest boundaries. The Wild and Scenic Rivers will be administered on 33 (Alternative A) and 34 (Alternative E) of the 34 eligible river segments of Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin, and Middle Fork Kings Rivers. In November 1987, Congress designated 20 of the eligible 34 river segments within the Merced and Kings River systems.

Alternative D will emphasize the Wild and Scenic River system only within the Forest boundary areas that contain designated Wilderness areas and outside the Forest boundaries on land managed by the National Parks. The rivers will be administered on 22 of the 34 eligible river segments of Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin, and Middle Fork Kings Rivers. Congress has already designated the Merced and Kings Rivers, which include 20 segments.

Alternative C will emphasize the Wild and Scenic River systems within and outside the Forest boundaries. Some of the segments within the Forest and BLM boundaries will not be included because of economic constraints.

The rivers will be administered on 27 of the 34 eligible river segments of Merced, South Fork Merced, San Joaquin, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin, and Middle Fork Kings Rivers. All segments of the Merced and Kings Rivers were designated in the November 1987 WSR Act.

Alternative B will de-emphasize the Wild and Scenic River system within and outside the Forest boundaries. Congress has already designated 19 of the Merced and Kings River segments. The remaining 14 segments will be deferred.

Alternative H will emphasize the Wild and Scenic River system outside the Forest boundaries and within existing Wilderness areas. The rivers will be administered on 12 of the 34 eligible river segments of Merced, South Fork Merced, North Fork San Joaquin, Middle Fork San Joaquin, South Fork San Joaquin, and Middle Fork Kings Rivers. All river segments of the Merced and Kings Rivers were designated in the November 1987 WSR Act.

274

Wildlife and Fish

In all alternatives, threatened, endangered and sensitive fish and wildlife will be protected. Sensitive plants will be conserved and managed to prevent them from becoming federally-listed as threatened and endangered.

Each alternative will provide viable populations of fish and wildlife, varying amounts of early and mid-seral stage habitat, and a network of between 26 and 34 Spotted Owl Habitat Areas (SOHAs) which, when linked with networks on adjacent forests, provide a network of viable populations within the Region.

Alternatives A, D and E will provide more late seral stage habitat required by spotted owls and sensitive furbearers. Alternatives C and H will provide more acres of early and mid-seral stage habitat. Alternative B will fall between these two groupings. Much of the late seral stage habitat will be provided by wilderness, Spotted Owl Habitat Areas, riparian corridors, dispersed recreation areas with no harvest, special interest areas, retention areas and sensitive furbearer habitat areas. Younger successional habitat is provided by standard timber harvest activity, prescribed burn treatments, wildfire and habitat improvement projects. Alternatives C and H will produce the largest declines in late seral stage habitat.

Each alternative will result in additional deer habitat through direct habitat improvement projects and in conjunction with the timber harvest program.

275

Riparian

Although each alternative will be expected to preserve the existing conditions of riparian areas in the Forest, the potential for impacts will increase as the intensity of commodity resource outputs increase. Alternatives C and H will provide a large potential for impact; Alternative B moderate potential; Alternatives D and E little potential, Alternative A low to moderate potential.

276

Range

In Alternatives A, C and H, permitted use will increase to meet or exceed RPA goals. Both structural and nonstructural improvements will occur to accommodate this increase. Range condition will be maintained or improved.

In Alternatives B, D and E, permitted use will remain the same or decline below current levels. There will be little or no range improvements constructed, however, existing facilities will be maintained.

277

Timber

Alternative A will provide a decreased level of timber harvest over the 10-year planning period and following 40-year projection. Many amenity values will be optimized by foregoing scheduled timber harvest on land previously considered to be in the timber land base. No scheduled harvest will be planned for the majority of the expanded streamside management zone, Forest spotted owl network and, in some roaded dispersed recreation areas. Other land was determined not to be cost efficient for timber production.

Alternative B will be similar to the Preferred except there will be more total harvest over the 10-year planning period and following 40-year projection. Sensitive areas will not expand to the degree indicated in the Preferred Alternative.

Alternative C will have high timber as well as other resource outputs during the 10-year planning period and following 40-year projection. Timber harvest will occur over all suitable timber land outside of wilderness areas. To produce high timber outputs and other resources, some investment in timber management above anticipated timber values will be made.

Alternative D will provide for a low level of timber production. The intensity of management on areas harvested will be similar to Alternative A. Harvest areas will be substantially restricted to timber land with existing access.

Alternative E will provide a little less timber than Alternative A. The principle difference between Alternatives E and A will be the change in regeneration system to be used on tractor ground from clearcut and shelterwood to small group selection where individual openings are two acres or less in sizes.

Alternative H will produce higher levels of timber from most cost-effective timber stands. Timber harvest will occur over most of the Forest and be readily apparent over the entire Forest within each decade.

2.7.8 Diversity

Alternatives A, D, and E will provide more late seral stage habitat required by California spotted owls and sensitive furbearers. Alternatives C and H will provide more acres of early and mid-seral stage habitat. Alternative B will be between the two alternative groups, having less late seral stage habitat than A, D and E but more than C and H, and more early seral stage habitat than A, D and E but less than C and H. Much of the late seral stage habitat will be provided in wilderness, SOHAs, riparian areas, dispersed recreation areas with no harvest, special interest areas, retention areas and sensitive furbearer habitat areas. Early successional stage habitat will be provided by standard timber harvest activity, prescribed burn treatments, wildfire and habitat improvement projects. Alternatives C and H will produce the largest decline in late seral stage habitat.

The seral stages of the 80,000 acres of chaparral in the Forest will change over time because of wildfires and prescribed burns. A minimum of 5 percent of each chaparral seral stage will be maintained during all time periods in all alternatives. At the end of the fifth decade, Amenity Alternative will have the most early successional stage habitat while Market the least.

Special habitat elements such as snags and down logs will vary between alternatives but all will provide at least the minimum of 15 snags and 3 down logs per acre. Other special habitat elements such as cliffs, caves, rocks, outcrops, seeps and ponds will remain at current levels in all alternatives.

2.7.9 Watershed

In Alternatives C and H, complex and expensive mitigation measures such as mulching, yarding un-utilized material, and hand piling slash will be used to maintain soil productivity and water quality. In Alternatives A and B, mitigation measures described in BMP and other standard practices recommended by watershed specialists will be used. In Alternatives D and E, the same types of mitigation measures will be used as in A and B except fewer measures will be needed due to the reduction in harvest and clearcutting.

2.7.10 Geology

Alternatives A, B, C, E and H will allow for continued effective utilization of sources of earth construction material within the Forest. Alternative D will disrupt the program by switching to commercial sources.

In Alternatives A, B, C, E and H, groundwater production will be maintained at near-current levels. Production will drop in Alternative D, underutilizing the investment made in well development.

2.7.11 Minerals

Legitimate mining will be encouraged on National Forest land open to mineral entry. Mining will be primarily influenced by the market price of the various minerals and controlled by factors outside the Forest. The primary effect on mining by the various alternatives will be the amount of land recommended for withdrawal from mineral entry. All alternatives will recommend withdrawing an additional 1,140 acres as Bishop Creek Pacific Ponderosa Pine Research Natural Area.

2.7.12 Lands

Primary emphasis of the land line location program will be to facilitate preparation and sale of Forest timber. Miles of land line marked and posted to standard, will range from 360 miles/decade in Alternative D, to 590 miles/decade in Alternative A. Approximately 800 miles of unauthorized occupancies will be identified each decade in Alternative H, 560 miles in Alternative B, 675 miles in Alternative C, and commensurate reduction in numbers to a low of 375 miles each decade in Alternative D.

Right-of-way acquisitions will range from an anticipated high of 50 miles/decade in Alternatives A to a low of about 25 miles/decade in Alternatives B, C, D, E, and H.

In Alternative A, the land adjustment program will emphasize acquisition of key tracts of large (1,000 acres) non-federal inholdings to enhance management efficiency. Alternatives C, D, E, and H will emphasize the acquisition of nonfederal land located within timber, range, or recreational areas. In Alternative E, emphasis will be directed toward the acquisition of land within designated wilderness areas. Alternative B will include land acquisitions that solve administrative problems, can become actionable cases, and have a favorable cost/benefit ratio.

2.7.13

Hydroelectric Development

Alternatives A, B and H essentially will balance hydroelectric development with the other resources to determine appropriateness of site development and mitigation. Management concerns will indicate resources that primarily must be protected, based on existing or proposed management direction for the area. However, no site is off limits to hydroelectric development

Alternative C will slightly restrict hydroelectric development at some sites in favor of maintaining commodity balance and RPA production. Alternative D will encourage hydroelectric development as a means to accomplish development, such as recreation, or certain types of mitigation to enhance existing resource protection.

Alternative E will discourage hydroelectric development by giving other resources priority over hydroelectric projects. Development must locate in areas devoid of other prime resource areas and mitigate heavily to compensate for any resource loss

2.7.14

Roads

Road system investments will range from very low (Alternative D) to high (Alternatives C and H). Alternatives A, B and E will have moderate levels of road investments

At the end of the Planning period the total road mileage, both open and closed, will be lowest in Alternative D. The road system will be most extensive in Alternatives C and H with about 15% more road mileage than in D. Alternatives A, B and E will result in total road mileage between these two

The ratio of reconstruction to construction will range from very low (1:1) in Alternative D to very high (2:1) in Alternative E. Alternatives A and B will have low ratios (1:25:1), Alternatives C and H moderate ratios.

The management emphasis will be directed towards protecting the road investment in Alternative D; providing a stable haul system in Alternatives A, B and E; and emphasizing a system to support market activities in Alternatives C and H.

General public road access will be discouraged in some areas in Alternative A; strongly discouraged or prohibited in Alternatives D and E. The public will generally be accepted throughout the system in Alternative B. The public will be encouraged to use the open system in Alternatives C and H

The Tables and Figures in Section 2.8 are presented to assist in the comparison of the alternatives.

2.8

SUMMARY COMPARISONS OF ENVIRONMENTAL FEATURES, CONSEQUENCES, AND MANAGEMENT ACTIVITIES

The environmental effects for all alternatives assume the implementation of the Forestwide Standards and Guidelines, which were designed to mitigate adverse impacts of management activities. For example, the Forest will permit a prescribed burn only when the atmospheric conditions meet the air quality standards approved by the State Air Resources Board. As a result, all alternatives meet legal standards for resource protection and maintenance.

In this section tabular summaries display vast quantities of data from other sections of this document. The intent is to present the reader with information in a handy form for comparisons. Brief descriptions of the intent of each table precedes each compilation. In some cases, an explanation of the categories is also included in the description.

Table 2.17 - shows a comparison of management direction of the six alternatives by resource. It is an example of management direction/standard and guidelines unique to each alternative

Table 2.18 - presents a summary comparison of the six alternatives for major consequences. Comparisons in most items is spatial in nature, that is, the number of acres affected by each alternative's emphasis is expressed in terms of acres, miles, and percent of area. A few categories are expressed in dollars, energy, or years. Chapter 4, Environmental Consequences, is the basis for this summary.

Table 2.19 - displays the amount of territory assigned to the range of management prescriptions or activity functions of Forest land. Perhaps, more than any other table, this table is the most succinct presentation of land distribution among the many Forest activities.

Table 2.20 - shows the changes in resource outputs between the first and fifth decades. This table is very useful for comparing the consequences of an alternative's emphasis. For example, under Fish and Wildlife category, it can be seen that only Alternative E places an emphasis on increasing the number of peregrine falcon within the Forest by the end of the fifth decade

TABLE 2.17 - MANAGEMENT STANDARDS AND GUIDELINES UNIQUE TO EACH ALTERNATIVE

A	B	C
RECREATION		
1. Provide broad spectrum of recreational opportunities which the Forest is most capable of providing and needed by the public.	1. Provide modest spectrum of recreational opportunities which the Forest is most capable of providing and needed by the public	1. Same as Alternative A.
2. Provide a moderate increase in intensively used recreational developments.	2. Expansion of recreational facilities will be through license agreements and use of private capital Rehabilitate existing Forest Service sites.	2. Same as Alternative A.
3. Rehabilitate trails for safety, convenience and resource protection by year 2010.	3. Rehabilitate trails for safety, convenience and resource protection by year 2010.	3. Same as Alternative B.
4. Increase capacity of developed sites about 7% by year 2000.	4. Maintain recreational sites and areas at current levels of development.	4. Same as Alternative B
5. Provide parking and sanitation for snowplay, snowmobiling, and cross-country skiing areas.	5. Provide parking and sanitation facilities for snowplay activities only where resource damage is occurring or public safety is a factor.	5. Same as Alternative A.
6. Increase the number of camp units under the user fee system at least 5% by year 2000.	6. Increase the number of camp units under the user fee system at least 5% by year 2000.	6. Same as Alternative B.
7. Limit commercial rafting to a maximum of 8 parties/day with a maximum of 31 persons and 6 boats/party on Merced River.	7. Limit commercial rafting to a maximum of 8 parties/day with a maximum of 31 persons and 6 boats/party on Merced River.	7. Six parties/day. Maximum of 31 persons and 6 boats / party
8. Existing permittees will be allowed to expand in response to public demands within existing recreational development and experience.	8. Existing permittees will be allowed to expand in response to public demands within existing recreational development and experience.	8. Same as Alternative B.
9. Limit all expansion of overnight PAOT to that approved by existing project environmental assessments until completion of Huntington Lake Area Composite Plan	9. Increase the overnight capacity at Huntington Lake in all facilities to a maximum of 7,500 PAOT.	9. Same as Alternative B.
10. Increase boat slips and/or moorings only for short term use at Huntington Lake.	10. Increase boat slips to 230 at commercial resorts at Huntington Lake	10. Same as Alternative B.
11. Allow limited expansion of boat dock, restaurant and grocery services at the Forks and Wishon Resorts. Maintain overnight facilities at present capacities	11. Permit Wishon Village Resort to expand only to meet public recreational needs.	11. Same as Alternative B.
12. Kings River Special Management Area Plan will establish limits of recreational use and acceptable change on river.	12. Kings River Special Management Area Plan will establish limits of recreational use and acceptable change on river.	12. Same as Alternative B
13. Issue a 10-year permit for the Camp Redwood site specifying retention of tent platforms only, maintaining capacity at the present level, and resolving health and safety problems.	13. Regain the Camp Redwood site and convert to public day use	13. Same as Alternative B.

TABLE 2.17 - MANAGEMENT STANDARDS AND GUIDELINES UNIQUE TO EACH ALTERNATIVE

D	E	H
RECREATION		
1. Provide a modest spectrum of recreational opportunities, emphasizing those that make minimum impacts on resources and require only minimal management.	1. Same as Alternative D.	1. Same as Alternative A.
2. No expansion of recreational facilities. Close sites where site protection, sanitation, and safety needs cannot be met.	2. Same as Alternative D.	2. Expand existing recreational developments to needed maximum capacity consistent with planned ROS classes.
3. Maintain and rehabilitate trails only as necessary for visitor safety.	3. Rehabilitate trails for visitor safety and convenience and resource protection by year 2005.	3. Same as Alternative E.
4. Maintain high-use recreational sites and areas at current levels of development.	4. Same as Alternative D.	4. Increase the capacity of developed sites about 10% by year 2005.
5. No areas for snowplay, snow-mobiling and cross-country provided.	5. Same as Alternative A.	5. Same as Alternative A.
6. No increase in camp units under the fee system.	6. Same as Alternative A.	6. Increase number of camp units the user fee system at least 15% by year 2000.
7. Same as Alternative C.	7. Same as Alternative C.	7. Same as Alternative B.
8. Same as Alternative B.	8. Same as Alternative B.	8. Same as Alternative B.
9. Maintain Huntington Lake areas current overnight capacity of 6,700 PAOT.	9. Increase overnight capacity at Huntington Lake in all facilities to a limit of 8,000 PAOT.	9. Same as Alternative E.
10. No expansion of commercial boat slips at Huntington Lake.	10. Increase boat slips to 170 at commercial resorts at Huntington Lake.	10. Increase boat slips by 360 at commercial resorts at Huntington Lake.
11. Retain Wishon Village Resort at current capacity.	11. Same as Alternative D.	11. Same as Alternative B.
12. Same as Alternative B.	12. Same as Alternative B.	12. Same as Alternative B.
13. Retain Camp Redwood at current level of development.	13. Same as Alternative D.	13. Same as Alternative B.

TABLE 2.17 - MANAGEMENT STANDARDS AND GUIDELINES UNIQUE TO EACH ALTERNATIVE

A	B	C
WILDERNESS		
1 Complete trail rehabilitation in Wilderness by year 2020, emphasizing resource protection, safety, and visitor dispersal.	1 Complete trail rehabilitation in Wilderness by year 2020, emphasizing resource protection, safety, and visitor dispersal.	1 Same as Alternative B.
2 Maintain current Wilderness acreage	2 Maintain current Wilderness acreage.	2 Same as Alternative B
3. In Kaiser Wilderness, limit party size and number of stock per party to a level that protects social and natural resource values.	3. In Kaiser Wilderness, limit parties to 5 persons and 5 head of stock	3 Same as Alternative B
4 In John Muir, Ansel Adams, Dinkey Lakes, and Monarch Wildernesses, limit party size and number of stock per party to a level that protects social and natural resource values	4 In John Muir, Ansel Adams, Dinkey Lakes, and Monarch Wildernesses, limit parties to 25 persons and no limits on stock.	4 In all except Kaiser Wilderness, limit parties to 15 persons and 23 head of stock/party
5 Provide more opportunities for public use/enjoyment and understanding of wilderness	5 Provide somewhat more opportunities for public use/enjoyment and understanding of wilderness.	5 Same as Alternative B.
FISH AND WILD LIFE		
1. Increase the current Forest-wide program of direct habitat improvement.	1. Increase the current Forest-wide program of direct habitat improvement	1 Same as Alternative A
2 Emphasize sensitive, T&E, and harvest species, but focus most habitat work to meet the needs of broad spectrum of species	2. Emphasize sensitive, T&E, and harvest species, but focus most habitat work to meet the needs of broad spectrum of species.	2. Emphasize sensitive, T&E and harvest species but focus a moderate number of habitat projects on a broad spectrum of species.
3 Minimize management activity in 75% of all key deer areas in the commercial forest zone during appropriate migration or fawning periods Modify timber management to benefit deer in these areas	3. Minimize management activity in 50% of all key deer areas in the commercial forest zone during appropriate migration or fawning periods Modify timber management to benefit deer in these areas	3. Same as Alternative B.
4 On CAS lands, manage for no less than 20% and 10% crown closure in mast producing oaks in key deer areas and nondeer areas, respectively Measure closure targets by deer areas or compartments. Keep all oaks on noncommercial land.	4. On CAS lands, manage for no less than 20% and 10% crown closure in mast producing oaks in key deer areas and nondeer areas, respectively Measure closure targets by harvest units	4 Same as Alternative B
RIPARIAN		
1 Maintain or enhance the condition of meadows to accommodate wildlife and range resources.	1. Maintain or enhance the condition of meadows to accommodate wildlife and range resources	1. Same as Alternative B
2 Manage vegetation in riparian zones so that existing Forest-wide conditions are maintained at all times	2. Permit the full range of multiple uses in riparian area; allow some changes in structure, but maintain associated species well above viable population levels.	2 Same as Alternative B.
DIVERSITY		
1. Manage key habitat elements, such as snags and down logs, in sufficient densities to sustain associated species well above viable population levels	1. Manage key habitat elements, such as snags, and down logs, in sufficient densities to sustain associated species well above viable population levels	1 Same as Alternative B.
2 Provide an average of 2 snags and 3 down logs/acre	2. Provide an average of 2 snags and 3 down logs/acre	2 Provide an average of 1.5 snags and 2 down logs/acre

TABLE 2.17 - MANAGEMENT STANDARDS AND GUIDELINES UNIQUE TO EACH ALTERNATIVE

D	E	H
WILDERNESS		
1. No trail rehabilitation.	1. Same as Alternative B, except complete by year 2005	1. Same as Alternative B.
2. Increase 24,368 acres on Sierra National Forest.	2. Increase 9,890 acres on Sierra National Forest.	2. Same as Alternative B
3. Same as Alternative B	3. Same as Alternative B.	3. In Kaiser Wilderness, limit parties to 10 persons and 10 head of stock
4. In all except Kaiser Wilderness, limit parties to 10 people and 15 head of stock	4. In all except Kaiser Wilderness, limit parties to 20 people and 30 head of stock.	4. In all except Kaiser Wilderness, limit parties to 25 people and 40 head of stock.
5. Administer wilderness to maintain very high values for primitive recreation, solitude and natural integrity.	5. Same as Alternative B.	5. Same as Alternative B.
FISH AND WILD LIFE		
1. Limit direct habitat improvement projects to those needed for managing T&E species or animals approaching viability thresholds	1. Provide a large increase in the direct habitat improvement program, consistent with other amenity resource objectives.	1. Limit direct habitat improvement projects to those funded from timber sale revenues or those needed to maintain T&E species or viable populations
2. Emphasize project for sensitive and T&E species, but focus a small number of projects on harvest species	2. Habitat management program will provide balanced diversity for broad spectrum of species	2. Same as Alternative C.
3. Same as Alternative A.	3. Minimize management activity in all deer areas in commercial forest zones during appropriate migration or fawning periods. Modify timber management in these areas to benefit deer habitat.	3. Do not modify management for deer in key deer areas.
4. Same as Alternative B.	4. Manage oaks at existing densities in all areas	4. On CAS lands, manage for no less than 10% and 5% crown closure in oaks in key deer areas and nondeer areas, respectively. Measure targets by harvest units. On non-commercial lands, manage oaks for balanced commodity and wildlife values.
RIPARIAN		
1. Same as Alternative B.	1. Same as Alternative B	1. Same as Alternative B
2. Same as Alternative B.	2. Same as Alternative B.	2. Same as Alternative B
DIVERSITY		
1. Same as Alternative B.	1. Manage key habitat elements at naturally-occurring levels.	1. Manage key habitat elements well below naturally-occurring levels, but in sufficient densities to maintain viable populations of associated species
2. Provide an average of 2.0 snags and 4 down logs/acre.	2. Provide an average of 6 down logs/acre and limit snag removal to projects enhancing public safety or amenity resource values	2. Same as Alternative C

ELEMENT	A	B	C
THEME OF ALTERNATIVE	Reduces timber production, slightly increases other commodity production, emphasizes dispersed recreation and maintains other resources	Maintains current levels of commodity production and other resources and improves deteriorating resources.	Meets commodity resource production of RPA and emphasizes dispersed recreation, while maintaining all resources and encouraging private investment in developed recreation
RECREATION Visual conditions	33% decline in EVC, mostly in decades 1-3, 38% of SNF in "Preservation" VQO	33% decline in EVC, mostly in decades 1-3; 38% of SNF in "Preservation" VQO	35% decline in EVC, mostly in decades 1-3; 38% of SNF in "Preservation" VQO.
RECREATION Land uses	Emphasizes dispersed and developed recreation and developed recreation-site capacity will meet demand with new facilities ROS class areas stay level. OHVs except snowmobiles, restricted to 238 miles of trails by 2030.	Emphasizes dispersed recreation. Developed site capacity meets demand to 2030. ROS Semiprimitive areas decline and Roaded Natural areas increase OHVs allowed cross-country in designated areas and restricted to 200 miles of trails by 2030.	Emphasizes dispersed recreation. Developed site capacity rises moderately to meet demand ROS Primitive areas will decline while Roaded Natural and Rural areas will reach high levels OHVs except snowmobiles, restricted to 238 miles of trails by 2030.
WILDERNESS	No change in area. Quality of experience is high.	No change in area. Quality of experience is moderately high.	No change in area. Quality of experience may decline from adjacent roads and logging. Maintenance increases.
WILD AND SCENIC RIVERS	Study recommends 23,400 acres 11,200 acres managed by Sierra NF.	Study defers rivers for further consideration	Study recommends 20,200 acres 11,200 acres managed by Sierra NF
FISH & WILDLIFE Sensitive Furbearers	Provide 7 furbearer habitat areas totaling 62,140 acres and habitat linkage between habitat areas totaling 4,182 acres.	No designated furbearer habitat areas.	No designated furbearer habitat areas.
RANGE	Forage quality and quantity increases slightly. Demand is met and industry stability increases.	Stable forage quality and quantity, demand greatly exceeds supply; industry stability decreases slightly.	Slight improvement at low elevations; stable at high elevations; demands exceed supply; industry stability increases.
TIMBER MANAGEMENT Production	50% of 328,900 ac. under even-aged management yielding 72% of harvest volume in 5 decades. Uneven-aged management used on visually sensitive, low-productive and protective cover-required land. Average growth in decades 5-6 is 80% of LTSY. Annual LTSY is 107.8.	72% of 352,700 ac under even-aged management yielding 81% of harvest volume in 5 decades Uneven-aged management used on low-productive and protective cover-required land. Average growth in decades 5-6 is 82% of LTSY. Annual LTSY is 156.9 MMBF.	72% of 393,700 ac. under even-aged management yielding 84% of harvest volume in 5 decades. Uneven-aged management used on low-productive and protective cover-required land. Average growth in decades 5-6 is 92% of LTSY. Annual LTSY is 173.1 MMBF.
WATER YIELD (Base year is 1982.)	Increases 1.4%. Requires 2 decades to correct water quality deficiencies	Increases 1.7%. Requires 3 decades to correct water quality problems.	Increases 1.6% Requires 2 decades to correct water quality problems
MINERALS	Locatable & leaseable activities strongly driven by price. FS responds to exploration and development by protecting surface. Additional 1,140 acres are withdrawn from mineral entry.	Locatable & leaseable activities strongly driven by price. FS responds to exploration and development by protecting surface.	Same as Alternative A.

TABLE 2.18 - COMPARISON OF OTHER SIGNIFICANT ENVIRONMENTAL CONSEQUENCES

ELEMENT	D	E	H
THEME OF ALTERNATIVE	Reduces commodity resource production and maintains minimal resource management required by law and takes other action to protect, conserve, and rehabilitate when necessary.	Emphasizes noncommodity resources, reduced commodity resource production, and avoids conflicts with natural habitats and recreation.	Emphasizes commodity resource production and developed recreation. Manages nonmarket resources at economically efficient levels.
RECREATION Visual Conditions	27% decline in EVC, mostly in decades 1-3; 39% of SNF in "Preservation" VQO.	32% decline in EVC, mostly in decades 1-3; 38% of SNF in "Preservation" VQO.	39% decline in EVC, mostly in decades 1-3, 38% of SNF in "Preservation" VQO.
RECREATION Land Uses	Dispersed/developed recreation directed toward conservation & visitor safety. Increase of ROS Primitive & Semiprimitive class areas results from some road/OHV route closures. Private facilities meet demand & FS sites serviced at low standard. Some restricted OHV routes but no cross-country use	Developed recreation only where strongly supporting dispersed recreation is emphasized. ROS Semiprimitive Motorized class areas greatly increase by closing roads & more restricted OHV routes in non-roaded areas to 260 miles by 2030. OHV cross-country use except snow-mobles prohibited.	Emphasizes dispersed recreation/developed recreation in high-use areas. Developed site capacity meets demand ROS primitive decline and Semiprimitive Nonmotorized/Rural class areas increase. OHV cross-country use except snowmobiles prohibited. Restricted OHV routes increase to 260 miles by 2030.
WILDERNESS	Increases 24,368 acres on Sierra NF. Increases 24,300 acres on the Sequoia NF. Quality of experience is high. Many adjacent areas managed without increase in commodity production	Increases 9,890 acres on the Sierra NF. Increases 4,600 acres on the Sequoia NF. Enhance values through increases in funding and personnel	No change in area. Manage at low intensity. ROS Primitive class areas decline from logging in adjacent areas.
WILD AND SCENIC RIVERS	Study recommends 19,860 acres. 9,300 acres managed by Sierra NF	Study recommends 24,000 acres 11,800 acres managed by Sierra NF.	Study recommends 9,600 acres 2,200 acres managed by Sierra NF.
FISH & WILDLIFE Sensitive Furbearers	No designated furbearer habitat areas	Provide 8 furbearer habitat areas totaling 77,410 acres and habitat linkage between areas totaling 7,127 acres.	No designated furbearer habitat areas
RANGE	Forage quality and quantity decreases, demand greatly exceeds supply and industry stability decreases.	Forage quality and quantity decreases in the conifer zone, demand greatly exceeds supply; industry stability will greatly decrease.	Forage quality and quantity increases; demand is met, industry stability increases
TIMBER MANAGEMENT Production	84% of 279,500 ac under even-aged management yielding 88% of harvest volume in 5 decades. Uneven-aged management used on low-productive and protective cover-required land. Average growth in decades 5-6 is 76% of LTSY. Annual LTSY is 126.1 MMBF	24% of 281,700 ac. under even-aged management yielding 36% of harvest volume in 5 decades Uneven-aged management used on all tractor loggable ground, low-productive and protective cover-required land. Average growth in decades 5-6 is 84% of LTSY. LTSY is 95.1 MMBF.	75% of 387,700 ac. under even-aged management yielding 87% of harvest volume in 5 decades Uneven-aged management used on low-productive and protective cover-required land. Average growth in decades 5-6 is 94% of LTSY. Annual LTSY is 172.9 MMBF.
WATER YIELD (Base year is 1982)	Increases 0.3%. Requires 5 decades to correct water quality problems.	No increase. Requires 2 decades to correct water quality problems	Increases 1.7%. Requires 2 decades to correct water quality problems
MINERALS	11,310 acres, above amount in Alternative A, withdrawn from mineral entry because of wilderness	26,238 additional acres, above amount in Alternative A, withdrawn from mineral entry because of Wilderness	Same as Alternative A.

ELEMENT	A	B	C
LANDS Lines to be marked and posted	Surveys increase moderately initially, commensurate with logging, but drop in later decades as logged areas are marked	Surveys remain the same initially and decline in later decades as boundaries of private land in logged areas are marked.	Surveys occur at levels necessary to meet RPA goals
SOCIO - ECONOMIC	Local income declines. Visitors find many recreational opportunities in pleasing surroundings. New arrivals & vacation-home owners pleased with high emphasis on amenity values.	Local income declines. Visitors find reduced quality at some developed sites from funding constraints. New arrivals & vacation-home owners see negative impact on their lifestyles.	High outputs benefit residents from employment and county receipts. Visitors, new arrivals, & vacation-home owners may find visual quality and old growth timber reduced & in conflict with their values
CULTURAL RESOURCES	Moderate probability of disturbance from more intensive logging and emphasis on dispersed recreation	Moderate probability of disturbance from more intensive logging and emphasis on dispersed recreation.	High probability of disturbance from increased logging, dispersed recreation, & new recreational developments

TABLE 2.18 - COMPARISON OF OTHER SIGNIFICANT ENVIRONMENTAL CONSEQUENCES

ELEMENT	D	E	H
LANDS Lines to be marked and posted	Surveys occur at reduced levels to meet administrative needs only.	Surveys decline initially and increase slightly in later decades.	Surveys greatly increase initially from logging then decline in following decades as cut areas are marked. Maintenance program increases.
SOCIO-ECONOMIC	Local income declines Visitors & new arrivals find site & road closures & reduced services. Low logging levels & high visual quality may appeal to new arrivals & vacation-home owners.	High amenity values benefit new arrivals, vacation-home owners, & visitors, but income of residents may be seriously affected.	High logging output benefit residents. Visitors, new arrivals, & vacation-home owners see reduced visual quality problem. Enhanced management at developed sites occur.
CULTURAL RESOURCES	Low probability of disturbance as production is concentrated on widely roaded timberland. Avoidance strategy is effective.	Low probability of disturbance as amenity value emphasized & commodity production reduced.	High probability of disturbance from increase in logging. Expanded road system leads to increased vandalism.

TABLE 2.19 - COMPARISON OF ALTERNATIVES BY ACRES AND MANAGEMENT PRESCRIPTION [1]

PRESCRIPTION NUMBER AND THEME	ALTERNATIVE (ACRES)					
	A	B	C	D	E	H
1. WILDERNESS	527,938	527,938	527,938	552,306	537,828	527,938
2. WILD & SCENIC [2]	27,040	0 [3]	14,560	13,140	19,565	2,200
3. MINIMUM - TIMBER YIELD [4]	64,800	41,000	0	114,200	112,000	6,000
4. LIMITED - TIMBER YIELD [4]	156,700	66,055	79,800	51,430	116,400	64,919
5. MODIFIED - TIMBER YIELD [4]	65,100	114,799	134,321	107,147	96,700	78,072
6. FULL - TIMBER YIELD [4]	107,100	171,846	179,579	120,923	68,600	244,709
7. DEVELOPED RECREATION [5]	75,965	73,418	73,435	73,403	75,933	73,452
8. ADMINISTRATIVE SITES	564	564	564	564	564	564
9. SPECIAL INTEREST AREAS	5,093	899	2,333	899	5,213	899
10. SPECIAL MGMT. AREA (KINGS RIVER) [6]	24,368	24,368	24,368	0	14,478	24,368
11. EXPERIMENTAL FOREST	3,200	3,200	3,200	3,200	3,200	3,200
12. EXPERIMENTAL RANGE	4,580	4,580	4,580	4,580	4,580	4,580
13. RESEARCH NATURAL AREA	2,850	1,650	2,840	1,650	4,050	2,840
14. LAND EXCHANGE	41,470	41,160	41,160	41,160	391,940	41,160
15. DISPERSED RECREATION [7]	409,307	346,491	368,169	401,642	391,940	369,703
16. FRONT COUNTRY	137,459	130,180	130,490	119,500	127,260	134,050
[1] Numbers are approximate due to rounding [2] See Appendix for specific recommendations and designations. [3] Recommendations deferred under this alternative. [4] Includes only CAS land [5] Includes water area also. [6] Only includes acres within the Sierra National Forest Boundary [7] Includes both dispersed no harvest and dispersed with harvest						

TABLE 2.20 - COMPARISON OF AVERAGE ANNUAL OUTPUTS BY ALTERNATIVE FOR FIRST AND FIFTH DECADES Part 1 - Page 1 of 3

RESOURCE ELEMENT	BASE 1982	1980 RPA Goals for		ALTERNATIVE			
				A		B	
		1990	2030	Decade 1	Decade 5	Decade 1	Decade 5
RECREATION							
Developed Public (M RVD)	750	1950	2880	781.7	519.8	781.7	519.8
Developed Private (M RVD)	830			923.3	1890.2	923.3	1890.2
Dispersed (M RVD)	2033.6	3360	4160	2095.8	3330.7	2095.8	3330.7
Wilderness (M RVD)	220			462.8	617.0	462.8	617.0
Restricted, Useable OHV Areas (except Alt. B which is "Open")							
Summer (M Acres)	346			285.0	275.0	292.7	284.0
Winter (M Acres) [1]	168.5			110.5	105.5	115.5	115.5
Roads and Trails Open Only to OHV							
Summer (Miles) [2]	249			198	238	193	213
Winter (Miles) [3]	30			32	52	30	42
Roads and Trails Closed Only to OHV							
Summer (Miles)	160			30	34	30	38
Winter (Miles)	160			20	20	20	20
Visual Quality Index (%)	93.0			93.8	91.2	92.0	88.9
ROS CLASS							
Primitive	461.4				490.8		498.8
Semi-primitive (non-motorized)	79.2				108.5		105.1
Semi-primitive (motorized)	114.4				58.8		58.8
Roaded Natural	603.8				596.7		594.1
Rural	122.8				126.8		124.8
WILDLIFE AND FISH							
Bald Eagles (Number)	5-10			5-10	5-10	5-10	5-10
Peregrine Falcon (Pairs)	0			3	3	3	3
Deer (M Animals)	15.0			18.4	28.0	17.2	22.8
Spotted Owls (Pairs) [4]	130			108	94	121	81
SOHAs	0			29	29	26	26
Goshawk (Pairs)				50	50	50	50
Lahontan Cutthroat Trout (Pops.)	2			2	2	2	2
Paute Cutthroat Trout (Pops.)	2			2	2	2	2
Resident Fish (M Pounds)	100			90	95	100	95
Wildlife User Days (M WFUDs)	141.3			148.7	197.6	148.1	206.6
Fish User Days (M WFUDs)	329.7			495.6	658.7	453.6	480.2
Direct Habitat Improvement							
Wildlife (M Acres)	2.62			2.0	2.0	1.0	1.0
Fish (Acres or Structures)	3.0			90.0	110.0	28.0	42.0
[1] Includes areas suitable for over-snow-vehicle travel							
[2] Estimated number of miles, actual miles to be determined in Forest OHV Plan.							
[3] Does not include over-snow-vehicle routes (45 miles)							
[4] Numbers valid for comparison purposes. No adjustment made for habitat fragmentation.							

TABLE 2.20 - COMPARISON OF AVERAGE ANNUAL OUTPUTS BY ALTERNATIVE FOR FIRST AND FIFTH DECADES

Part 1 - Page 2 of 3

RESOURCE ELEMENT	BASE 1982	1980 RPA Goals for		ALTERNATIVE			
				A		B	
		1990	2030	Decade 1	Decade 5	Decade 1	Decade 5
RANGE							
Grazing (M AUMs)	35 0	38.1	40 2	38.0	40 6	35.6	35 3
TIMBER							
Allowable Sale Quantity (MMBF)	110.0	149 1	163.4	88 0	88.0	115.6	125.0
Allowable Sale Quantity (MMCF)	17 4	23.8	26.1	14.1	14.1	18 3	19 8
Reforestation (M Acres)	1.1	6.5	7.6	3.0	1 2	2 8	1.6
Timber Stand Improvement (M Acres)	0 5	4.9	5.0	4 1	2.6	2.1	5 1
WOOD PRODUCTS OTHER THAN SAWTIMBER							
Fuelwood (M Cords)	22 5			22.5	22.5	22.5	22.5
Biomass (M MCF)	0			No Projection Made			
WATER							
Quality (MM Ac Ft. at Management Objectives)	2.514	1.882	1.903		2.538		2.590
Increased Quantity (MM Ac Ft.)	2.565				0.035		0 043
Watershed Improvement (Acres)		270	310	226	0	151	0
LANDS AND MINERALS							
Minerals (Operating Plans)	21	53	69	15	20	15	20
Land Acquisition (Acres)		500	0	200	0	0	0
TRANSPORTATION							
Trail Const./Reconst (Miles)	26 0	54.0	42 0	47.0	0	26 0	18.0
Road Const. (Miles)	36 0			17	1	16	1
Road Reconstruction (Miles)	41.0			26	4	24	1
Maintained Road System (Annual Miles)	2550			2630	2820	2620	2850

TABLE 2.20 - COMPARISON OF AVERAGE ANNUAL OUTPUTS BY ALTERNATIVE FOR FIRST AND FIFTH DECADES Part 1 - Page 3 of 3

RESOURCE ELEMENT	BASE 1982	1980 RPA Goals for		ALTERNATIVE			
				A		B	
		1990	2030	Decade 1	Decade 5	Decade 1	Decade 5
FACILITIES							
Dams and Reservoirs							
F.S. (Number)	0		0	0	0	0	
Other Federal (Number)	0		0	0	0	0	
Other State/Local (Number)	3		3	3	3	3	
Private (Number)	25		25	25	25	25	
Administrative Sites							
F.S. Owned (Number)	26		20	20	21	20	
Leased (Number)	6		6	5	5	4	
PROTECTION							
Total Fuel Treatment (Acres)	0	3000	2800	7020	6310	3300	4700
Expected Acres Burned by Wildfire							
Intensity Level	1	36		46	53	53	60
	2	91		102	127	120	146
	3	221		91	113	166	129
	4	429		501	541	577	619
	5	577		330	582	578	665
	6	924		1093	988	1046	1130
HUMAN RESOURCES							
Programs (Enrollees)	38	16	16	38	38	38	38
TOTAL BUDGET (MMS)							
	18 7	18 9	20.8	23 1	26 9	19.1	29.3

TABLE 2.20 - COMPARISON OF AVERAGE ANNUAL OUTPUTS BY ALTERNATIVE FOR FIRST AND FIFTH DECADES Part 2 - Page 1 of 3

RESOURCE ELEMENT	ALTERNATIVE							
	C		D		E		H	
	Decade 1	Decade 5	Decade 1	Decade 5	Decade 1	Decade 5	Decade 1	Decade 5
RECREATION								
Developed Public (M RVD)	781.7	519.8	723.6	342.9	723.6	342.9	781.7	519.8
Developed Private (M RVD)	923.3	1980.2	856.4	1237.7	856.4	1237.1	923.3	1890.2
Dispersed (M RVD)	2095.8	3330.7	2095.8	3330.7	2095.8	3330.7	2095.8	3330.7
Wilderness (M RVD)	462.8	617.0	462.8	617.0	462.8	617.0	462.8	617.0
Restricted, Usable OHV Areas (except Alt. B which is "Open")								
Summer (M Acres)	285.0	275.0	292.7	284.0	285.0	275.0	275.0	265.0
Winter (M Acres) [1]	110.5	105.5	115.5	115.5	110.5	105.5	107.0	102.0
Roads and Trails Open Only to OHV								
Summer (Miles) [2]	198	238	193	193	200	260	200	260
Winter (Miles) [3]	32	52	30	30	40	80	40	80
Roads and Trails Closed Only to OHV								
Summer (Miles)	30	34	30	30	25	20	25	20
Winter (Miles)	20	20	20	20	20	20	20	20
Visual Quality Index (%)	91.9	88.4	92.5	90.9	92.9	90.4	91.5	87
ROS CLASS								
Primitive		486.0		500.8		500.8		485.0
Semi-primitive (non-motorized)		106.5		113.5		109.5		104.5
Semi-primitive (motorized)		60.6		60.8		75.8		53.8
Roaded Natural		592.5		581.7		574.7		598.3
Rural		135.0		124.8		124.8		140.0
WILDLIFE AND FISH								
Bald Eagles (Number)	5-10	5-10	5-10	5-10	7-12	7-12	5-10	5-10
Peregrine Falcon (Pairs)	3	3	3	3	6	6	3	3
Deer (M Animals)	17.6	25.4	15.7	15.6	20.2	36.9	13.1	9.6
Spotted Owls (Pairs) [4]	112	65	129	105	124	103	107	57
SOHAs	226	26	34	34	29	29	26	26
Goshawk (Pairs)	50	50	50	50	50	50	50	50
Lahontan Cutthroat Trout (Pops)	2	2	2	2	2	2	2	2
Paiute Cutthroat Trout (Pops.)	2	2	2	2	2	2	2	2
Resident Fish (M Pounds)	90	110	100	115	85	120	90	70
Wildlife User Days (M WFUDs)	160.5	217.1	109.5	148.0	18.2	24.7	131.3	177.6
Fish User Days (M WFUDs)	374.5	506.4	255.4	345.3	42.6	57.7	30.6	41.4
Direct Habitat Improvement								
Wildlife (M Acres)	2.0	2.0	0.5	0.5	3.0	3.0	1.0	1.0
Fish (Acres or Structures)	120.0	130.0	17.0	24.0	130.0	160.0	30.0	34.0
[1] Includes areas suitable for over-snow-vehicle travel [2] Estimated number of miles, actual miles to be determined in Forest OHV Plan. [3] Does not include over-snow-vehicle routes (45 miles) [4] Numbers valid for comparison purposes. No adjustment made for habitat fragmentation								

TABLE 2.20 - COMPARISON OF AVERAGE ANNUAL OUTPUTS BY ALTERNATIVE FOR FIRST AND FIFTH DECADES Part 2 - Page 2 of 3

	ALTERNATIVE							
RESOURCE ELEMENT	C		D		E		H	
	Decade 1	Decade 5	Decade 1	Decade 5	Decade 1	Decade 5	Decade 1	Decade 5
RANGE								
Grazing (M AUMs)	41.8	42.5	33.6	35.0	25.0	25.0	40.0	40.0
TIMBER								
Allowable Sale Quantity (MMBF)	138.0	150.3	75.2	78.4	77.0	77.0	147.5	147.5
Allowable Sale Quantity (MMCF)	22.2	23.9	11.9	12.5	12.3	12.3	23.5	23.5
Reforestation (M Acres)	5.2	1.9	2.2	1.1	2.3	1.1	5.7	1.9
Timber Stand Improvement (M Acres)	2.1	5.0	1.7	3.0	2.6	1.0	2.8	5.9
WOOD PRODUCTS OTHER THAN SAWTIMBER								
Fuelwood (M Cords)	22.5	22.5	16.0	16.0	22.5	22.5	22.5	22.5
Biomass (M MCF)	No projection made							
WATER								
Quality (MM Ac.Ft. at Management Objectives)		2.558		2.557		2.513		2.591
Increased Quantity (MM Ac Ft.)		0.041		0.009		0.042		0.044
Watershed Improvement (Acres)	310	0	91		226		226	0
LANDS AND MINERALS								
Minerals (Operating Plans)	25	35	10	12	10	12	20	25
Land Acquisition (Acres)	500	0	0	0	200	0	0	0
TRANSPORTATION								
Trail Const./Reconst (Miles)	47.0	0	13.0	9.0	68.0	0	42.0	0
Road Const. (Miles)	30	1	1	1	16	1	26	1
Road Reconstruction (Miles)	45	1	1	1	32	2	40	1
Maintained Road System (Annual Miles)	2685	2950	2560	2610	2620	2820	2665	2890

TABLE 2.20 - COMPARISON OF AVERAGE ANNUAL OUTPUTS BY ALTERNATIVE FOR FIRST AND FIFTH DECADES Part 2 - Page 3 of 3

RESOURCE ELEMENT	ALTERNATIVE								
	C		D		E		H		
	Decade 1	Decade 5	Decade 1	Decade 5	Decade 1	Decade 5	Decade 1	Decade 5	
FACILITIES									
Dams and Reservoirs									
F S. (Number)	0	0	0	0	0	0	0	0	
Other Federal (Number)	0	0	0	0	0	0			
Other State/Local (Number)	3	3	3	3	3	3			
Private (Number)	25	25	25	25	25	25	25	25	
Administrative Sites									
F.S. Owned (Number)	24	22	16	14	16	10	15	14	
Leased (Number)	5	5	5	5	6	3	4	4	
PROTECTION									
Total Fuel Treatment (Acres)	6500	4920	1800	1180	6800	6280	6500	4500	
Expected Acres Burned by Wildfire									
Intensity Level	1	45	51	64	72	45	53	44	50
	2	99	122	154	188	102	128	98	120
	3	85	109	368	311	89	113	85	108
	4	484	522	761	840	501	554	481	512
	5	319	558	1172	974	328	581	317	548
	6	1058	952	1561	1449	1091	992	1051	935
HUMAN RESOURCES									
Programs (Enrollees)	38	38	38	38	38	38	38	38	
TOTAL BUDGET (MM\$)									
	25.0	36.2	14.1	20.1	20.9	23.7	25.8	36.6	

Table 2.21 - summarizes the yield classes for timber management. Appendix C in the Forest Land and Resource Management Plan contains a detailed description of the process used to identify land capable, available, and tentatively suited (CAS) for timber production. CAS land is assigned to one of four timber yield classes depending on the theme of each alternative, prescriptions compatible with the alternative program direction, costs and benefits, management requirements applied, and the FORPLAN linear computer program modeling procedure. Amount of land included in each of four timber yield classes provides for a comparison of scope and management intensity. Description of the four yield classes are:

Full-Timber Yield land (Class I) is managed principally using even-aged silvicultural systems. Rate of harvest is primarily limited by economics, dispersion of regeneration harvest units, minimum rotation age for second-growth timber, and allowable sale quantity.

Modified-Timber Yield land (Class II) is managed using even-aged and uneven-aged silvicultural systems. The total amount of regeneration harvest in each decade is limited by a need for more physical dispersion of that harvest for production of other Forest resource values. The rate at which Modified-Timber Yield land is regenerated in any one decade is about half of what is possible on Full-Timber Yield land.

Limited-Timber Yield land (Class III) is managed principally using uneven-aged silvicultural systems. Intensity of timber management on this land must be limited to assure protection and production of other Forest resources.

Minimum-Level Management land (Class IV) is otherwise available and capable timber land on which no timber management is planned.

Table 2.22 - contains a summary of acres harvested by silvicultural systems in the first and fifth decades and maximum LTSY. Acres harvested by silvicultural system reflect amount of timber land assigned to the four timber yield classes and management requirements necessary to carry out the theme of the alternative. The higher the level of timber production the greater the amount of clearcutting in the early decades (Alternatives C and H). In these alternatives many stands will be scheduled for regeneration in the next three decades. Little intermediate harvest will occur in the first decade. Amounts of clearcutting decreases and intermediate harvest will increase in decade five in all alternatives as more existing plantations and timber regenerated in the first decade reach commercial size.

The maximum LTSY displayed for Alternatives B, C, D and H is the theoretical timber yield if the Forest is fully regulated and the prescriptions maximizing timber yield always implemented. (See Appendix I for description of fully regulated forest.) Achieving this level of continuous timber production is not likely. Variation in LTSY between these alternatives is primarily due to amount of land assigned to each timber yield class. The LTSY displayed for Alternatives A and E is based upon the prescriptions selected in the planning and analysis process. Therefore, the difference in LTSY between these two alternatives is due to the different prescriptions selected.

TABLE 2.21 - TIMBER MANAGEMENT INTENSITY AREAS (M acres)

TIMBER YIELD CLASS [1]	ALTERNATIVES					
	A	B	C	D	E	H
I	107.1	171.9	179.6	120.9	68.6	244.7
II.	65.1	114.8	134.3	107.1	96.7	78.1
III	156.7	66.0	79.8	51.0	116.4	64.9
IV	64.8	41.0	0	114.2	112.0	6.0
TOTAL	393.7	393.7	393.7	393.7	393.7	393.7
[1] Also referred to as regulation class						

TABLE 2.22 - SUMMARY BY SILVICULTURAL SYSTEMS OF ACRES UTILIZED TO MAXIMIZE LONG-TERM SUSTAINED YIELD (LTSY)

ASSESSMENT VARIABLE (Unit of Measure)	Decade	ALTERNATIVES					
		A	B	C	D	E	H
Clearcut (acres)	1	115,500	24,400	48,000	19,000	11,600	51,900
	5	58,200	13,600	9,600	9,700	4,700	8,200
Shelterwood (acres)	1	111,700	1,700	2,600	1,600	4,000	3,100
	5	53,100	2,800	21,100	1,600	0	15,200
Intermediate (acres)	1	117,400	11,300	0	0	18,780	0
	5	517,400	39,300	41,000	11,500	18,780	40,900
Selection (acres)							
Group Selection	1	12,500	0	0	0	7,800	0
	5	51,000	0	0	0	6,400	0
Stand Maintenance	1	127,200	28,200	27,900	17,600	26,900	15,100
	5	527,200	28,200	27,900	17,600	35,100	15,100
Maximum Long-Term Sustained Yield							
(MMBF/Decade)		107.8	156.9	173.1	126.1	95.1	172.9
(MMCF/Decade)		17.1	24.9	27.5	20.0	15.1	27.4

TABLE 2.23 - shows a range of acres allocated by Alternative for Special Areas. The range for Special Interest Areas is between three established areas totaling 899 acres in Alternatives B, D and H, to eight areas totaling 5213 acres in Alternative E. The range for Research Natural Areas is between two established and one recommended in Alternatives B and D, to two established and three recommended areas in Alternative E. The acres range from 1650 acres to 4050 acres. The

acreage for the Teakettle Experimental Forest, San Joaquin Experimental Range, and Kings River Special Management Area is constant in all alternatives.

Management direction, common to all alternatives, protects Special Areas from the impacts of other resource management activities.

TABLE 2.23 - SPECIAL AREAS BY ALTERNATIVE (In Acres)

	ALTERNATIVE					
	A	B	C	D	E	H
SPECIAL INTEREST AREAS						
Courtright Intrusive Contract Zone Geological Area *	11	11	11	11	11	11
Kings Cavern Geological Area *	388	388	388	388	388	388
Carpenteria Botanical Area *	500	500	500	500	500	500
Nelder Grove Historical Area **	1,434		1,434		1,434	
McKinley Grove Botanical Area **	520				520	
Dinkey Creek Roof Pendant Geological Area **	6640				640	
Crater Lake Meadow Geological Area **					120	
Devil's Peak Botanical Area **	1,600				1,600	
SUBTOTALS	5,093	899	2,333	899	5,213	899
RESEARCH NATURAL AREAS						
Backbone Creek *	430	430	430	430	430	430
San Joaquin Blue Oak-Digger Pine *	80	80	80	80	80	80
Bishop Creek Pacific Ponderosa Pine **	1,140	1,140	1,140	1,140	1,140	1,140
Home Camp Creek White Fir-Red Fir **	1,200		1,200		1,200	1,200
Heitz Meadow Mixed Conifer **					1,200	
SUBTOTALS	2,850	1,650	2,850	1,650	4,050	2,850
EXPERIMENTAL FOREST						
Teakettle Creek *	3,200	3,200	3,200	3,200	3,200	3,200
EXPERIMENTAL RANGE						
San Joaquin *	4,580	4,580	4,580	4,580	4,580	4,580
SPECIAL MANAGEMENT AREA						
Kings River *	48,668	48,668	48,668	24,300	38,778	48,668
TOTALS						
	64,391	58,997	61,631	58,997	65,711	60,197
* Existing Areas ** Candidate Areas						

LAND CLASSIFICATION FOR TIMBER

Table 2.24 summarizes land classification for timber management by alternative. See Appendix C of the Forest Land and Resource Management Plan for a more detailed description of the process used to evaluate suitability of land for timber production. In summary, forest land must pass six tests before it can be considered tentatively suitable for further analysis in FORPLAN. From the tentatively suitable land, FORPLAN selects land where timber harvest may be conducted within economic and other resource constraints that are appropriate and necessary to meet the goals of each alternative. Land not selected for timber production in the FORPLAN analysis is excluded from regulated timber production.

The five tests for determining tentatively suitable land is:

- 1 Land is forested or has been forested
- 2 Land has not been legislatively or administratively withdrawn from timber production

- 3 Land is capable of producing crops of industrial wood (culmination of mean annual increment greater than 20 cubic feet per acres per year)
4. Timber harvest operations will not result in irreversible damage to soil and watershed values
5. Current scientific knowledge, practices and experience assure the land is capable of being regenerated within 5 years of "final harvest".

Land that does not pass one of the tests is not analyzed further. For example, land designated as Wilderness has been withdrawn from timber production and will have no further evaluation.

Land not passing through the five tests, plus land not selected for scheduled timber harvest, is designated as not suitable for timber production. However, incidental timber may be harvested from such land, if necessary, to achieve other planned resource goals.

Land not selected for scheduled timber harvest, because it does not meet the goals of an individual alternative, is designated as not suitable. Suitable land is lowest in the Amenity and Low Budget Alternatives and highest in the RPA and Market Alternatives.

TABLE 2.24 - LAND CLASSIFICATION FOR TIMBER BY ALTERNATIVE [1]

	ALTERNATIVE					
	A	B	C	D	E	H
1. NON-FORESTED LAND (INCLUDES WATER)	712.3	712.3	712.3	712.3	712.3	712.3
2. FORESTED LAND	562.9	562.9	562.9	562.9	562.9	562.9
3. WITHDRAWN FROM TIMBER PRODUCTION	142.4	142.4	142.4	142.4	142.4	142.4
4. NOT CAPABLE OF PRODUCING INDUSTRIAL WOOD	9.3	9.3	9.3	9.3	9.3	9.3
5. PHYSICALLY UNSUITED						
a. Irreversible damage to soils, watersheds, or productivity.	8.2	8.2	8.2	8.2	8.2	8.2
b. Non-regenerable within 5 years of final harvest.	9.3	9.3	9.3	9.3	9.3	9.3
6. TENTATIVELY SUITABLE TIMBER BASE	393.7	393.7	393.7	393.7	393.7	393.7
7. NOT SUITABLE FOR TIMBER [2]	64.8	41.0	0	114.2	112.0	6.0
8. TOTAL UNSUITABLE ACRES	234.0	210.2	169.2	283.4	281.2	175.2
9. TOTAL SUITABLE ACRES	328.9	352.7	393.7	279.5	281.7	387.7
10. TOTAL NATIONAL FOREST ACRES	1,275.2	1,275.2	1,275.2	1,275.2	1,275.2	1,275.2
[1] Acres in first decade [2] Lands where scheduled timber harvest would not be compatible with the resource emphasis assigned to such land in a particular alternative. The other is land not needed to produce the allowable sale quantity. This occurs where a constraint unique to the alternative limits the allowable sale quantity below the potential yield of the CAS land.						

2.10 ECONOMIC AND TRADEOFFS ANALYSIS

2.10.1 Introduction

The purpose of this section is to compare economic values and significant tradeoffs (A full discussion of the relationship between economic values and net public benefits is contained in Appendix D.) This comparison is accomplished using six tabular displays.

Table 2.25, Summary Comparison of Economic Effects, presents a detailed breakdown of total costs including capital investments and operations and maintenance, cash and noncash benefits, national and local revenues, and income and employment figures by alternatives

Table 2.26, PNV Comparison - Marginal Cost of Constraints, displays the opportunity costs in terms of PNV of the MMRs, MIRs, and common Forest constraints

Table 2.27, PNV Comparison of Alternatives, shows a breakdown of discounted benefits and costs by the major contributing resources for each alternative.

Table 2.28, Average Annual Cash Flows and Noncash Benefits by Alternative, displays total costs, noncash benefits, returns to treasury, and net cash flow by alternative for decades one and five.

Table 2.29, Indicators of Responsiveness to Major Issues and National Concerns, presents relationships between PNV, net cash flow and noncash benefits, displays first decade local income and employment effects, and shows other indicators that reflect the alternative's responsiveness to major issues.

Table 2.30, Summary Listing of Reasons for Change in PNV, lists the alternatives by decreasing PNV, explains why the PNV is declining, and indicates what social groups are significantly affected by the tradeoff of PNV for nonpriced benefits and local issue resolution.

2.10.2 Narrative of Table 2 25

Total benefits from the Forest increase over time in all alternatives, as do costs. By the fifth decade benefits range from a 20% increase over 1982 levels, where budgets are heavily constrained, to more than 30% above 1982 levels with unconstrained budgets. Total costs needed to achieve these benefits range from no change to more than 70% above 1982 levels

Benefit increases are primarily from recreation, timber, and water while cost increases are primarily due to timber, recreation, and roads. Noncash benefits exceed cash benefits by far. In most alternatives, noncash benefits exceed 90% of total benefits. This is caused primarily by heavy dispersed recreation and water production. Cash benefits are directly related to the timber, developed recreation and range programs.

Recreation benefits increase as demand and use increase over the planning period. Timber and water benefits increase, in some alternatives as, timber harvest and associated increases in water yield increase. Timber benefits also increase as projected timber prices rise over the planning period. As a result of projected unit cost increases for timber, associated costs increase to provide greater quality and quantity of outputs in the alternatives.

Capital investment costs are composed mostly of road construction, recreational facility construction, and timber site preparation, planting, and improvement work. These costs vary by alternative in relation to the amount of timber production and the size of the recreation program.

Employment and income opportunities are generated primarily by the recreation and timber programs and their related support business. The range program also contributes, but to a much lesser extent. Other resources contribute only minor amounts. Changes in local employment opportunities in the first decade range from a decrease of 23% to an increase of 14%, compared to current levels.

TABLE 2.25 - SUMMARY COMPARISON OF ECONOMIC EFFECTS BY ALTERNATIVE

		ALTERNATIVE					
		PRF A	CUR B	RPA C	LBU D	AMN E	MKT H
		MILLIONS OF 1982 DOLLARS PER YEAR					
1. Total Benefits 1982 = 207.1							
Decade	1	217.1	218.9	228.2	206.4	214.1	228.0
	2	228.8	232.1	240.2	220.4	225.4	240.5
	3	237.2	242.2	251.6	228.9	233.7	252.5
	4	245.7	252.2	262.4	238.2	242.0	262.9
	5	256.5	263.1	278.1	249.0	252.2	275.4
2. Returns to the U.S. Treasury 1982 = 3.6*							
Decade	1	12.8	15.4	18.2	9.8	11.5	19.4
	2	16.8	21.9	23.9	13.0	15.1	25.8
	3	19.4	25.7	28.3	15.2	17.6	30.3
	4	22.7	30.4	33.7	18.2	20.7	36.1
	5	27.3	35.8	42.6	22.2	24.7	42.1
3. Non-Cash Benefits 1982 = 203.5							
Decade	1	204.3	203.5	210.0	196.6	202.6	208.6
	2	212.0	210.2	216.3	207.4	210.3	214.7
	3	217.8	216.5	223.3	213.7	216.1	222.2
	4	223.0	221.8	228.7	220.0	221.3	226.8
	5	229.2	227.3	235.5	226.8	227.5	233.3
4. Total Costs 1982 = 22.0							
Decade	1	24.2	20.5	26.3	15.8	22.1	27.1
	2	24.9	23.9	28.3	17.8	22.8	29.3
	3	26.0	26.2	30.8	19.2	23.5	32.4
	4	26.4	28.1	31.9	20.4	23.7	33.5
	5	28.0	30.7	37.6	21.9	24.9	37.9
5. Non-Federal Cost 1982 = 0.6							
Decade	1	0.6	0.6	0.6	0.6	0.6	0.6
	2	0.6	0.6	0.6	0.6	0.6	0.6
	3	0.6	0.6	0.6	0.6	0.6	0.6
	4	0.6	0.6	0.6	0.6	0.6	0.6
	5	0.6	0.6	0.6	0.6	0.6	0.6
1. Total benefits include both cash returns to the U.S. Treasury and non-cash benefits. Total benefits are the estimated total amount consumers are willing to pay for Forest outputs, whether or not this amount is actually collected by the U.S. Government.							
2. Returns to the U.S. Treasury are the estimated payments by consumers of Forest outputs collected by the Federal Government.							
3. Non-cash benefits are the difference between the total estimated amount that consumers would be willing to pay for Forest outputs and actual collections by the Federal Government. At present it is national policy to provide most Forest outputs either at no charge to consumers or at a charge less than the total willingness to pay value.							
4. Total costs include the Federal and non-Federal costs needed to produce Forest outputs.							
5. Non-Federal costs include all costs paid by non-Federal cooperators (examples include State Fish and Game habitat improvement expenditures, range capital investments made by the permittee, etc. On many forests non-Federal costs will be negligible).							
* 1982 was the base year figured for treasury returns. It was a depression year in the local timber industry, causing receipts to be much lower than normal because little of the timber that was sold was actually cut and paid for by purchasers. Treasury receipts have rebounded to over \$10 million in recent years.							

		ALTERNATIVE					
		PRF A	CUR B	RPA C	LBU D	AMN E	MKT H
		MILLIONS OF 1982 DOLLARS PER YEAR					
6. Federal Cost 1982 = 21.4							
Decade	1	23.6	19.9	25.7	15.2	21.5	26.5
	2	24.3	23.3	27.7	17.2	22.2	28.7
	3	25.4	25.6	30.2	18.6	22.9	31.7
	4	25.8	27.5	31.3	19.8	23.1	32.9
	5	27.4	30.1	37.0	21.3	24.3	37.3
7. Total Budget 1982 = 18.7*							
Decade	1	23.1	19.1	25.0	14.1	20.9	25.8
	2	23.8	22.5	27.0	16.1	21.6	28.0
	3	24.9	24.9	29.5	17.4	22.3	31.1
	4	25.3	26.8	30.5	18.6	22.5	32.2
	5	26.9	29.3	36.2	20.1	23.7	36.6
8. Operation and Maintenance Cost 1982 = 13.9							
Decade	1	16.9	12.4	14.0	4.8	15.8	14.1
	2	17.4	13.3	14.4	10.9	16.3	14.7
	3	18.2	14.6	16.2	11.8	16.8	16.6
	4	18.5	15.0	17.1	12.6	16.9	17.5
	5	19.6	16.3	19.0	13.4	17.8	18.8
9. Capital Investment Cost 1982 = 8.1							
Decade	1	7.3	8.1	12.3	6.0	6.3	13.0
	2	7.5	10.6	13.9	6.9	6.5	14.6
	3	7.8	11.6	14.6	7.4	6.7	15.8
	4	7.9	13.1	14.8	7.8	6.8	16.0
	5	8.4	14.4	18.6	8.5	7.1	19.1
10. Roads 1982 = 2.4							
Decade	1	2.2	2.7	3.4	1.9	2.0	3.5
	2	2.0	2.3	3.0	2.2	1.8	3.1
	3	1.0	1.6	2.0	2.2	0.8	2.1
	4	0.8	1.5	2.0	2.0	0.6	2.1
	5	0.5	2.9	4.0	0.9	0.3	4.2
11. Other Capital Investment 1982 = 5.4							
Decade	1	5.1	5.4	8.9	4.1	4.3	9.5
	2	5.5	8.3	10.9	4.7	4.7	11.5
	3	6.8	10.0	12.6	6.2	5.9	13.7
	4	7.1	11.6	12.8	6.8	6.2	13.9
	5	7.9	11.5	14.6	7.6	6.8	14.9
6 Federal costs are all costs borne by the Federal Government. Includes costs paid from general tax receipts, costs paid from funds set aside from receipts (such as KV) and costs paid by accepting in kind payments in lieu of cash (such as purchaser road credits) Federal cost also equals total cost less non-Federal cooperator cost.							
7 Total budget is equal to Federal cost less the cost of fighting forest fires (FFF).							
8 Operation and maintenance costs include the cost of administration, management, and protection of existing resources and capital assets Operation and maintenance cost equals total cost less capital investment.							
9 Capital investment costs are the costs of creating or enhancing capital assets Costs of treatments or activities that generate outputs or benefits over more than one period are capital investment costs							
10 Total road investments.							
11 Other capital investment is all investment cost other than roads. Includes both investments in facilities and timber plantations							
* Budget increases are due to real price increases and increased recreational visitors							

TABLE 2.25 - SUMMARY COMPARISON OF ECONOMIC EFFECTS BY ALTERNATIVE

		ALTERNATIVE					
		PRF A	CUR B	RPA C	LBU D	AMN E	MKT H
		MILLIONS OF 1982 DOLLARS PER YEAR					
12. 25% Receipt Shares (millions of 1982 dollars per year) 1982 = 0.9 *							
Decade	1	3.2	3.9	4.6	2.5	2.9	4.9
	2	4.2	5.5	6.0	3.3	3.8	6.4
	3	4.9	6.4	7.1	3.8	4.4	7.5
	4	5.7	7.6	8.5	4.6	5.2	9.0
	5	6.8	8.9	10.6	5.6	5.8	10.6
13. County Yield Tax Revenues (millions of 1982 dollars per year) 1982 = 0.5							
Decade	1	0.4	0.4	0.5	0.3	0.3	0.6
	2	0.5	0.6	0.7	0.4	0.4	0.7
	3	0.6	0.7	0.8	0.4	0.5	0.9
	4	0.7	0.9	1.0	0.5	0.6	1.0
	5	0.8	1.0	1.2	0.6	0.7	1.2
14. Income, first decade (millions of 1982 dollars per year)							
	58.5	65.5	73.5	54.4	57.0	75.0	
15. Employment, first decade (thousands of persons years)							
	3.9	4.4	4.9	3.4	3.8	5.0	
16. Discounted Benefits (millions of 1982 dollars) **							
	1985	1988	2247	1697	1791	2236	
17. Discounted Costs (millions of 1982 dollars) **							
	507	502	642	358	448	663	
18. Present Net Value (millions of 1982 dollars) **							
	1388	1486	1605	** 1339	1343	1574	
19. Benefit/Cost Ratio							
	3.7	4.0	3.5	4.7	4.0	3.4	
12. Twenty-five percent of returns to the U.S. Treasury are distributed back to the counties in proportion of the Sierra National Forest's acreage in the County							
13. Under California law, a yield tax currently equal to 2.9% of timber harvest value is levied on timber operators.							
14. Total personal income including wages, salaries, proprietor's income, and rents was estimated for the Forest's zone of influence. See Appendix B for description of the input - output model used to make estimates.							
15. Employment generated by the Forest in the zone of influence was estimated with an input-output model. See Appendix B							
16. Discounted benefits over the planning period.							
17. Discounted costs over the planning period.							
18. Discounted benefits less total discounted costs.							
19. Discounted benefits divided by total discounted costs.							
* 1982 was a depression year in the local timber industry causing receipts to be much lower than normal because little of the timber that was sold was actually cut and paid for by purchasers.							
** Min-level has been subtracted out.							

Minimum Management and Timber Policy Requirements
 - Sets of minimum management and timber policy constraints from the base maximum PNV benchmark without MMRs are applied to create a maximum PNV benchmark with minimum management requirements (MMRs). In total, the MMR's cost \$114.6 million; in terms of reduced PNV, a drop of 6.4%. The viable population/diversity (spotted owl) constraint has the greatest effect, followed by the dispersion, water/soil productivity, and nondeclining yield constraints. The CMAI and T&E species constraints did not affect the PNV of the Forest and therefore are not shown. Detailed descriptions of these constraints are contained in Appendix B.

The viable population/diversity constraint maintains sufficient suitable spotted owl habitat, such that the continued existence of an adequate number and distribution of reproductive pairs is ensured throughout the existing range. It is also an important factor in maintaining viable populations of goshawks and other mature forest and dense canopy dependent species, such as marten and fisher. This constraint also helps maintain visual quality and vegetative diversity. The cost of this constraint in terms of reduced PNV is \$32.5 million or 28.4% of the PNV drop. This reduction in PNV is primarily caused by reduced timber and associated water yields. Although recreational experiences are enhanced by this constraint, recreational benefits and costs that can be priced are not affected.

The dispersion constraint spreads regeneration harvest units over the suitable forest land base, while leaving space for future harvest between openings created by regeneration harvest. This helps to maintain visual quality, provides filter blankets for reducing soil movement associated with timber harvest, and provides a variety of vegetation for wildlife. The cost of this constraint in terms of reduced PNV is \$25.2 million or 22% of the PNV drop. This reduction in PNV is caused by reduced timber and associated water yields. Recreational experiences are enhanced by this constraint, yet recreational benefits and costs that can be priced are not affected.

The primary objective of the soil and water constraint is to protect riparian habitat and to conserve soil and water resources in such a manner that no significant or permanent impairment of productivity occurs. Approximately 90% of this constraint was generated from the need to protect riparian habitat. This constraint provides protection for streams, streambanks, shorelines, lakes, wetlands, and the plants and animals dependent on riparian areas. It helps prevent adverse change in water temperature, chemistry, sedimentation, and channel blockages. The constraint also limits the disturbance on sensitive watershed land to avoid soil loss, to prevent activation of massive land failures, and to prevent

degradation of water quality by sedimentation. The cost of this constraint in terms of reduced PNV is \$18.9 million or 16.5% of the PNV drop. The reduction in PNV is caused by reduced timber and associated water yields. This constraint helps maintain the recreational experiences for fishermen, but as in the other constraints, has no effect on priced recreational costs or benefits.

The nondeclining yield constraint requires a minimum level of timber harvest and does not permit the timber harvest in any decade to fall below the preceding decade's harvest. It provides a relatively constant flow of timber, which in turn tends to provide some stability to employment in the timber industry. The cost of this constraint in terms of reduced PNV is \$13.8 million or 12% of the PNV drop. Only benefits and costs for timber and associated water yields are affected by this constraint.

The above four constraints account for approximately 79% of the reduction in PNV between the two benchmarks, the remaining \$24.3 million reduction is due to overlap.

Minimum Implementation Requirements - Scenic highway constraints are minimal implementation requirements applied to assure minimum acceptability and implementability on the ground. The scenic highway constraint maintains foreground and middleground retention and partial retention as a minimum degree of protection along State Highway 41 leading to Yosemite National Park, State Highway 49 between Oakhurst and Mariposa, State Highway 168 to Huntington Lake, and State Highway 140 along the Merced River. This constraint causes PNV to decline by \$10.6 million, which is attributable to a decline in timber harvest and associated water yields. Overall, this reduction in PNV is not significant, as it is less than a 1% decrease from the maximum PNV with MMR's benchmark.

Forest Constraints - These are constraints needed to insure implementation at the local level. Three constraints fell into this category. 1) around highly developed recreational reservoirs, foreground views are managed for partial retention and middleground views for modification, 2) a shelterwood constraint is required when 20% of mixed conifer regeneration is to be by shelterwood because of the high percentage of white fir in some mixed conifer stands and 3) management of the red fir forest type is limited by ability to successfully establish regeneration following final harvest. While there is demonstrated evidence, steps necessary to successfully regenerate stands after harvest are known and have been successfully carried out, there is insufficient evidence this success can be achieved on a large scale. Therefore, clearcutting is limited to 2,000 acres per decade until there is demonstrated ability to successfully regenerate red fir harvest areas on a large scale. Together these constraints reduce PNV by \$1.2 million from that in the CEE Alternative, which is a loss of less than 1%.

Benefits and Costs - The loss in discounted benefits due to constraints is \$293.1 million, an 11.3% drop. Timber and water benefit losses account for 96% of the drop. Discounted costs drop \$166.7 million, or 20.4%. Timber costs account for over 97% of the total drop in cost.



TABLE 2.26 - PRESENT NET VALUE COMPARISON - MARGINAL COST OF CONSTRAINTS (In Millions of 1982 Dollars)

ID Code	Present Net Value	Change in Present Net Value [1]	Dis-counted Cost	Change in Dis-counted Cost [1]	Dis-counted Benefits	Change in Dis-counted Benefits [1]	Discounted Benefits By Resource					Discounted Costs by Category				
							Timber	Disp Rec [2]	Dev Rec	Water	Other	Timber	Roads	Disp Rec [2]	Dev Rec	Other [4]
FLW	1797.8	NA	817.6	NA	2615.4	NA	936.0	811.2	562.7	270.3	35.2	611.3	78.7	49.3	44.3	34.0
VPD	NA	-32.5	NA	-28.6	NA	-61.1	See Text for Discussion of Individual Constraint Effects on Resource Benefit and Cost Categories									
DSP	NA	-25.2	NA	-34.8	NA	-60.0										
WSD	NA	-18.9	NA	-14.4	NA	-33.3										
NDY	NA	-13.8	NA	-18.0	NA	-31.8										
BAL	NA	-24.3	NA	-31.3	NA	-55.6										
MMR	1683.2	-114.6	690.5	-127.1	2373.7	-241.7	784.4	811.8	562.7	185.9	28.5	483.9	75.6	48.2	44.3	38.5
SHC	NA	-10.6	NA	-28.4	NA	-39.0	See Text for Discussion of Individual Constraint Effects on Resource Benefit and Cost Categories									
CEE	1672.6	-10.6	662.1	-28.4	2334.7	-39.0	760.2	811.5	562.7	176.7	23.6	460.0	73.3	48.0	44.3	36.5
VCNS	NA	-1.2	NA	-11.2	NA	-12.4	See Text for Discussion of Individual Constraint Effects on Resource Benefit and Cost Categories									
MLV [5]	3890.2	NA	136.9	NA	4027.1	NA	0	238.1	0	3828.0	-39.0	0	0	4.6	132.3	0
NA	Indicates not applicable															
[1]	All Changes are measured incrementally from the maximum PNV without MMR's Benchmark.															
[3]	Other Discounted Benefits include Range and reduced Resource losses due to wildfire.															
[4]	Other Discounted Costs Include Range and Fire Management costs															
[5]	The minimum level benchmark shows the naturally occurring background benefits and fixed costs associated with maintaining the Sierra NF in Federal ownership. In order to display incremental tradeoffs, background benefits and fixed costs have been subtracted from the other benchmarks and alternatives.															
ID Code	Name															
FLW	Max PNV without MMRs															
VPD	Spotted Owl Constraint															
DSP	Dispersion Constraint															
WSD	Soil & Water Constraint (Approximately 90% riparian habitat)															
NDY	Non-declining Yield Constraint															
BAL	Balance Due to Overlap															
MMR	Max PNV with MMRs															
SHC	Scenic Highway Constraint															
CEE	Constrained Economic Efficiency															
VCMS	Visual Constraint at Major Reservoirs and Shelterwood Constraint															
MLV	Minimum Level															

This table lists the alternatives in order of decreasing PNV. However, using constraint subtraction to determine costs in PNV of individual constraints, as done in the Benchmark Analysis, is not intended here. Arranging alternatives by decreasing PNV does not reflect an incremental change in constraints, but rather the net effect of the interaction of a wide range of constraints and prescriptions in a variety of resource categories within the FORPLAN model. Direct comparison between individual benefit and cost categories may be misleading because many outputs have common costs of production that cannot be reliably separated and attributed to individual resources.

Discounted benefits range from \$2,246.6 million in the Resource Planning Act Alternative to \$1,696.5 million in the Low Budget Alternative. Resources contributing most of these changes were timber, dispersed recreation, developed recreation, and water. Timber benefits varied from \$703.5 million in the Market Alternative to \$400.8 million in the Low Budget Alternative. Dispersed Recreation benefits ranged from \$837.2 million in the Resource Planning Act Alternative to \$747.3 million in

the Low Budget Alternative. Water benefits varied from \$160.0 million in the Market Alternative to \$52.0 million in the Amenity Alternative. The Amenity and Preferred Alternatives have lower water benefits than the other alternatives because of reduced clearcutting and regeneration harvesting.

Discounted costs vary from \$663 million in the Market Alternative to \$358 million in the Low Budget Alternative. These changes are attributed primarily to Timber and Fire Management costs.

PNV varies from \$1,604.7 million in the RPA Alternative to \$1,338.7 million in the Low Budget Alternative. The largest changes in PNV are caused by changing timber output and associated water yields. Water yield varies directly with the amount of clearcut acres. Budget constraints in the Current and Low Budget Alternatives cause significant PNV declines in all resource areas. Reduced clearcut acres in the Amenity and Preferred Alternatives cause a significant PNV decline because of reduced timber output and associated water yield. Changes in Dispersed Recreation are primarily caused by changing WFUD outputs, which vary with the theme of the alternative.

TABLE 2.27 - PRESENT NET VALUE - COMPARISON OF ALTERNATIVES

Alternative	Present Net Value	Change In Present Net Value [1]	Dis-counted Cost	Change In Dis-counted Cost [1]	Dis-counted Benefits	Change In Dis-counted Benefits [1]	Discounted Benefits by Resource					Discounted Costs by Category				
							Disp Rec [2]	Timber	Dev Rec	Water	Other [3]	Timber	Roads	Disp Rec [2]	Dev Rec	Other [4]
C (RPA)	1604.7	-66.7	641.9	-9.0	2246.6	-75.7	837.2	674.9	562.7	148.7	23.1	443.2	72.4	48.9	44.3	33.1
H (MKT)	1573.8	-97.6	662.6	+11.7	2236.4	-85.9	786.0	703.5	562.7	160.0	24.2	465.0	74.7	47.0	44.3	31.6
B (CUR)	1486.5	-184.9	501.7	-149.2	1988.2	-334.1	769.4	590.4	504.5	103.2	20.7	335.1	55.1	48.7	38.0	24.8
A (PRF)	1387.7	-283.7	507.2	-143.7	1894.9	-427.4	776.9	457.4	562.7	52.9	45.0	243.0	38.4	61.2	36.9	127.7
E (AMN)	1343.5	-327.9	447.8	-203.1	1791.3	-531.0	874.6	409.0	447.2	52.0	8.5	208.2	36.6	50.7	36.9	115.4
D (LBU)	1338.7	-332.7	357.8	-293.1	1696.5	-652.8	747.3	400.8	469.4	67.8	11.2	233.9	32.5	44.1	28.2	19.1
MLV [5]	3890.2	NA	136.9	NA	4027.1	NA	238.1	0	0	3828.0	-39.0	0	0	4.6	0	132.3
[1] All changes are measured from the constrained economic efficiency alternative with the addition of visual constraints at major reservoirs and shelterwood constraints. [2] Dispersed Recreation includes Dispersed RVDs, Wilderness RVDs, and WFUDs. [3] Other Discounted Benefits include Range and reduced Resource losses due to wildfire. [4] Other Discounted Costs include Fire Management costs and range, watershed and administrative costs [5] The minimum level benchmark shows the naturally occurring background benefits and fixed costs associated with maintaining the Sierra NF in Federal ownership. In order to display incremental tradeoffs, background benefits and fixed costs have been subtracted from the alternatives. NA Indicates not applicable MLV Minimum Level																

Expenditures are greater than returns to the treasury in all alternatives in the first decade. However, by the fifth decade all alternatives have a positive net cash flow with returns to the treasury exceeding total costs

The primary reasons for negative cash flow in the first decade are high timber and road development costs in the RPA and Market Alternatives and high fire management, wildlife, recreation and administrative costs in the Preferred and Amenty Alternatives. Current and Low Budget Alternatives, with low first decade costs, have better first decade cash flows. Over time, however, the greatest changes from negative to positive cash flow will occur in the MKT, RPA, and CUR Alternatives because they will be more efficient than the other alternatives.

Cash receipts come primarily from timber production, with range production and developed recreation adding minor amounts to the total. In all alternatives, returns to the Treasury (cash receipts) increase at a faster rate than total Federal costs over time. Primary reasons for this trend are reduced road-building costs and real price increases for timber.

The negative cash flows in the first decade do not consider the large noncash benefits occurring in each alternative. Noncash benefits are generated primarily by dispersed recreation with water production also adding a significant amount.

Because of the Forest's ability to accommodate recreation of all kinds, noncash benefits are relatively uniform across the alternatives, compared to cash receipts. The noncash benefits increase over time in all alternatives due to predicted increases in recreation use.

TABLE 2.28 - AVERAGE ANNUAL CASH FLOWS AND NON-CASH BENEFITS
(Millions of Undiscounted Dollars Per Year)

Alternative	DECADE 1				DECADE 5			
	Net Cash Flow	Total Federal Cost	Returns to Treasury	Non-Cash Benefits [1]	Net Cash Flow	Total Federal Cost	Returns to Treasury	Non-Cash Benefits [1]
B (CUR)	-4.5	19.9	15.4	203.5	5.7	30.1	35.8	227.3
D (LBU)	-5.4	15.2	9.8	196.6	0.9	21.3	22.2	226.8
H (MKT)	-7.1	26.5	19.4	208.6	4.8	37.3	42.1	233.3
C (RPA)	-7.5	25.7	18.2	210.0	5.6	37.0	42.6	235.5
E (AMN)	-10.0	21.5	11.5	202.6	0.4	24.3	24.7	227.5
A (PRF)	-10.8	23.6	12.8	204.3	-0.1	27.4	27.3	229.2
[1] See Appendix B for detailed listing of benefits								

This table highlights major differences and/or similarities between alternatives in terms of major issues and national concerns. Chapters 2 and 4 need to be read to fully understand the differences between alternatives

PNV and net cash flow are indicators of concern to the taxpayer. They measure responsiveness to national issues of economy in governments and deficit reduction. PNV and net cash flow are both discussed in other tables in this section

County receipts, jobs available, and local income are indicators of local economic concerns. There is a high degree of correlation within these three categories. The alternative with the highest county receipts also has the highest local income and number of jobs available, while the alternative with the lowest county receipts has the lowest local income and number of jobs available. This relationship holds for all the alternatives.

Allowable sale quantity and acres of regeneration deal with the amount and intensity of timber management, a major issue in the Forest. Generally, the higher the timber output, the greater the acres of regeneration required, with the highest output alternatives doing regeneration almost entirely by clearcutting.

Visual quality is another major Forest issue. In this case, the higher the visual quality index, the better the overall visual quality in the Forest. The small changes between alternatives in visual quality index are somewhat misleading because the large amount of wilderness and other undisturbed land areas tend to overshadow

intensively managed areas where significant changes are occurring. The small changes in visual quality index do reflect significant differences between alternatives, particularly at the 3,500-7,000 foot elevation. There is little difference between alternatives above 7,000 feet.

The amount of late seral stage forest on CAS land and spotted owl management are issues at the national, regional, and Forest level. Generally, the lower the allowable sale quantity, the greater the amount of late seral stage forest remaining at the end of the fifth decade. It should be pointed out that large amounts of late seral stage forest remain within wilderness areas under all alternatives, which is not reflected in this table.

Wild and Scenic River inventories, studies, and recommendations are also major issues at the national and local level. The miles of river recommended for classification in each alternative are shown. Some alternatives, such as the Current, defer study on all or part of the inventoried rivers.

The conclusions from analyzing Table 2.29 include: PNV, net cash flow, non-cash benefits that can be valued, county receipts, income and employment are all positively correlated with timber production.

There is a tradeoff between the major issues of PNV, net cash flow, non-cash benefits that can be valued, county receipts, income and employment, and reduced clearcutting, maintenance of visual quality, late seral stage retention and spotted owl habitat retention. These tradeoffs encompass the most difficult decisions to be made in this Forest Plan.

TABLE 2.29 - INDICATORS OF RESPONSIVENESS TO MAJOR ISSUES AND NATIONAL CONCERNS [1]

Alt	Present Net Value [2] MM\$	Net Cash Flow MM\$ Decade		Non-Cash Benefits MM\$ Decade		County Receipts MM\$/Yr	Jobs Available M Person /Yr	Local Income MM\$/Yr	Allowable Sale Quantity MMBF/Yr	Regeneration M Acres		Late Seral Stage [3] on CAS Lands M Acres Decade 5	Calif. Spotted Owl Pairs Decade 5	Visual Quality M Acres Decade 5	
		1	5	1	5					Clearcut	Shelterwood			Retention	Partial Retention
C (RPA)	1604.7	-7.5	5.6	210.0	235.5	4.6	4.9	73.5	138.0	52.3	2.8	205.6	65	59.1	254.4
H (MKT)	1573.8	-7.1	4.8	208.6	233.3	4.9	5.0	75.0	147.5	56.4	3.3	191.1	57	50.5	185.7
B (CUR)	1486.5	-4.5	5.7	203.5	227.3	3.9	4.4	65.5	115.6	24.4	1.7	245.8	81	94.4	233.3
A (PRF)	1387.7	-10.8	-0.1	204.3	229.2	3.2	3.9	58.5	85.0	15.5	8.2	242.8	94	79.7	241.4
E (AMN)	1343.5	-10.0	0.4	202.6	227.5	2.9	3.8	57.0	77.0	11.6	4.7	272.4	103	75.1	277.1
D (LBU)	1338.7	-5.4	0.9	196.6	226.8	2.5	3.4	54.4	75.2	19.0	1.6	286.7	105	169.6	212.7
[1] All entries are for the First Decade, unless otherwise noted [2] All PNV Values are shown incrementally above the minimum level fixed costs and values. [3] Stands over 140 years															

Narrative of Table 2.30

This table is generally self-explanatory. It should be noted only the major causes for PNV decline are shown and that a lot of interaction goes on between resource prescriptions and constraints that affect PNV both positively and negatively in each alternative.

In the section concerning social groups affected, the conclusions are for the social group as a whole, and do not necessarily fit all subdivisions or individuals. Nonpriced benefits that have significant effect on PNV, such as oak retention, visual quality, and key deer areas, are discussed where pertinent.



TABLE 2.30 - SUMMARY OF REASONS FOR CHANGE IN PRESENT NET VALUE COMPARED TO THE CONSTRAINED ECONOMIC EFFICIENCY ALTERNATIVE

Alternative	Present Net Value (\$MM)	Change in PNV (\$MM)	Decade 5 Net Cash Flow (\$MM)	Reason for Change
RPA	1,604.7	-66.7	5 6	This alternative will be the most economically efficient as it will produce the highest PNV. Key deer habitat will be increased by 11,385 acres and the ROS Class of some specific areas will be specified because of RPA emphasis on dispersed use. This will result in slightly lower timber benefits relative to timber costs, but increased dispersed recreation benefits relative to dispersed recreation costs. Fewer clearcut areas will result in less water production, which will also lower PNV High timber yield and grazing outputs will benefit long-time residents by providing many employment opportunities, and higher county receipts. In the distant future, there will be a possibility the North Fork Mill will close. Regional recreationists, second-home owners, and new arrivals may find the environmental impacts, particularly reduced visual quality and reduced oldgrowth areas on CAS land, will conflict with their values and beliefs. This will be somewhat balanced, however, by increases in recreation, particularly dispersed use, high visual quality objectives in significant recreational areas, and high visual quality along roads to destination recreational areas.
MKT	1,573.8	-97.6	4 8	This alternative will emphasize timber, range, and developed recreation. These high volume goals may cause most low value timber stands to be harvested, plus will require the most miles of access road of any alternative. This will increase the timber costs relative to timber benefits causing PNV to decrease. Developed recreation will be managed at full standard and range modeled to meet or exceed 50 MAUM's annually. Because of the emphasis on market outputs, dispersed use will be negatively affected, causing a drop in PNV. Specifying minimum harvest levels will cause some lower-valued timber stands to be cut, which will have a negative effect on PNV. The visual quality index will rank the lowest of all alternatives because of the high amount of vegetative manipulation. No inventoried rivers outside of wilderness areas will be recommended for wild and scenic river status. Social group effects will be very similar to the High Production Alternative. The primary difference will be that the regional recreationists, who heavily utilize developed recreational sites, will be pleased with full standard management.
CUR	1,486.5	-184.9	5 7	Most of the drop in PNV will be caused by budgets and outputs being held to 1982 levels. These constraints will cause timber stands that will otherwise be harvested to be held longer, causing a moderate drop in PNV. In the foreseeable future, there will be a possibility the North Fork Mill will close. The resulting reduction in clearcut areas also will cause a large drop in water benefits. Specifying current low standard dispersed and developed recreation will cause PNV to drop when compared to all full standard management in the CEF Alternative. Setting the fire budget at current levels also will lower PNV. Non-budget constraints that will have a negative effect on PNV include increased deer habitat of 11,385 acres and specified ROS Class designation, to meet dispersed use emphasis, on some specific areas.

TABLE 2.30 - SUMMARY OF REASONS FOR CHANGE IN PRESENT NET VALUE COMPARED TO THE CONSTRAINED ECONOMIC EFFICIENCY ALTERNATIVE

Alternative	Present Net Value (\$MM)	Change in PNV (\$MM)	Decade 5 Net Cash Flow (\$MM)	Reason for Change
PRF	1,387.7	-283.7	-0.1	Several additional constraints will be added to this alternative that will have negative effects on PNV. One-third of the poorly-stocked mixed conifer and pine stands will be programmed for regeneration in each of the first three decades to meet silvicultural objectives of full production. An additional 35M acres will be required to use uneven-aged management in areas where clearcutting will be controversial. This will result in fewer clearcut areas and less water production. No scheduled timber harvest will be proposed for 24 spotted owl habitat areas. Shelterwood harvesting will be modeled for two-thirds of the regeneration cutting in developed recreational areas in order to retain higher visual quality. Also, some additional visual constraints will be added along heavily-used forest roads. In the immediate future, there will be a possibility the North Fork Mill will close. Acres managed for marten and fisher will have limited timber yield harvest. Deer habitat will be increased 18,703 acres and 3.5% of future regenerated stands made unavailable for harvesting to provide sufficient oaks for wildlife purposes. The ROS Class of selected areas will be specified because of emphasis on dispersed use. Local income and jobs will be reduced. Regional recreationists will find a large variety of opportunities in pleasing surroundings. Second-home owners and new arrivals will be pleased with the relatively high emphasis on amenity values.
AMN	1343.5	-327.9	0.4	This alternative will emphasize production of noncash and nonpriced benefits. The loss in PNV will be significant. Constraints will be the same as those in the Preferred Alternative with the following exceptions. All tractor ground will be harvested using uneven-aged harvesting systems. Range AUM outputs will be constrained to reflect increased emphasis on wildlife management. Water benefits will be dropped because of the limited extent of regeneration areas. All dispersed and wilderness recreation will be managed to full standard. In the immediate future, there will be a good possibility the North Fork Mill will close. Emphasizing amenity values will result in predicting significantly reduced developed recreational demand that will have negative effect on PNV. Additional visual constraints will be added due to increased emphasis on dispersed use. Emphasis on amenity values, such as dispersed recreation, fish and wildlife, and visual quality, will be beneficial to the lifestyles of new arrivals and second-home owners. Regional recreationists seeking dispersed-use activities also will benefit, while those seeking primarily a developed setting may find the Forest less desirable because many developed recreational areas will be managed at less than full standard. Preservationists will find this alternative the most desirable, especially with all inventoried rivers recommended for wild and scenic river designation. Lower market outputs will cause county receipts, local income, and jobs to be less than current levels, and therefore, not beneficial to the lifestyle of long-term residents or others who will be economically-dependent on forest commodity outputs. No group will gain or lose significantly by this alternative. Long-time residents will find little change in income and job opportunities. Visual quality, while reduced, will remain relatively high and not greatly affect regional recreationists seeking dispersed activities. Budget constraints will reduce quality of experience and facility standards in developed recreational areas, which will not be beneficial to these regional recreationists using developed sites. The new arrivals and second-home owners will look upon this alternative as being a continuing negative impact on their lifestyle. Deferring wild and scenic recommendations to a later date will not resolve an important issue nor benefit any particular group. Cash flows will be positive by the fifth decade as will be the case in all alternatives.

TABLE 2.30 - SUMMARY OF REASONS FOR CHANGE IN PRESENT NET VALUE COMPARED TO THE CONSTRAINED ECONOMIC EFFICIENCY ALTERNATIVE

Alternative	Present Net Value (\$MM)	Change in PNV (\$MM)	Decade 5 Net Cash Flow (\$MM)	Reason for Change
LBU	1,338.7	-332.7	0.9	Drop in PNV will be the largest of any alternative. Constraining the budget to 75% of the 1982 budget level will cause the timber and recreation programs to fall considerably and will be the biggest factor in the decline. The reduced timber harvest, in turn, will reduce water output and associated PNV. In the immediate future, there will be a good possibility the North Fork and Auberry Mills will close. Other factors causing less significant PNV drop will include increased acres for deer habitat over that contained in the MMR. These increases will reflect the emphasis on wildlife habitat in this alternative, which also will provide the greatest amount of oldgrowth forest at the end of the fifth decade. This alternative also will have the highest visual quality because of the reduced vegetative manipulation. Long-time residents will be adversely affected by loss of local income and jobs. Regional recreationists will be negatively affected by closure of some facilities and reduced services in others. New arrivals and second-home owners also will be negatively affected by recreation site closures, reduced services, road closure, and low levels of interpretive services. However, these feelings will generally be offset by low levels of timber harvest, high visual quality, and large amounts of oldgrowth forests, which will be more satisfying with the lifestyles and values of second-home owners and new arrivals.

2 11
ISSUES, CONCERNS, AND OPPORTUNITIES

As discussed earlier, ID team identified major issues, concerns, and opportunities as the first step of the planning process

Table 2.31 - summarizes each alternative's response to the major Forest issues, concerns, and opportunities in expected outputs and management objectives. Nine major resource areas are listed, each having 7 headings. Each issue continues across 2 concurrent pages

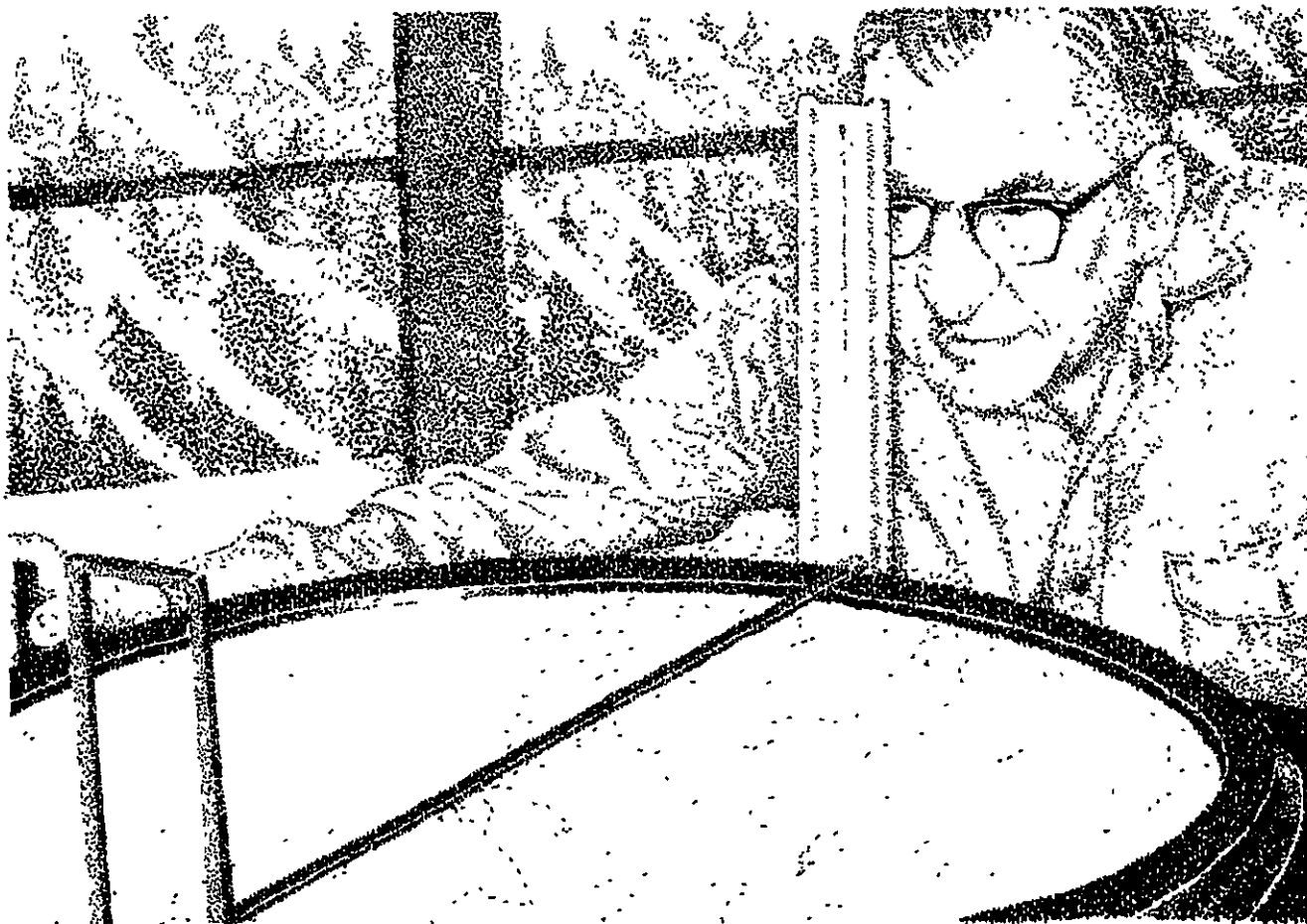


TABLE 2.31 - COMPARISON OF ALTERNATIVES BY MAJOR ISSUES

MAJOR ISSUES	A	B
ECONOMICS		
How will the Forest implement the Forest Plan, given the discrepancy between current budget trends and the budget needed?	This is a Region-wide issue. The Forest Plan describes the general assignment of land, outputs, standards and guidelines which will be implemented subject to the annual budget level. Regardless of funding level, the Forest will implement the MMRs and MIRs contained in the Plan. If the budget is not adequate to implement the Plan, protection and maintenance will continue to be emphasized. Appendix L has been added to explain the budget process and priorities.	This is a Region-wide issue. The Forest Plan describes the general assignment of land, outputs, standards and guidelines which will be implemented subject to the annual budget level. Regardless of funding level, the Forest will implement the MMRs and MIRs contained in the Plan. If the budget is not adequate to implement the Plan, protection and maintenance will continue to be emphasized. Appendix L has been added to explain the budget process and priorities.
RECREATION		
What strategy of recreational opportunity development and utilization should be emphasized by kinds and amounts of recreational opportunities and where should they be located?	---	---
a. What kinds of recreational experiences and what experience levels should be provided?	Same as other Alternatives	Same as other Alternatives.
b. Should Forest areas be zoned to eliminate conflicts between certain recreational opportunities? If so, to what extent?	Same as other Alternatives.	Same as other Alternatives.
c. What kinds and intensities of recreational opportunities should be planned in roadless areas released by the California Wilderness Bill?	Same as other Alternatives.	Same as other Alternatives.
d. Under what circumstances should general public recreation take priority over existing recreational residences?	Same as other Alternatives.	Same as other Alternatives
VISUAL RESOURCES		
What priority should be given to managing scenic values in the forest?	Same as Alternative B	Manage for visual quality objectives of retention and partial retention along most major recreational roads and trails and around all major recreational areas.

TABLE 2.31 - COMPARISON OF ALTERNATIVES BY MAJOR ISSUES

C	D	E	H
ECONOMICS			
Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.
RECREATION			
---	---	---	---
a. A range of experience levels and opportunities will be provided in all alternatives. There will be a broad range of experience levels and opportunities in the primitive, roaded natural, and rural ROS class zones in all alternatives due to the large areas available. Semiprimitive experiences, particularly semiprimitive motorized, will be in short supply due to the small acreages currently available. An attempt is made in all alternatives to maintain or increase these areas by various management directions, standards, and guidelines. Although the number of acres vary little between alternatives, the quality of semiprimitive experience will be highest in Alternatives A, D, and E. (See Table 2.17 REC items #1 & 2, ROS Element Map, Forest Plan Section 4.5 and FEIS Section 2.6.)			
b. To resolve conflicts in recreational opportunities and to use and maintain recreational opportunities in primary locations at quality levels, extensive directions, standards, guidelines, and limited zoning were developed for each alternative. Solutions vary by alternative. Alternative A displays the proposed management. Variance between alternatives can be reviewed in discussions, tables, and maps in this report (See Table 2.17 REC. items #4, 5 and 9-11, Forest Plan Section 4.5, and FEIS Section 2.6).			
c. Recreational opportunities vary by alternative based on the theme of the alternative. Element maps for each alternative specify the overall management emphasis while recreational role statements under each alternative indicate the overall emphasis for recreation. (See Table 2.17 REC. item #3, ROS Element map, Forest Plan Section 4.5, and FEIS Section 2.6).			
d. Public recreational uses take priority over existing recreational residences when capacity levels have been exceeded for a specific recreational composite and general public recreational demands require development of more facilities in the area. Priority for public use also occurs when a recreational residence occupies a primary recreational site that is needed for development of a public use facility or for public dispersed recreational uses and no other practical alternative exists. Needs for more general public recreational facilities will be greatest under Alternatives C and H. (See FEIS Section 2.6 and Forest Plan Section 4.5)			
VISUAL RESOURCES			
Manage for visual quality objectives of retention and partial retention along significant recreational roads and trail and around all major recreational areas.	Manage for visual quality objectives of retention and partial retention along significant recreational roads and trail and around all major recreational areas	Manage for visual quality objectives of retention and partial retention along some major recreational roads and trail and around all major recreational areas.	Manage for visual quality objectives of retention and partial retention along some major recreational roads and trail and around all major recreational areas

TABLE 2.31 - COMPARISON OF ALTERNATIVES BY MAJOR ISSUES

MAJOR ISSUES	A	B
FURTHER PLANNING		
How should the Forest manage Further Planning Areas?	---	---
a. What values exist in each release area, how suitable are they for management and to what degree of intensity should they be managed?	Most released areas emphasize dispersed recreation. Regulated timber harvest permitted in over half the units with a requirement that most roads be closed after logging - maintain semiprimitive recreational experiences.	About half of the released areas emphasize dispersed recreation with most areas subject to regulated timber harvest. The other half of the released areas emphasize timber or other resource management and are subject to fully regulated timber harvest.
WILD AND SCENIC RIVERS		
How should we manage rivers that are inventoried for possible inclusion in the Wild and Scenic River System?	---	---
a. What river segments should be recommended for Wild, Scenic or Recreational classification?	14 segments, including Segments 9, 10 Merced, Segment 1 San Joaquin, Segments 1-3 North Fork San Joaquin, the 4 segments Middle Fork San Joaquin, the 4 segments South Fork San Joaquin.	All segments on all rivers are deferred
b. What river segments should not be recommended for designation?	Segment 2 San Joaquin River	All segments are deferred
c. What river segments should be deferred for further study?	None.	All segments.
FISH AND WILDLIFE		
What kinds and amounts of fish and wildlife habitats should be provided and what are management's effects on the habitats?	---	---
a. What is the desired mix of harvest and non-harvest species and what are the desired target species for habitat management?	Emphasize deer in 75% of the key deer areas, equal emphasis on remaining harvested and non-harvested species.	Emphasize deer in 50% of key deer areas, equal emphasis on remaining harvested and non-harvested species.
b. What constitutes maintaining appropriate diversity of plant and animal diversity?	Provide moderate increase in high quality deer habitat and moderate increase of peregrine falcons, allow some decline in species associated with hardwoods and late seral stage; maintain existing levels of most other species.	Provide moderate increase in high quality deer habitat and moderate increase of peregrine falcons, allow some decline in species associated with hardwoods and late seral stage; maintain existing levels of most other species
c. What is the desired mix of harvested and nonharvested species and what are the desired target species for habitat management?	Maintain at least 5% of each habitat type in important seral stages	Maintain at least 5% of each habitat type in important seral stages.

TABLE 2.31 - COMPARISON OF ALTERNATIVES BY MAJOR ISSUES

C	D	E	H
FURTHER PLANNING			
---	---	---	---
a. Most released areas will emphasize timber harvest on those lands that are capable and suitable. Those released areas remaining will emphasize dispersed recreation with regulated timber harvest permitted and roads closed after logging.	Released areas will emphasize dispersed recreation. Only un-regulated timber harvest will be permitted with roads to be closed after logging. Kings River Further Planning Area is recommended for Wilderness.	Same as Alternative D, except only upper part of Kings River Further Planning Area will be proposed for Wilderness.	Same as Alternative C
WILD AND SCENIC RIVERS (cont.)			
---	---	---	---
a. Same as Alternative A, except Segment 3 South Fork San Joaquin is deferred. (13 segments recommended)	Same as Alternative A, except Segment 4 Middle Fork San Joaquin and Segment 4 on the South Fork San Joaquin are deferred. (12 segments recommended)	Same as Alternative A including Segment 2 on the San Joaquin River (15 segments recommended)	Same as Alternative A, except Segments 2 and 3 North Fork San Joaquin, Segment 4 Middle Fork San Joaquin, Segments 3 and 4 South Fork San Joaquin and Segments 1 and 2 San Joaquin are deferred. (6 segments recommended)
b. 2 segments, including Segment 2 San Joaquin and Segment 3 South Fork San Joaquin Rivers.	2 segments, including Segments 2 San Joaquin and Segment 4 Middle Fork San Joaquin Rivers.	0 segments	6 segments, including Segments 1,2 San Joaquin Rivers. Segments 2,3 North Fork San Joaquin and Segments 3,4 South Fork San Joaquin Rivers.
c. None.	None	None.	None.
FISH AND WILDLIFE			
---	---	---	---
a. Same as Alternative B.	Same as Alternative A.	Emphasize deer in all key deer areas; equal emphasis on remaining harvested and non-harvested species.	Give equal emphasis to harvested and non-harvested species
b. Same as Alternative B	Same as Alternative B.	Provide high quality habitat for deer and large increase in peregrine falcons; maintain significant habitat for late seral stage species; maintain current levels of other species.	Provide moderate increase in peregrine falcons, large increase in species associated with early stages of succession but reduce most other species.
c. Same as Alternative B	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

TABLE 2.31 - COMPARISON OF ALTERNATIVES BY MAJOR ISSUES

MAJOR ISSUES	A	B
d. What effects could fish and wildlife management programs have on other resources?	Other resources could maintain present condition of most habitats, but moderately reduce hardwood and late seral stage mixed conifer habitat.	Other resources could maintain present condition of most habitats, but moderately reduce hardwood and late seral stage mixed conifer habitat
e. What effects could other resource management programs have on Forest fish and wildlife habitat conditions?	Road use is regulated in all key wildlife areas.	Road use is regulated in all key wildlife areas
f. Under what conditions should roads be closed to the public?	Moderate to high reduction in timber yields, dispersed recreational use - moderate increase in prescribed fire program.	Moderate to high reduction in timber yields, dispersed recreational use - moderate increase in prescribed fire program.
How many spotted owl habitat areas (SOHAs) should be established in Sierra National Forest?	Establish 29 SOHAs in the general forest area	Establish 26 SOHAs in the general forest area.
TIMBER		
How intensive and widespread should timber management activities be in the Forest?	Area harvested during first decade (acres): Limited-timber yield ... 27,200 Modified-timber yield ... 6,670 Full-timber yield 40,430	Area harvested during first decade (acres). Limited-timber yield ... 28,200 Modified-timber yield 13,400 Full-timber yield 24,000
a. How far should the Forest go toward meeting local, regional and national demands for wood products?	Allowable Sale Quantity (MMBF): Decade 1 880 Decade 5 880	Allowable Sale Quantity (MMBF): Decade 1 1,250 Decade 5 1,250
b. How much should the Forest disperse or concentrate timber management activities, and what are the environmental and economic trade-offs?	Limited-timber yield land 156,700 Modified-timber yield land 65,100 Full-timber yield land 107,100 Total (acres) 328,900	Limited-timber yield land ... 66,055 Modified-timber yield land ... 114,799 Full-timber yield land 171,846 Total (acres) 352,700
c. What level and intensity of timber management activities should be planned in roadless areas released by California Wilderness Bill?	Limited-timber yield (MMBF) Decade 1 120 Decade 5 120	No Scheduled Timber Harvest
d. To what extent will harvest levels effect community stability and other resources and uses?	Causes loss of jobs in local community.	Cause some loss of jobs in local community.
e. How much productive forest land is suitable for timber management activities?	Suitable land (acres) ... 328,900	Suitable land (acres) ... 352,700
What should the allowable sale quantity (ASQ) level be?	Allowable Sale Quantity (MMBF): Decade 1 880 Decade 5 880	Allowable Sale Quantity (MMBF): Decade 1 1,250 Decade 5 1,250
Is clearcutting necessary to meet the Forest's long-term timber resource management goals?	15,500 acres per decade	24,400 acres per decade
What are the socio-economic consequences in allowable sale quantity (ASQ) on the community of North Fork and surrounding areas.	There will be a possibility the North Fork Mill will close. This can result in a loss of 200 jobs in North Fork	There will be a possibility the North Fork Mill will close. This can result in a loss of 200 jobs in North Fork and a gain of 100 jobs in Auberry and Dinuba

TABLE 2.31 - COMPARISON OF ALTERNATIVES BY MAJOR ISSUES

C	D	E	H
d. Same as Alternative B.	Maintain most habitats, produce low to moderate reduction in hardwoods and late seral stage habitat.	Other resource activities will be used to accomplish fish and wild life objectives and will be restricted where conflicts are likely.	Maintain many habitats but reduce the quality or quantity of some key habitats such as meadows, late seral stage and hardwoods
e Same as Alternative A.	Road use is not regulated in key wildlife areas.	Same as Alternative A.	Same as Alternative D.
f. Same as Alternative B	Influences moderate to high reduction in timber yields - little effect on other resources.	Significant reduction in commodity resource outputs.	Low to moderate reduction in timber yield, little effect on other resources.
Same as Alternative B	Establish 34 SOHAs in general forest areas	Establish 29 SOHAs in general forest area	Same as Alternative B.
TIMBER			
Area harvested during first decade Limited-timber yield 31,800 Modified-timber yield 18,500 Full-timber yield .. . 32,000	Area harvested during first decade Limited-timber yield 17,600 Modified-timber yield 14,000 Full-timber yield .. . 6,600	Area harvested during first decade Limited-timber yield26,900 Modified-timber yield7,800 Full-timber yield32,500	Area harvested during first decade Limited-timber yield17,800 Modified-timber yield . . .11,400 Full-timber yield 43,600
a. Allowable Sale Quantity (MMBF) Decade 1 1,380 Decade 5 1,380	Allowable Sale Quantity (MMBF) Decade 1 752 Decade 5 784	Allowable Sale Quantity (MMBF) Decade 1 770 Decade 5 770	Allowable Sale Quantity (MMBF) Decade 1 1,475 Decade 5 1,475
b Limited-timber yield land . 79,800 Modified-timber yield land .134,321 Full-timber yield land179,579 Total (acres)393,700	Limited-timber yield land .. 51,430 Modified-timber yield land . 107,150 Full-timber yield land 120,920 Total (acres): 279,500	Limited-timber yield land ...116,400 Modified-timber yield land . 96,700 Full-timber yield land68,600 Total (acres)281,700	Limited-timber yield land64,919 Modified-timber yield land . 78,072 Full-timber yield land244,709 Total (acres)387,700
c. Limited-timber yield (MMBF): 4.9 Modified-timber yield (MMBF) .8.3 Full-timber yield (MMBF) ..11.3 Total (MMBF)24.5	No Scheduled Timber Harvest	Limited Timber Yield (MMBF) Decade 112.0 Decade 512.0	Limited-timber yield (MMBF). ...4.5 Modified-timber yield (MMBF) .5.3 Full-timber yield (MMBF) ..16.3 Total (MMBF)26.6
d. Increases potential number of jobs in the community	Causes significant loss of jobs in community.	Causes loss of jobs in local community.	Increases potential number of jobs in the community
e. Suitable land (acres): . . 393,700	Suitable land (acres) .. . 279,500	Suitable land (acres):281,700	Suitable land (acres) 387,700
Allowable Sale Quantity (MMBF) Decade 1 1,380 Decade 5 1,380	Allowable Sale Quantity (MMBF) Decade 1 752 Decade 5 784	Allowable Sale Quantity (MMBF) Decade 1 770 Decade 5 770	Allowable Sale Quantity (MMBF) Decade 1 1,475 Decade 5 1,475
48,000 acres per decade	19,000 acres per decade	11,600 acres per decade	51,900 acres per decade
In the future, there will be a possibility the North Fork Mill will close. This can result in a loss of 200 jobs in North Fork and a gain of 100 jobs in Auberry and Dinuba			

TABLE 2.31 - COMPARISON OF ALTERNATIVES BY MAJOR ISSUES

MAJOR ISSUES	A	B
HYDROELECTRIC		
How shall the Forest Service resolve conflicts between hydro-electric development and free-flowing conditions of rivers and streams in the Forest?	Same as other Alternatives.	Same as other Alternatives
GENERAL		
Adequacy of soil and water quality protection?	---	---
Domestic use versus other resource use of Forest range?	---	---
Use of fire to enhance the resource values?	---	---
Desirability of vegetative manipulation measures?	---	---
a Should management policies be changed to increase soil and water quality protection?	Same as other Alternatives	Same as other Alternatives
b. What is the appropriate balance between livestock grazing and other resource values and needs?	Same as other Alternatives.	Same as other Alternatives.
c Should fire be used to enhance resource values and protect opportunities? If so, for what purpose and under what conditions?	Fire will be used to enhance resource values and create other resource opportunities that will reduce activity fuel loading, assist wildfire suppression activities, increase range and wildlife benefits in the areas outside Wilderness. Inside Wilderness, fire will be used to return vegetation to a natural state	Fire will be used to enhance resource values and create other resource opportunities that will reduce activity fuel loading, assist wildfire suppression activities, increase range and wildlife benefits in the areas outside Wilderness. Inside Wilderness, fire will be used to return vegetation to a natural state.
d. Should vegetation manipulation/control measures be accelerated, and if so, where and for what purpose?	Vegetation manipulation through prescribed fire will be accelerated in 1) Wilderness to speed up return of vegetation to a more natural state, 2) brush areas to enhance range and wildlife benefits, and 3) assist fire suppression efforts.	Vegetation manipulation through prescribed fire will be accelerated in 1) Wilderness to speed up return of vegetation to a more natural state, 2) brush areas to enhance range and wildlife benefits, and 3) assist fire suppression efforts.

TABLE 2.31 - COMPARISON OF ALTERNATIVES BY MAJOR ISSUES

C	D	E	H
HYDROELECTRIC			
In dealing with the hydroelectric issue, the Federal Energy Regulatory Commission (FERC) is the lead agency on most hydroelectric projects and is responsible for development of Environmental Statements for development projects. All applications for hydroelectric projects are filed with FERC. Therefore, this plan will not deal with the issue other than establishing management direction for our role as a cooperating agency, including issuance of Special Use Permits and input to FERC through the 40 letter process. The Forest will cooperate with FERC during the environmental analysis of projects proposed for Forest land. The Forest Service's role is to insure resource protection on National Forest System land. The different alternatives emphasize priorities in resource mitigation, not guidelines, if the project is reasonable or socially desirable.			
GENERAL			
---	---	---	---
---	---	---	---
---	---	---	---
---	---	---	---
a. In all alternatives, soil and water quality protection will be maintained through the use of the Best Management Practices; Riparian Management Zones, and Standards and Guidelines - 16-20, 33, 35, 37, 41-43, 46, 49, 50, 52, 69-72, 76-82, 84, 88, 92, 93, 103, 111, 120-130, 132, 136-139, 144-149, 151, 158, 162-164, 170, 184, 207-211, 213-215, 233, 238, 307, 310, 314, 316, 317, 323, 328, 329, 340, 345, 352, 353, 355, 360, 364, 366, 369, 375, 377.			
b. In all alternatives range allotments will be managed to provide sufficient residual forage for wildlife and recreational stock, and watershed protection, based on calculated allowable use factors. Monitoring will result in adjustments to avoid conflicts.			
c. Same as Alternative B	Same as Alternative B, except fewer unplanned ignitions will be used to return vegetation to a natural state in Wilderness	Same as Alternative B.	Same as Alternative B.
d. Same as Alternative B.	Same as Alternative B.	Same as Alternative B.	Same as Alternative B.

Chapter 3.0 – The Affected Environment



3.0 AFFECTED ENVIRONMENT

3.1 INTRODUCTION

An analysis of the current management situation (AMS) was completed to assess the ability of the Forest to supply goods and services in response to public demand. This analysis provides the basis for changing management emphasis to make the Forest more responsive to the public. The AMS and associated papers for Sierra National Forest illustrate the current and potential management conditions. These are part of the planning records located in the Forest Supervisor's Office. The major aspects of this analysis are summarized and presented here.

3.2 GENERAL DESCRIPTION OF FOREST

The Forest is located in Central California on the west slope of the Sierra Nevada Range. It is located approximately 6 hours driving time southeast of San Francisco, and 6 hours northeast of Los Angeles, and an hour northeast of Fresno.

Elevations in the Forest range from less than 1,000 feet at the western boundary to nearly 14,000 feet at Mount Humphreys on the Sierra Crest.

The Forest landscape is quite diverse, ranging from steeply rolling foothills covered with chaparral and grass/woodland to barren, windswept crags on the Sierra Crest. The mid-elevations are characterized by steep-walled river canyons interspersed with gentler, highly productive, heavily forested areas. The knife-edged ridges, sharp peaks, and steep-walled basins at the higher elevations owe their form to the abrading action of past glaciers. The steep-walled canyons and rolling topography of the lower elevations developed through water and wind erosion.

The climate of the Forest is variable, but has an overall character that makes an ideal recreational area. The average annual precipitation is 45 to 50 inches, ranging from 23 inches near Meadow Lakes to 82 inches near Iron Mountain. More than half of the precipitation falls in January, February, and March, while less than 3% falls in the summer. Summers are usually dry, but summer thunder showers are common at higher elevations. Winter snow begins to accumulate at snowline near 4,000 feet and accounts for the largest portion of precipitation above that elevation. The Forest's mean temperature is approximately 80° F. in the summer and 20° F. in the winter. Strong, dry, east winds, locally known as Monos, occasionally occur in the summer, causing very dangerous fire conditions.

The geologic character of the Forest is dominated by the granitic core of the Sierra Nevada. Some metamorphosed remnants of sedimentary rocks are visible as isolated blocks within the range and as a discontinuous band along the foothills. Small areas with basalt are remains of volcanic flows. Surficial deposits resulting from glacial, stream, and mass wasting action cover bedrock in many places.

Active faults are found outside the Forest. Earthquake hazard is low to moderate, based on the existing geological assessments.

A recognized volcanic hazard area exists at Mammoth Lakes near the eastern boundary of the Forest. Most of the Forest lies within potential hazard zones likely to receive varying amounts of ash during an eruption.

Localities subject to landslide hazard exist throughout the Forest. In the commercial area of the Forest, where most management activities occur, 88% of the land surface is basically stable. Another 6% is marginally stable and the remaining 6% is unstable.

About 180 reported mineral deposits of potential economic value occur in the Forest. Nearly all of these deposits have been explored and some have been producers. A few are currently being explored or are in production. They are not expected to be extensive in area nor to make significant impacts on other resources.

Portions of the drainage basins of the Merced, Chowchilla, Fresno, San Joaquin, and Kings Rivers occur within the Forest. Annual runoff from these river drainages averages 2.6 million acre/feet. Water quality is good to excellent. The lakes and streams are generally clear and clean, except during periods of high water.

The water is valuable for recreation, fish habitat, power generation, and irrigation. It is the source of power for several hydroelectric projects having a total installed capacity of 2,300 MW. There is potential for more projects to evolve. Reservoirs within the Forest have a storage capacity of almost 2 million acre/feet with a surface area totaling 16,000 acres.

Ground water is present throughout the Forest, mainly in fractured-rock aquifer systems. Wells and springs presently supply the needs of 16 administrative sites and 21 recreational facilities. An estimated 1.9 million gallons of ground water was produced annually during the past 5 years.

The Forest contains nearly 2,550 miles of roads, ranging from bituminous-surfaced highways to narrow, unimproved paths suitable for four-wheel drive vehicles. Some of these roads were established before the Forest was organized, having originated as trails, wagon routes, and railroad grades. Considerable mileage was constructed for access to dam sites and hydroelectric facilities.

The transportation network now supports and affects most of the uses and resources of the Forest. Most of the Forest's planned road system has been constructed. In recent years, 25% of the construction funds have been expended for new construction, while the remaining 75% was spent to improve the existing system.

Within the boundaries of the Forest, there are 109,609 acres of private land, or nearly 7.8% of the area. Only a few owners have property exceeding 1,000 acres. Many properties are in the 100-acre range, but most are less than 10 acres in size. Most private parcels are concentrated around Dinkey Creek, Shaver Lake/Highway 168, Meadow Lakes, North Fork, Yosemite Mountain Ranch, and Jerseydale/Footman Ridge. Some problems related to the private land patterns include difficulty of access to Forest land, trespass on Forest land because of unmarked boundary lines, and the expense of resolving the land encroachment issue.

Less than half the Forest, about 562,900 acres, is capable of producing timber in quantities and of a quality to be considered as commercial forest land. Only 393,700 acres of this acreage is available for timber management because of other resource decisions.

Timber stands consist primarily of ponderosa pine, sugar pine, Jeffrey pine, white fir, red fir, and incense cedar. Other conifers include lodgepole pine, western white pine, Douglas fir, giant Sequoia, mountain hemlock, juniper, white bark pine, limber pine, digger pine, and knobcone pine.

Hardwood species include black oak, blue oak, live oak, aspen, alder, dogwood, cottonwood, sycamore, and maple. The primary value of hardwoods is food and cover for wildlife, though there are other important values. Several brush species are also important to wildlife, providing food and cover for many species. The primary brush species are: mountain whitethorn, bearclover, manzanita, buckbrush, deerbrush, Sierra plum, and mountain mahogany.

The Forest's range resource includes 104,000 acres of suitable rangeland that provides more than 35,000 AUMs of annual grazing for over 7,600 cattle and 4,000 horses and mules. Except for some annual grasslands in the foothills, areas suitable for grazing are small and intermingled with extensive, unsuitable acreages. Opportunities to apply intensive range improvements or increased stocking on the grazing resources above 5,000 feet elevation are quite limited. Chaparral treatments such as prescribed burns, and wildfire burns will provide opportunities to improve the quantity and quality of the forage base.

Nine structural habitat elements range from the blue oak/annual grass savannah at the lowest elevations to the subalpine forest above 8,000 feet. The diversity in habitats, seral stages, and abundant special habitat

elements, such as snags, logs, caves, rock outcrops, seeps etc., make Sierra National Forest suitable for a broad spectrum of fish and wildlife.

It is estimated the Forest contains a total of 346 species of animal life. They are as follows: 198 birds, 82 mammals, 22 reptiles, 31 fish and 13 amphibians. Thirteen species of game animals and four furbearers are found in the Forest. Deer are the most important game animal in the Forest. The Forest also provides habitat for 19 sensitive plant species.

The Forest currently provides habitat for two federally-listed endangered species: bald eagles and peregrine falcons; two federally-listed threatened species: Lahontan cutthroat trout, Paiute cutthroat trout; and eight Forest Service listed sensitive species: goshawk, spotted owl, willow flycatcher, osprey, pine marten, fisher, Sierra red fox and wolverine.

The Forest regularly conducts both formal and informal Section 7 Threatened and Endangered (T&E) species consultation with the U. S. Fish and Wildlife Service (USF&WS) on a project-by-project basis. However, as per correspondence dated August 7, 1984, the USF&WS does not want the U. S. Forest Service to initiate formal T&E consultation on each Region 5 Land Management Plan. (See Appendix T for USF&WS comments on the Draft Plan.)

Only eight of the fish species occurring in Forest streams and lakes are native. All native fish except rainbow trout are nongame, warmwater species. Fish native to California, but not endemic to the Forest, are Lahontan cutthroat trout and Paiute cutthroat trout. Both species of cutthroat trout are federally-designated as threatened species and the Forest is participating in recovery efforts for each. Introduced warm water fish species, such as largemouth bass, bluegill, crappie, and red-ear sunfish, are found in reservoirs, lakes, and a few streams within the Forest and provide a significant recreational resource.

The Forest offers a wide spectrum of high-quality recreational opportunities. These range from large reservoirs, where socially-oriented, intensive recreational activities occur in a forest setting, to remote lakes and streams, where solitude and self-reliance in natural surroundings is the predominant experience. Between these extremes are a myriad of opportunities for recreationists to pursue activities of their choice at a site suited to their particular skill level.

There is undeveloped land outside designated wilderness, which provides a wide variety of recreational opportunities in a primitive, undeveloped environment. Hiking, horseback riding, off-highway vehicle travel on designated routes, fishing, and hunting are popular in some of these areas. By providing alternative places for organized groups to pursue a semiprimitive experience, undeveloped areas have been invaluable in improving opportunities for solitude in designated wilderness.

The Forest has approximately 528,000 acres of designated wilderness. Designated wilderness includes Dinkey and Kaiser Wildernesses and portions of John Muir, Ansel Adams, and Monarch Wildernesses.

Though recreation is one of several objectives for which wilderness is established and managed, it represents the most frequent use made of wilderness. Alpine and subalpine areas are particularly attractive to wilderness users. The high lakes, meadows, streams, and rugged peaks overlooking expansive vistas are the settings that attract a great proportion of the recreationists. Conversely, there are large portions of wilderness that lack these attractive features and receive little or no recreational use. Problems commonly associated with heavy use are lack of solitude, waste disposal, soil compaction, vegetation damage, and excessive number of old campfire rings.

A wide variety of landscapes exist within the Forest. Some very distinctive scenery occurs in the crest zone, whereas the chaparral-covered foothills have limited visual appeal. The scenic quality of the sloping plateau between the crest and the foothills varies, depending on local diversity in vegetation and landform.

The relationships within the socio-economic environment are very complex. Each of the Forest's products and amenities influences or is influenced by different areas and publics. The affected areas expand or contract as differing aspects and combinations of Forest products and amenities are considered. For example, the Forest's waters sustain a fishery resource, afford recreation, and provide energy and storage for irrigation in extensive

portions of the San Joaquin valley. Hydroelectric energy generated within the Forest is transmitted to the Los Angeles and San Francisco Bay areas.

Water and other amenities attract great numbers of recreationists from the San Francisco, Los Angeles, and San Diego areas and points in between. Reservoirs alter recreation opportunities by replacing stream-oriented with "flatwater" uses. The Forest Service often responds to these changes by developing additional services and facilities. Operation and maintenance of the hydroelectric projects and associated recreational facilities and services generate local employment.

Similar relationships occur with other Forest resources. These relationships often involve interactions between different resources and interests. Most persons perceive Forest resources and uses in the light of their personal experiences and desires. While it is desirable to define and quantify the socio-economic environment for a reference base common for all readers, such a study is beyond the scope of this planning process.

Within the high and middle elevations are seven river courses that have high value for recreation and natural resources. These rivers, free-flow through corridors containing spectacular landform vistas and significant plant communities, wildlife, natural habitats, and cultural features. These rivers have been inventoried for possible inclusion in the Wild and Scenic River System, using criteria established by law, when recommended to Congress by the Forest Service.



3.3 SOCIAL ENVIRONMENT

Management and activities of the Forest affect individuals and groups living within the Forest's sphere of influence.

The Forest is located in the eastern foothills and mountains of Fresno, Madera, and Mariposa Counties. With the exception of the larger urban areas of the cities of Fresno and Madera, these counties can be characterized as relatively rural, but with recent significant population growth and cyclical employment trends. Population growth in these "urbanizing" areas has been rapid, exceeding the State average and previous local 10-year period. This increase is from migration. Fresno and Madera Counties show a trend toward young families with the proportion of the population under age 5 exceeding the State average and the median age below that of the State. A striking difference occurs in Mariposa County, where the proportion of population age 65 and over greatly exceeds the State average, indicating Mariposa County is becoming a retirement area.

The percentage of Indians in the three-county area equals the State average, but the Black and Asian populations are less than the State average. The local Hispanic population of 29%, largely concentrated in the Central Valley, exceeds the State average by 10%.

Native American settlements and/or concentrations occur throughout the Forest's sphere of influence, but are located primarily in the vicinity of the small communities of Mariposa, North Fork, Auberry, Cold Springs, and Table Mountain. The original Indian populations of Mono, Yokuts, and Miwok have been augmented with non-Californian Indians who have migrated to this area. Migration has doubled the number of Native Americans in California between 1970 and 1980.

Compared with the State average, the local counties have a higher percentage of families with incomes below the poverty level. In this category, Madera County has 15.7%, Fresno 14.5%, Mariposa 11.5%. The State average is 11.4%. Local gains in family income is small when adjusted for inflation.

3.3.1 Social Groups

Five social groups have been identified as most likely to be affected by management directions expressed by the alternatives. They are:

1. Long-time residents,
2. New arrivals,
3. Regional recreationists,
4. Second-home residents, and
5. California Indians

The groups were developed through a variety of sources: the Forest planning records, Forest land use patterns, issues raised during the scoping process, use surveys and projected user group trends, newspaper articles, personal interviews, and census data. The identified categories are not mutually exclusive. They are, however, readily useful for analysis. Different social groups are affected differently by Forest management actions. Although categorization may produce some stereotyping incorrectly, generally the following characteristics apply to these groups. These groups generally place different demands and values on resource use.

3.3.1.1 Long-Time Residents

Settlement patterns of the rural parts of Fresno, Madera, and Mariposa counties have developed in close relation to the natural resources of the area, many of which are Forest-related. Long-term residents include many who are employed in timber and timber-related industries, ranching, mining, and trades and services. These individuals, often influential and with strong community ties, tend to view the Forest primarily in economic and commodity terms. Long-term residents also value the Forest for its recreational opportunities, especially hunting, fishing, and boating. The towns of North Fork, Auberry, and Oakhurst are heavily dependent on Forest resources, which supply about 4,000 local jobs.

3.3.1.2 New Arrivals

Recent immigration from large urban areas brought new attitudes toward Forest resources. Few newcomers are involved in forest industries, and as a result, their view of forest resources is less commodity-oriented. These individuals often place higher value on protecting the environment and providing recreation than do long-term residents. New arrivals are likely to participate in the Forest's recreational opportunities.

3.3.1.3 Regional Recreationists

These recreationists have an important relationship with the Forest, but they do not reside within its sphere of influence. These individuals live primarily in the large metropolitan areas of the Central Valley and the rest of California, and are interested in the high-quality recreational attractions. These attractions include snow skiing, water-oriented recreation, camping, backpacking, and hunting and fishing. Regional recreationists are more interested in the protection of amenity values than in resource development, and they place a high emphasis on both dispersed and developed recreation.

3.3.1.4

Second Home Residents

Fully 75% of the owners of recreational residences on the Forest's land live in the San Joaquin Valley and most of them reside in or close to Fresno. These owners and those who have second homes on private land within or adjacent to the Forest wish to retain the natural setting and other values of the Forest which attracted them. Many are relatively affluent, with family income not tied to local forest commodity usage. Many residential tracts are associated with reservoirs, which serve both power and recreational purposes. The demands of these individuals are for special uses and recreational opportunities of Forest land.

3.3.1.5

California Indians

Local Native American groups have long-standing ties with the Forest, reaching back well into the prehistoric period. The Mono, Miwok, and Yokuts often view the Forest land as all that remains of their former territory. The Forest provides numerous resources that are important to the maintenance of cultural traditions. These range from plant materials for baskets and medicines to areas of spiritual importance. Local Indians live on private, allotted, or reservation land throughout the foothill zone or have migrated to nearby urban centers to find employment. Income for many Indian families is closely tied to the timber industry. Indian individuals and communities are becoming increasingly influential in matters affecting their traditional attitudes, values, and territory. Since Forest projects have the potential to disturb areas of cultural or religious importance, Forest projects are coordinated with these groups.

3.3.2

Social Variables

Impacts of the Forest Plan on social groups are measured and analyzed in terms of the effects on three aspects of the groups: lifestyles; attitudes, beliefs, and values, and stability and cohesion. These social variables are described below.

3.3.2.1

Lifestyles

Lifestyle refers to the ways people live: patterns of work and leisure, customs and traditions and relationships with family and friends. A portion of the jobs and income generated in the Forest's area of influence results from Forest outputs. However, the local economy is growing from a variety of new employers and the proportionate role of commodity resources is decreasing considerably.

Additionally, aesthetic amenities, such as open space, scenery, quiet, and recreational opportunities on public land are affected by Forest Service decisions.

3.3.2.2

Attitudes, Beliefs, and Values

This variable refers to the feelings, preferences, and expectations people have for the Forest and management and use of particular areas. It may include a sense of freedom or self-sufficiency, as well as feelings of certainty or uncertainty about the future. Included are perceived changes in the degree of control held by outside interests, perceived capability of local government to meet their needs, and a group's sense of whether they can meet their sustenance needs for food, fuel, and shelter from the Forest. Feelings about the future may be affected by rate of change caused by Forest Service management and predictability of consequences of change.

3.3.2.3

Community Stability and Cohesion (Social Organization)

Community stability refers to the rate of change with which people can cope without exceeding their capacity to deal with change. The Forest's area of influence is a rapidly growing area regardless of Forest Service influence. It is expected the Forest will have less effect on community stability than it currently has because the Forest's outputs will generate a smaller portion of total jobs and income.

Local employment is dependent, to some extent on the Forest's commodity outputs. By law, 25% of Forest receipts support schools and roads in the counties containing Forest Service land. For many alternatives the Forest's economic effects will increase county employment through the 25% receipt shares during the first decade, with the same amount or more in later decades.

Community cohesion refers to the unity and cooperation shown by various social groups in the community. A lessening of community cohesion can occur with an influx of people with diverse backgrounds. Issues that the Forest must face, such as wilderness classification and hydroelectric development, can polarize communities into opposing factions, thus decreasing community cohesiveness.

3.3.2.4

Population Growth

Forest Service policy can affect population characteristics, such as distribution, growth rate, and density. In the Forest's zone of influence, Forest Service effects on population are minor, although there is concern expanding populations may exceed the ecological carrying capacity of the land, with resulting increase in pollution and change in land use/ownership patterns.

Community Services

The Forest and its users require law enforcement, solid waste and sewage disposal, roads, and domestic water services from local government.

Law Enforcement - The aesthetics and recreational opportunities of the Forest draw many visitors. Campgrounds, ski areas, reservoirs, and the several forest environments attract all types of people. Other people visit the Forest to collect fuelwood under permits and *although illegal, some come to cut Christmas trees.* The appropriate Sheriffs Department, the California Highway Patrol, and Sierra National Forest law enforcement personnel are responsible for law enforcement within the Forest. The California Department of Fish and Game is responsible for enforcing fish and game laws.

Solid Waste - Visitors to the Forest create and leave behind large quantities of solid waste, generally at developed recreational sites. The waste is hauled to county-operated landfills, where the cost of operating

these landfills and the lack of suitable new sites create an economic burden to the counties.

Sewage - Effluent from developed recreational sites, sites under special use permit, and Forest Service administrative sites are all treated by county sewage treatment plants

Transportation Facilities - Funds for construction of roads necessary for management of the Forest are obtained from federal appropriations and purchaser credits from the appraised rate of timber. The Forest roads generally terminate at a county road or state highway. Although 25% of the revenues collected from the sale of the resources are returned to the counties for roads and schools, this is often insufficient to repair all damages to the county roads

Domestic Water - All developed sites and special use permit sites are required to have periodic testing of their water systems. These tests are conducted by Forest Service and county personnel. County costs are reimbursed by the Forest or permittee.

TABLE 3.01 - POPULATION (From 1980 Census)

County/State	1970	1980	% Increase From 1970-80	% Increase From 1960-70
Fresno	413,329	514,621	25	13
Madera	41,519	63,116	52	3
Mariposa	6,015	11,108	85	19
California	19,972,913	23,667,902	18.5	25

TABLE 3.02 - SELECTED POPULATION COMPOSITION BY AGE (From 1980 Census)

	% Under 5	% 18 and older	% 65 and over	Median Age
Fresno	8.5	70.2	10.1	28.3
Madera	9.1	67.6	10.8	29.1
Mariposa	5.4	76.7	15.5	34.9
California	7.2	73.0	10.2	29.9

TABLE 3.03 - RACIAL COMPOSITION (From 1980 Census)

County/State	%White	%Black	%Indian	%Asian	%Other	%Claiming Hispanic Origin
Fresno	74	5	1	3	18	29
Madera	76	3	2	1	18	27
Mariposa	94	1	3	-	2	5
3 County Average	74	5	1	3	17	29
California	76	8	1	5	10	19

THE ECONOMIC ENVIRONMENT

The Sierra National Forest affects the regional economy by producing commodities that are consumed in local and regional markets; by generating income and employment opportunities, by returning to the U.S. Treasury receipts from the sale of goods and services; and by sharing Treasury receipts with local governments. Although some effects of managing the Forest are dispersed over a broad area, economic effects are most important in Fresno, Madera, and Mariposa Counties

Income and employment growth in Fresno, Madera, and Mariposa Counties has been much more rapid than in California as a whole. However, the labor sector has also been growing rapidly, with the result that unemployment rates are typically a few percentage points higher than for the State average. Strong growth has occurred in all major sectors of the economy, but more growth has occurred in trade and services than in any other sector. Agriculture makes up a much larger proportion of the local economy than for the State as a whole. Some data concerning employment and income over the last two decades are shown in Tables 3.04 and 3.05.

Management programs of the Sierra National Forest currently generate about 4,000 jobs. Most of these are associated with the Forest's recreation and timber management programs and water resource development activities. Livestock grazing and mining activities in the Forest also generate some employment.

The Forest also affects the local economy by sharing 25% of revenues from the sale of goods and services with local government. These funds are given to the State for

distribution to the counties. Each county receives a proportionate share of the receipts based upon the amount of National Forest acreage in that county. Under California law, 50% of these monies must be used for roads and 50% for schools.

Returns to the U.S. Treasury and county receipt shares are shown in Table 3.06 for the years 1979 through 1983. Revenues from timber sales account for over 90% of the Forest receipts. Recreation fees from campgrounds, recreational residences, and the Sierra Summit ski area account for most of the remaining receipts. Because timber sales account for such a large share of receipts, returns to the U.S. Treasury and subsequent county shares fluctuate widely. In 1979, a year with strong timber markets, county receipts were nearly \$4 million, while in 1982, a depression year in the timber market, counties received less than \$1 million.

Counties also receive revenue from State yield taxes levied on timber operators. Currently, the yield tax is 2.9% of the value of the timber harvested.

PNV is the primary measure of economic efficiency used by the Forest Service. PNV is defined as the difference between the discounted value (benefits) of all outputs to which monetary values can be assigned and the total discounted cost of managing the Forest (see glossary). For Sierra National Forest, the values of timber, recreation, and water and the budget for managing the Forest are the primary determinants of PNV. Over the past decade, timber, recreation, and water values have all increased. The budget for managing the Forest increased from \$6 million in 1975 to nearly \$19 million in 1982, but has since then been declining.

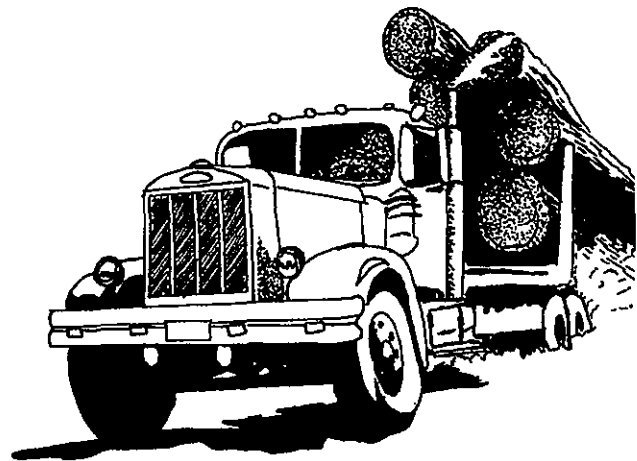
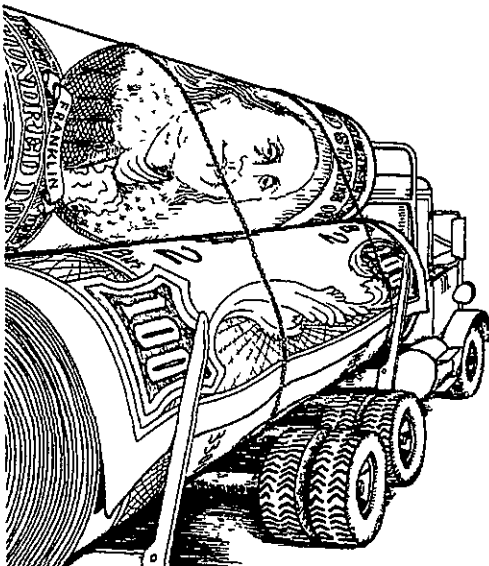


TABLE 3.04 - EMPLOYMENT BY INDUSTRY IN FRESNO, MADERA, AND MARIPOSA COUNTIES, 1970 AND 1980 (M)

INDUSTRY	FRESNO COUNTY		MADERA COUNTY		MARIPOSA COUNTY		TOTAL	
	1970	1980	1970	1980	1970	1980	1970	1980
Agriculture, forestry & fisheries	16,813	24,643	2,927	4,132	176	240	19,916	29,015
Mining	534	607	26	166	26	14	586	787
Construction	7,120	13,341	697	1,955	134	395	7,951	15,691
Manufacturing	15,914	24,818	1,252	3,271	114	157	17,280	28,246
Lumber and wood products	1,374	1,821	240	586	30	49	1,644	2,456
Trades and services	98,268	150,629	7,718	14,496	1,609	3,671	107,595	168,796
TOTAL	140,023	215,859	12,860	24,606	2,059	4,526	154,972	244,991
Source: U S Department of Commerce, Bureau of the Census								

TABLE 3.05 - PERSONAL INCOME IN FRESNO, MADERA, AND MARIPOSA COUNTIES IN 1970 AND 1980 (\$MM)

COUNTY	1970	1980
Fresno	3,399	5,821
Madera	319	644
Mariposa	56	115
Three-county TOTAL	3,774	6,580
State of California	205,397	299,502
Source: U.S. Department of Commerce, Bureau of Economic Analysis.		

TABLE 3.06 - RETURNS TO THE U.S. TREASURY AND COUNTY SHARE FROM THE SIERRA NATIONAL FOREST REVENUES (\$MM)

YEAR	RETURNS TO THE U.S. TREASURY	COUNTY SHARE
1979	15.0	3.8
1980	5.2	1.3
1981	8.0	2.0
1982	3.6	0.9
1983	9.9	2.5

3.5

RESOURCE AND SUPPORT ELEMENTS

The capabilities of the Forest's land and suitability to provide goods and services were estimated in Planning Step Four, Analysis of the Management Situation (AMS). This was documented in "An Assessment of the Lands and Resources of the Sierra National Forest." This section is summarized from that AMS. The complete AMS is available for review from the planning records at local District Offices.

3.5.1

Recreation

3.5.1.1

Supply and Demand

Sierra National Forest ranks in the top 15 National Forests in total recreation use. In 1982, recreation visitor days (RVD) amounted to 1.5 million in developed sites, 2.5 million in dispersed use areas, and 0.25 million in wilderness. Demand for recreation at developed sites is expected to reach 1.6 million in 1985 and increase to 1.8, 1.9, and 2.1 million RVDs in 1995, 2005, and 2015, respectively (Canavan, 1979). Demand for dispersed recreation is expected to reach 2.31 million RVDs by 1985 and rise to 2.7, 3.0, and 3.3 million RVDs at subsequent 10-year intervals.

Figure 3.01 displays projected recreational demand by type of use from 1985 to 2035. Demand is determined by extrapolating 1982 use data with population growth projections for the planning period. The mix of activities was assumed to be proportional to 1982 use for the five-decade planning period. The supply of developed and dispersed recreation opportunities is more than adequate during the planning period. However, dispersed recreational use capacities are in short supply in the semiprimitive ROS classes and will not meet the projected demand (reference Appendix G and Tables G.03 and G.04, and Figure G3.). Some limited

conversion of roaded natural land to semiprimitive land may be possible to accommodate more semiprimitive dispersed use.

Except during August and on holiday weekends, most developed campgrounds in the Forest have site spaces available. The two most popular areas, Bass Lake and Huntington Lake, have overflow situations more frequently. Generally, these areas could accommodate a limited increase in developed sites. Resort facilities appear to be sufficient to meet current and projected demands.

Current Forest Service policy is to provide sufficient numbers of safe and sanitary facilities to accommodate the average peak-season weekend use. The Forest's supply of public recreational facilities is generally meeting current demand, but the quality of facilities provided continues to be a problem, with many facilities needing major rehabilitation or replacement.

Recreation Management Intensity - The management intensity for all types of recreation varies annually according to budget and personnel levels. As a result of these varying budget levels, prescriptions have been necessary to reflect standard (high-budget levels) and low standard (low-budget levels) management intensities. In recent years, funding has decreased, necessitating management of recreation services at low standard levels. Although levels of service may be lower, protection of soil, water, and public health and safety is always provided. Where resource protection has not been possible, use of the site or area is restricted.

Reliance on volunteers and other special work programs helps to keep facilities and areas open during high use seasons. Concessionaire and licensee operations of Forest recreational facilities are increasing primarily from budgeting and manpower limitations imposed on the Forest.

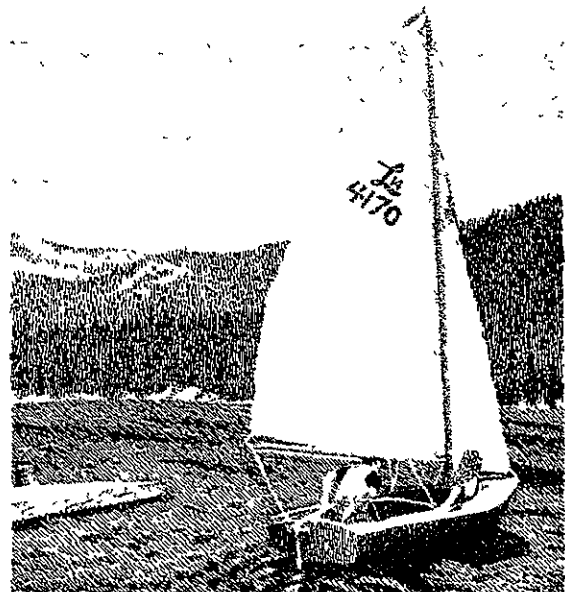
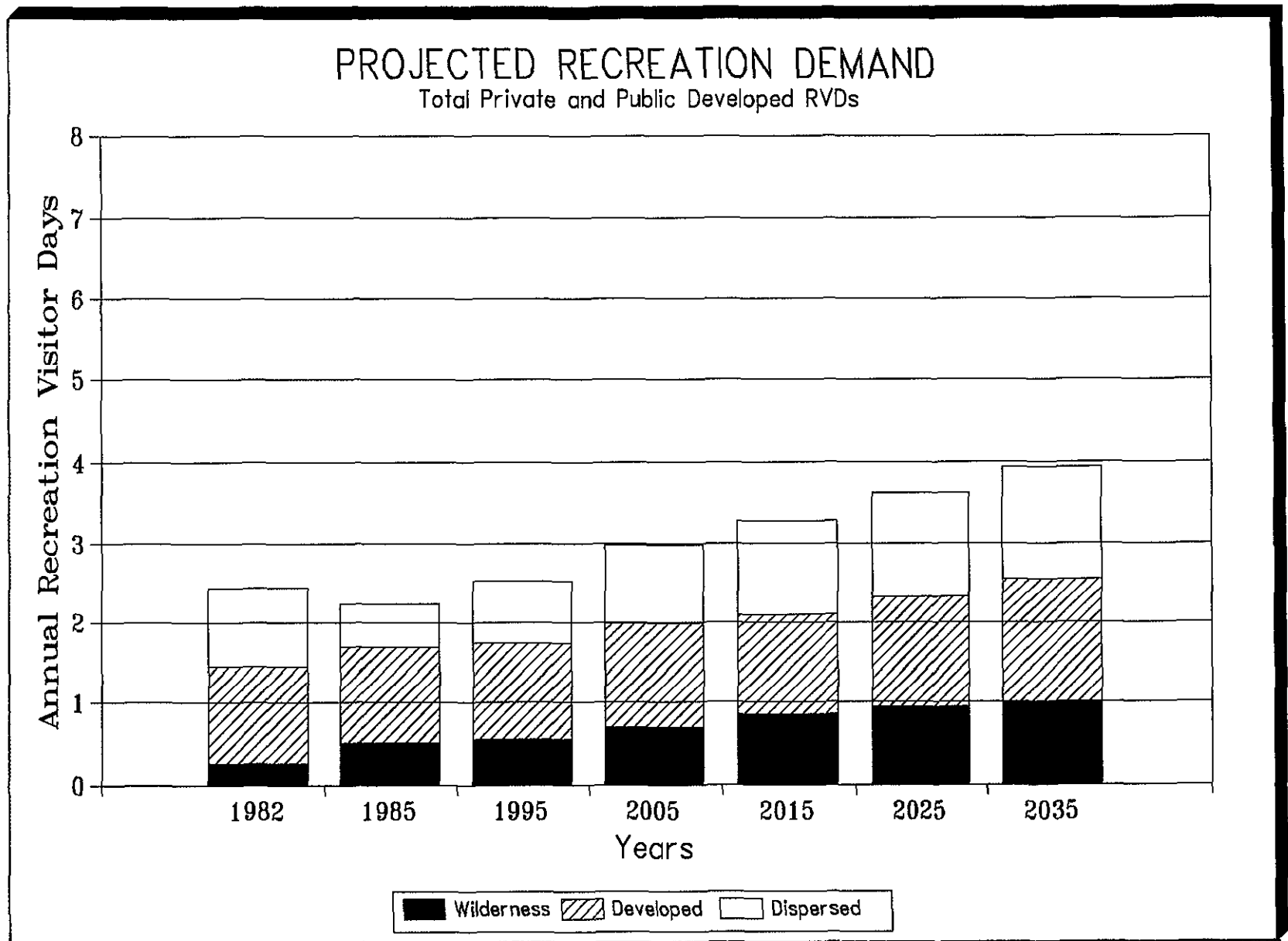


FIGURE 3.01 - PROJECTED RECREATION DEMAND (Total Private and Public Developed RVDs)

3.5.1.2

Developed Recreation

Campgrounds - Caretakers are used in most of the large campgrounds and many of the smaller ones in the Forest. As a result of the caretaker program, there has been a dramatic reduction in vandalism, greatly improved compliance with rules and regulations, and improved quality of the recreation experience.

The capacity of the Forest's campgrounds is almost 8,500 PAOT. The Forest has sufficient suitable land to accommodate additional recreational demand if development funds become available. However, in some locations, the most suitable sites are occupied by other improvements. Current policy is to remove these improvements where sites are needed to serve an important public recreational use.

Most of the Sierra's recent campground developments have been completed by the private sector. FERC licenses for hydroelectric projects now stipulate that the licensee develop facilities to accommodate the anticipated project-induced recreation. In addition to responsibility for construction of project-related recreation facilities, the licensee is also responsible for providing for operation, maintenance, and replacement of these facilities through the life of the project. Memorandums of agreement between the licensee and Forest Service determine whether the Forest will do the operation and maintenance with funds supplied by the licensee or whether the licensee will do the work themselves.

In the present system of requiring water project licensees to provide recreation facilities, some of the demand for additional campground facilities through the year 2000 will be met by facilities developed or rehabilitated by licensees. Some of these facilities may be located on new recreational reservoirs developed by water and power project licensees.

If upgraded to desired standards, the present mix of campgrounds in semiprimitive-through-rural opportunity classes appears to be satisfactory. The 1983 reports indicated campground use occurring as follows: 1% in semiprimitive motorized, 31% in roaded natural, and 68% in rural. There are no indications of a need to substantially change this mix. Appendix F contains capacity estimates for campgrounds (Table F 01) and projected campground use in the Forest (Figure F1). Assumptions and summary conclusions regarding developed site use and capacities in the Forest are also given in Appendix F.

Day-Use Sites - The Forest has a variety of picnic areas, vistas, and boat launch facilities. Picnic facilities meet current demand fairly well, except on high-use weekends. Many of the Forest's picnic sites need rehabilitation and the quality of many facilities need upgrading. Some prime lake and stream frontage that is very desirable for

picnic and day use is now occupied and restricted by other uses. Adjustments in these other uses may be necessary as day-use needs increase. Many of the rehabilitation needs at older sites and needs for new sites will be met by water and hydroelectric development projects.

Vistas with parking, sanitation, and picnic facilities are generally in good condition. Several unimproved vista sites, such as White Bark Vista, are popular and their use indicates a need for development. Visitor information station sites merit a higher degree of development.

New boat launch ramps, with attendant parking and sanitation facilities, have been constructed at Bass Lake, Huntington Lake, Redinger, Mammoth Pool, Florence, Edison, Courtright, and Wishon Reservoirs. Rehabilitation and expansion of parking is necessary at several of these sites.

Lack of parking and sanitation facilities is a common problem over much of the Forest. Funding to provide safe parking and sanitation facilities is needed to accommodate snowplay, cross-country skiing, snowmobiling, fishing, hiking, and horseback riding activities.

Private Recreation Residences - There are 563 recreational residences in the Forest under special use permits. Most of these residences have existed for more than 50 years as well-established, well-maintained, rustic cabins. Many of these residences and tracts impart a unique and distinctive character to the Forest. No new recreational residence tracts have been established for many years and none are planned as per current Forest Service Policy. All available Forest Service residential lots are now under permit. Adequate private land exists and is being developed to meet demands for additional recreational residences.

Some recreational residences are located on sites that are suitable and desirable for general public recreational uses. Recreational residences are private uses and have lower priority for retention when compared with general public uses. However, recreational residential use continues to be an important recreation activity and most sites will be retained as an important part of the overall recreational opportunities in the Forest. No large-scale termination appears necessary. However, previous planning action has placed Lot 1E of the Angel Springs Tract on notice that the permit will not be re-issued under terms of the existing permit.

Commercial Public Services - There are a number of commercial business permits offering a wide variety of public services within the Forest. Most commercial structures were built in the late 1920's or 1930's. Because of reduced public needs as recreationists become more self-sufficient, some commercial establishments have become uneconomical. Most public services are met with existing facilities in the Forest or on private land. The

major unmet need is overnight accommodations at Huntington Lake during the winter. Previous planning actions outside this plan have placed the Huntington Lake Gift Shop and Lumber Yard on notice that their permits will not be re-issued under terms of the existing permits

Organization Camps - There are 19 organization camps in the Forest with an overnight capacity of nearly 2,500 PAOT. Generally, these camps receive heavy use and serve many groups in addition to the primary permittee. Additional demands for facilities from organizations lie in more efficient utilization of existing camps. Several commercial camps occupy highly desirable recreational land in high-use areas. Some of these sites may be needed for other public uses in the future. Parking areas for some camps, notably those used by scouts at Huntington Lake, occupy prime lake frontage.

Developed Facilities on Private Lands - The Pacific Gas and Electric Company operates several day-use sites near Bass Lake. Although PG&E possesses large holdings at Bass Lake, it operates no public recreation facilities on this land. PG&E does lease some land to the Forest Service for operation of public recreation facilities. PG&E plans to develop and operate a small overnight camp, picnic facilities, and a launch ramp on its land at Kerckhoff Reservoir.

The major landowner at Shaver Lake, Southern California Edison Company, provides a 100-unit campground, two boat ramps, and day-use parking and picnicking facilities. These facilities receive visitors from other facilities during peak use in July and August. The Company plans to construct several hundred new overnight camp units and a number of day-use parking facilities on its land at Shaver Lake as part of its project relicensing requirements.

Other private recreational developments include resorts, campgrounds, and recreation vehicle and trailer parks. Resorts have been developed where the potential for profit justified development costs. Most of these are in the Bass Lake and Shaver Lake areas. Due to the economics of development, few campgrounds have been developed on private land within or near the Forest.

3.5.1.3

Dispersed Uses

Dispersed recreation refers to those recreational activities that occur outside developed sites. It includes camping, hiking, fishing, cross-country skiing, fuelwood gathering, sailing, and motoring, which are but a few of the 35 recreational activities reported within the Forest.

Current Forest Service policy is to provide a range of recreational opportunities. For management convenience, combinations of activities and experience opportunities have been arranged along a Recreation Opportunity Spectrum (ROS) (see glossary). Absence of

suitable areas means some activities are not available within the Forest. An overall recreational opportunity picture of this part of the state shows there are areas in a variety of settings for almost all outdoor recreational activities. Estimates of popularity for dispersed areas in terms of PAOT and RVD for each ROS are included in Appendix G, as data for RVD capacity for each ROS class during the planning period 1985 to 2035. Assumptions used and a summary relating to dispersed use are also included in the appendix.

Driving - In the Forest and surrounding area, many attractions exist for driving in an urban and rural setting. Many miles of various types of roads are also available for travel in the Forest's roaded natural setting. The key for future management seems to be that the present mix of various types of roads be maintained.

Off-Highway Vehicles - The Forest has had an OHV plan since OHV management was first implemented in 1958. Over the years, controls have been adjusted and modified to meet changing conditions and needs.

The current plan (1977) establishes regulations for OHV use while protecting other resources. It divides the Forest into five zones of use:

Zone A (Non-Use) are composed of wilderness and primitive areas where OHV use is prohibited.

Zone B (Limited Use) includes Released Roadless Areas, motor vehicle control areas, and Teakettle Experimental Forest where OHV use is restricted to designated routes except for over-the-snow travel with three exceptions.

Zone C (Limited Use) are the winter sports sites at Sierra Summit and the snow play area at Summerdale Campground where cross-country over-the-snow use is restricted to designated routes.

Zone D (Limited Use) is the largest zone and includes all land between the western boundary and Zone B. Over-the-snow travel and land travel is open with five exceptions.

Zone E (Limited Use) is the small area on Tamarack Ridge adjacent to Highway 168 where OHV use and over-the-snow use is restricted to designated routes.

In Zones B and D, Road Management Objectives for Maintenance Levels 1 thru 5 roads have been developed and updated through the Forest ID Team process. Summer OHV use on Maintenance Level 1 roads are closed to all motorized vehicle travel. Approximately half of the total miles in Maintenance Level 2 road category are closed to summer OHV travel. Maintenance Levels 3, 4 and 5 roads are closed to all unlicensed OHV travel.

The Forest is in the process of preparing a new OHV Plan which will be completed within 18 months of the Forest Plan completion and approval. It will contain site specific management direction, tiered to the Forest Plan, and designate a road and trail system

A Draft Statewide Off-Highway Motor Vehicle Recreational Trails Plan has been developed for the State of California Department of Parks and Recreation. This plan presents the concept of a statewide OHV trail system that connects use areas to provide opportunities for long distance trail touring. Although the State plan identifies specific route locations, it recognizes that actual route locations may vary. Existing Forest OHV trails and low standard roads can serve as part of the statewide system and provide long distance touring opportunities. New connector trails will be needed to supplement existing routes and to complete the system

The California Off-Highway Motor Vehicle Recreation Commission has also endorsed the concept of a statewide OHV trail system and has developed guidelines for the designation of trail segments.

Boating - There appears to be sufficient opportunity to meet current and projected demand for powerboating and waterskiing outside the Forest on existing and proposed low-elevation reservoirs. The potential for increasing use of relatively small, high-elevation reservoirs of the Forest is limited in part due to the more placid boating and fishing activities occurring on those waters

Bass Lake and Shaver Lake are heavy-use boating reservoirs located primarily on private land, with local Sheriff Departments regulating the use. There is need for the Forest Service to cooperate with the other local enforcement agencies in developing and enforcing regulations to maintain some specific experience level.

Huntington Lake is a very popular high-elevation lake where numerous sailboat regattas have been held for many years. As the number of racing events increased to include all weekends and most weekdays during the main season, complaints from fishermen and other sailboaters followed. Despite some regatta controls established in 1976, problems regarding use of the water surface still exist. The types and density of boats allowed to participate in regattas needs resolution. Unless a more urban atmosphere is desired by the majority of users, the capacity for sailboating at Huntington Lake in the primary-use season has been reached. However, use could be extended after Labor Day when there are fewer conflicts.

Camping - Most of the Forest is suitable for camping, as many unimproved campsites are located near lakes, streams, and roads. Conflicts occasionally occur with other resources and uses. Most common conflicts are camping in a fire hazard area, too close to water surfaces, and disturbance of wildlife.

Opportunities to accommodate additional dispersed camping are good. Many suitable sites exist where camping creates low impact on other resource values. If information systems and regulations are utilized, considerable increases in dispersed use and its supervision appears possible.

Hunting and Fishing - Successful big game hunting has declined in recent years. This is mainly attributed to declining Forest deer populations rather than hunters, since hunting pressure has remained stable. If the herds increase, hunting should follow a similar trend. Hunting black bear, valley and mountain quail, band-tailed pigeon, and western gray squirrel and trapping of bobcat, coyote, and other furbearers are important recreational pursuits.

Fishing is a major Forest activity that occurs in all recreation opportunity classes. About 1800 miles of streams and rivers and 480 inventoried lakes and reservoirs are capable of supporting fish, with rainbow and brown trout the predominant cold-water species. Lower elevation impoundments are dominated by warm-water species

Snow Activities - Concentrated activities by snowplayers, crosscountry skiers, and snowmobilers has caused competition for available parking space and use areas. In the more popular snowplay areas, snowmobiling has either been prohibited or restricted. The primary need for winter recreation is to increase the parking space available in areas where good snow conditions exist, and to assign incompatible activities to different areas. There is need to expand downhill skiing facilities at Sierra Summit. Although there are possibilities for additional skiing development in the Mt. Raymond area, skiing demands can be met during this planning period by expansion of Sierra Summit facilities.

Trails - There are approximately 1,100 miles of trail in the Forest. Primary uses are hiking and horseback riding, however other uses are also made of the trails, mountain bikes, trail bikes, etc. They vary in quality from trails developed for intensive use to barely defined routes. Many of the trails need heavy maintenance to reduce resource damage or ensure public safety. Hiking occurs mainly on developed trails and along roads. Most hiking occurs as a result of another recreation activity.

Trail destination and origin points also change. An example of use is the historic French trail; although the French Trail is in disuse presently, there is a strong public demand to continue this historic connection to Millerton Reservoir. This new connection from Fresno to the high Sierras requires some new trail construction and reconstruction of the historic trail. Changing the termination point creates new users and public interest.

Commercial pack and saddle stock use has been relatively stable in recent years, but activities using personal horses have increased. Large equestrian groups and riding clubs use the Forest and have requested special facilities and

trails for their animals. Back country conflicts over riding stock occur at some popular camp spots and in meadows. Many opportunities exist to accommodate stock use without major impact on other activities or resources.

3 5.2 Visual Resources

The Forest exhibits diverse and distinctive landscape qualities highly suited to scenic appreciation. This is recognized by the State of California in listing Highways 41, 49, 149, and 168 in the Master Plan of State Highways Eligible for Official Scenic Highway Designation.

While no specific statistical analysis of the demand for visual quality is available, the presence of strong demand can be inferred from a variety of sources. There are many laws and policies that cite visual quality or scenery as their primary or secondary purpose. By establishing the State Scenic Highway Master Plan, the State legislature perceives this demand. In 1965, Regional Forester Charles Connaughton acknowledged this demand by coordinating Regional Forest Service policy with the State's Master Plan. He stated National Forest land will be managed to retain natural-appearing conditions for public enjoyment by restricting or modifying timber harvesting in the immediate vicinity and view of eligible highways.

Another measure of demand for visual quality is the level of recreation in activities associated with the enjoyment of scenery. The California State Comprehensive Outdoor Recreation Plan of 1975 projected driving and walking for pleasure and sightseeing would increase 31% by 1990.

The California Recreation Patterns Study of 1982 also projected increased participation in activities associated with visual qualities on National Forests. Visiting scenic areas should increase 31% and nature appreciation 24% between 1980 and 2000. Per capita participation ratios will increase about 5% during this period, indicating total participation will grow even faster than the population. As the population continues to gain affluence and education, they will expect a high-quality scenic environment for their leisure activities.

As a result of the public's concern and demand for natural scenic environments, standards have been established for measuring the current and future condition of the visual resource. Inventories of the present state of visual resource values are used to derive two baselines against which the effects of each alternative can be evaluated. The two baselines are the initial visual quality objectives (initial VQOs) and existing visual condition (EVC). VQOs are goals of how the landscape should appear in the future. (See Visual Quality Objectives in Agriculture Handbook 461 and 462 of the Visual Management System.) Initial VQOs set those goals, based on predictions of the amounts of landscape alteration that will be acceptable to the public, without consideration of other competing resource values.

The initial VQO mapping system is developed by combining indices for:

- 1) the public's concern for scenic quality, or Sensitivity Level,
- 2) the diversity of natural features, or Variety Class, and
- 3) the three distance zones

The initial VQOs that have been mapped for the Forest closely follow Forest Service direction provided by Agriculture Handbook Nos. 461 and 462.

Sensitivity Level

Sensitivity levels measure people's concern for scenic quality. These people are generally traveling through the Forest or permanently or temporarily occupying a use area. Travelways can be roads, trails, or waterways. Use areas can be campgrounds, recreation day-use facilities, or visitor centers. The sensitivity level classification, based on how many people see the area and how concerned they are with aesthetics, is divided into three levels, which apply to all travel routes, use areas, and water bodies:

- Level 1: High sensitivity
- Level 2: Moderate sensitivity
- Level 3: Low sensitivity

Variety Class

Variety classes measure inherent scenic quality by the degree of variety in the landscape. Variety classes are derived by using landscape character types and subtypes, as a frame of reference, to classify physical features in an area on their degree of scenic quality. The three variety classes are:

- A: Distinctive landscapes (generally photographed by Forest visitors),
- B: Pleasing but common landscapes, and
- C: Landscapes normally perceived as dull or monotonous.

The distribution of land in the Forest between these variety classes is shown below.

VARIETY CLASS	AREA (M Acres)
A	526 (38%)
B	676 (48%)
C	194 (14%)

Distance Zone

A visitor's perception of an area can vary according to how close the viewer is to the object. Distance can be a factor of how important a viewed scene is. Change in detail can be perceived to about one-quarter to a half-mile away. This is called "foreground" distance zone.

The "middleground" is from one-quarter to a half-mile away up to a maximum of 3 to 5 miles. In this zone, perception is reduced to being able to somewhat distinguish tree forms. The "background" zone extends from middleground to infinity.

Foreground, middleground, and background zones are evaluated with variety class and sensitivity levels and these are combined for initial VQO mapping. The initial VQO inventory found the Forest's land distributed in five different objectives as shown below. Each of these objectives defines a different level of visible landscape alteration that is acceptable.

INITIAL VQO	REA (M Acres)
Preservation	324 (25%)
Retention	254 (19%)
Partial Retention	427 (32%)
Modification	228 (17%)
Maximum Modification	88 (07%)

Another baseline, the existing visual condition (EVC) inventory categorizes the Forest's land according to landscape alterations that currently exist. Unlike VQOs, the EVC describes how the Forest presently looks. The degrees of landscape alteration defined by the visual condition levels correspond to the levels of the VQOs

The visual condition levels are:

- I. Untouched: predominantly ecological changes.
- II. Unnoticed: changes are not evident.
- III. Minor Disturbance: changes are noticed, but do not attract attention.
- IV. Disturbance: changes are easily noticed and attract attention.
- V. Major Disturbance: changes are very strong and attract attention.
- VI. Drastic Disturbance: changes are in glaring contrast and disharmony with natural patterns.

The distribution of land in each EVC level is shown below.

EVC	REA (M Acres)
Untouched	643 (47%)
Unnoticed	401 (29%)
Minor Disturbance	242 (18%)
Disturbance	64 (05%)
Major Disturbance	19 (01%)
Drastic Disturbance	4 (00%)

Mining, road building, logging, utility, and recreational developments have caused landscape changes on 53% of the Forest. About 6% of the Forest is visually dominated by human activities, while the remainder is still predominantly natural in appearance. Timber management activities have the greatest potential to change visual conditions.

An indicator used to compare the effects of the alternatives on the visual resource is the visual quality index (VQI). The VQI is a means of quantifying the overall visual quality of the Forest. It reflects both the inherent scenic value of the landscape and the amount of human modification. VQI is correlated to public preference ratings of these two characteristics, giving higher values to landscapes of variety and more natural appearance. VQI can be calculated for the EVC as well as for the future visual condition that will result from implementing each alternative. The VQI for the initial existing visual condition is 93.0. The VQI for the initial VQO is 85.5. If the Forest had not been altered by man, the VQI would be 101.4, and if all of the Forest had been drastically disturbed, the VQI would be 46.7.

3.5.3

Wilderness

3.5.3.1

Introduction

Except for the Kings River Roadless area (B5-198), the disposition of roadless areas was resolved by the passage of the California Wilderness Act (CWA) of 1984 (PL 98-425). Kings River B was designated as a further planning area by the CWA. However, on November 3, 1987, PL 100-150 designated the Kings River B area as a "Special Management Area" (SMA). Both Sequoia and Sierra National Forest land included in that area will be administered by the Secretary of Agriculture, through Sierra National Forest. Those areas not designated as wilderness were made available for multiple uses other than wilderness. Disposition of the RARE II areas by PL 98-425 is given in Table 3.07.

The CWA added 227,778 acres of designated wilderness to Sierra National Forest. The Dinkey Lakes and Monarch Wildernesses were created, and additions were made to the John Muir and Ansel Adams (formerly the Minarets) Wildernesses. The Kaiser Wilderness was unaffected by the Act. The total wilderness acreage in the Forest is now 527,938 acres, excluding 24,553 acres administered by the Inyo National Forest. A breakdown of acreages is shown in Table 3.08.

TABLE 3.07 - CALIFORNIA WILDERNESS ACT, 1984 DESIGNATIONS (In Acres)

AREA	AREA NUMBER	TOTAL FOREST SERVICE AREA *	WILDERNESS	NON- WILDERNESS ***	FURTHER PLANNING
San Joaquin A	A5047	42,270	42,270		
San Joaquin B	B5047	84,900	53,730	31,170	
A5-198 Kings River	A5198	5,332	5,332		
B5-198 Kings River**	B5198	48,668			48,668
Rancheria	05198	13,330	6,250	7,080	
Ferguson Ridge	05240	6,100		6,100	
Devils Gulch	05241	30,300		30,300	
Mt. Raymond	05242	6,850		6,850	
Shuteye	05243	7,700		7,700	
Dinkey Lakes	05244	115,110	85,180	29,930	
Woodchuck	05245	19,830	19,830		
Sycamore Springs	05246	8,900		8,900	
* Acres listed are approximate and include private lands within each area ** Kings River B5-198 was the only area included in the California Wilderness Act for further planning (24,368 gross acres in Sierra National Forest and 24,300 gross acres in Sequoia National Forest). In 1988 the total area (48,668 acres) became a Congressionally designated Special Management Area (SMA). *** There is further discussion in Appendix H describing the probable future management of those areas with acreages shown as non-wilderness.					

TABLE 3.08 - CHANGES IN WILDERNESS AREAS IN SIERRA NATIONAL FOREST RESULTING FROM THE CALIFORNIA WILDERNESS ACT (Acres)

UNIT	PREVIOUS SIZE	AREA ADDED IN 1984	CURRENT SIZE*
Ansel Adams**	42,660	96,000	138,660
John Muir	234,790	81,000	315,790
Dinkey Lakes		30,000	30,000
Monarch		20,788	20,788
Kaiser	22,700		22,700
Approximate Totals	300,150	227,778	527,938
* Area is approximate. Does not include 24,553 acres of John Muir Wilderness administered by Inyo National Forest. ** Ansel Adams Wilderness includes only the former Minarets Wilderness within Sierra National Forest.			

The Ansel Adams Wilderness

A portion of this Wilderness was formerly designated the Minarets Wilderness. The Minarets Wilderness has an approved management plan. Completed in 1979, it was developed with public participation and contains management direction to assure a high quality, enduring wilderness character. The direction established in that plan will be reaffirmed or modified during the land management planning process and incorporated with the additional areas into direction for the new Ansel Adams Wilderness

This Wilderness is easily accessible to the general public. Visitor use has increased to the point where trailhead quotas limiting visitors has been placed on all trails entering the old Minarets Wilderness. The purpose is to reduce use levels around certain lakes and other popular areas in order to maintain a measure of opportunity for solitude and to reduce damage to soils and vegetation. Quotas may now be necessary for trails leading into the new areas.

Commercial pack and saddle stock use has remained static for a number of years. Use of private recreation stock, however, has increased at westside trailheads. Private livestock grazing makes demands on forage around key-use meadow areas. Livestock grazing had caused some depletion in range condition until the 1920's, but that situation has since improved. For the past several years, PSW and Sierra National Forest conducted grazing studies in the Jackass Allotment in the old Minarets Wilderness Area. Under cooperative agreement with the permittee, cattle were not grazed in the portion of the wilderness during the study period. They were permitted to resume grazing in 1984 at the conclusion of the study. Future grazing should be coordinated to allow accomplishment of all resource objectives

Most of the trail system in the Ansel Adams Wilderness is basically adequate with regard to length and number of trailheads needed to serve the public. However, some locations are inferior by today's standards. Because trails are a major source of soil loss, rehabilitation and rerouting are needed to protect resource values and public safety. Some new trail construction will aid in dispersing recreationists

Fire and the possibility of a major conflagration are moderate. A wilderness management plan plus a fire management action plan, which includes planned and unplanned ignitions, is needed to provide direction for managing the vegetation and fuels under more natural conditions.

Fire has been excluded in this area for years and has interrupted the natural ecological role. The use of both unplanned and planned ignition will reduce the accumulation of natural fuels that deter the normal cycle.

However, the lightning fire frequency, which occurs in this area, does not provide for the timely return of existing vegetation to its natural state. Therefore, the use of planned ignition prescribed fire becomes necessary to obtain this condition. Also, prescribed fire will reduce the threat of fires escaping the wilderness area and impacting adjacent public and private resources and improvements.

3.5.3.3

The John Muir Wilderness

The John Muir Wilderness formally designated in 1964, has an approved management plan, completed in 1974. It was developed with public participation and contains management direction to assure a high quality wilderness experience.

Recreational use is extremely heavy along most major trail corridors leading to the interior, as is the use along the Pacific Crest Trail, which traverses much of the Wilderness from north to south. Wood shortage, soil and vegetation damage, human waste disposal, and over-crowding with few opportunities for solitude are common problems along the main trail corridors and the primary destination lakes or streams they serve. Potential pollution problems and reduction in water quality are the result of too much use close to major water sources. In such areas, maintenance of wilderness resources and the assurance of a quality experience with some semblance of solitude are not being met.

Trailhead quotas limiting visitor use to established capacities have been initiated on all trails. Although use problems prevail in the areas noted, the vast majority of the area is still wild and untrammled. Only a few miles off the main paths, solitude and low recreational use areas exist. It appears desirable that few to no trails be built into these areas in order to preserve this type of opportunity. Dispersing users and continued regulation of area capacities and trailhead quotas are necessary to preserve wilderness values

With the adoption of the current management plan, maximum group size is limited to 25 persons. Over 90% of the use is by groups of seven or less, and 4% by groups numbering more than 16. Small groups continue to express strong negative feelings toward large groups and groups that bring excessive numbers of riding and pack stock into the wilderness

A number of commercial packers serve this Wilderness from both the east and west sides, but the activity has declined over the past decade. Private recreational stock use has increased in the southwestern part of the John Muir, as access from the San Joaquin Valley to the trailheads has been improved. Many of these equestrians are unaware of regulations in wilderness areas. Often they are a source of major conflict with backpackers along the main trails, around campsites, and in small meadows near lakes. Some excessive grazing by pack and

saddle stock occurs along major trails and near popular camping areas

There is cattle grazing, primarily in the areas added in 1984. Some conflicts between livestock use and recreationists may need resolution because of grazing in the Post Corral, Woodchuck, and Rancheria areas. Fire in the John Muir has played a major role in maintaining the natural ecosystems. For the most part fires have occurred in sparse vegetation and have little chance to create a major conflagration. However, exclusion of fire has seriously deterred the natural ecological cycle in certain areas and threatens improvements and resources adjacent to the wilderness. Prescribed fire restores the natural cycle and reduces these threats.

The trail system in the John Muir is adequate in length. A major portion of the system, however, is substandard in location and condition. Most trails were established in early years to serve grazing areas and most were developed for horses. They do not adequately serve today's recreational backpacking and horse use. Soil loss from poor trail location and design and hazardous sections are common. Extensive rehabilitation and some relocation are needed to reduce resource damage and improve public safety. Some trail closures and some new construction are needed to aid in managing the area. There are only a few miles of trail and little need for more, in the Sierra portion of the Monarch Wilderness.

Fire has been excluded from this wilderness and has interrupted the natural ecological cycle. The use of managed unplanned and planned ignitions will reduce unnatural fuel build-ups and restore the normal natural cycle.

3 5 3 4

The Monarch Wilderness

This area was designated wilderness in the California Wilderness Act of 1984. The Wilderness is located in Sierra and Sequoia National Forests, bounded on the south by the Kings River, on the east by Sequoia National Park, and on the north by John Muir Wilderness.

The fire threat for the Monarch Wilderness is different. Highly flammable fuels are present and a threat of major fires exist. Prescribed fire is needed to protect the adjacent private and public resources and improvements, as well as to restore the natural ecological cycle.

Limited access is provided into the southeastern portion of the wilderness by a low-standard trail with a trailhead located on the paved, Cedar Grove Road. Recreational use is very low, with many opportunities for solitude. Recreational use is confined to the area accessed by the limited trail system in Sequoia National Forest. Use of the Sierra National Forest portion is negligible. Most use is by hunters and rock climbers, with limited fishing occurring in several small lakes and streams in the Sequoia part of the wilderness.

Grand Dike, Little Tehipite Valley, and the Middle Fork Kings River are major special features within the area. The area has the appearance of apparent naturalness. The only recreational opportunities are very primitive in nature, with no facilities provided. The range of recreational activities are limited due to the difficult terrain, poor access, and absence of significant attractions.

3 5 3 5

The Kaiser Wilderness

The Kaiser Wilderness, established in 1977, does not have an approved management plan. Management now follows the direction and policy of national and regional Forest Service directives. Management direction relating specifically to the area will be determined during the land management planning process.

A good road system surrounds the Kaiser Wilderness, with 11 trailheads affording access to the interior. Visitor use was relatively high prior to Wilderness designation and remains high at the present time. With easy access and a large population of recreationists at Huntington Lake, the Wilderness is very heavily used by day hikers.

In Wilderness designation, the requirement to have outstanding opportunities for solitude or a primitive and unconfined type of recreation was added to the other management concerns for this area. Overuse at popular sites is damaging soils and vegetation, while reducing opportunities to enjoy solitude and challenge. Limiting visitors through trailhead quotas and prohibiting overnight camping in some locations was initiated in 1981 to maintain capacities and protect wilderness values.

Organized group use has been high in the Kaiser, with some groups conducting summerlong programs that repeatedly bring in large parties. The small size of the area and the open alpine environment at higher elevations allows large groups to be readily seen and heard. This creates an adverse impact. Though the present limit is presently 25 persons per party, reducing that number to 10 persons would permit more individuals and parties to visit the area with lower impact than currently occurs. Travel with relatively lightly-loaded horses, consists mostly of day rides in the southern portion of the Wilderness. Some commercial packing occurs, but the practice is limited. Forage for pack and saddle stock and opportunities for increased livestock use without serious conflicts are limited.

The trail system's length is more than adequate, but erosion damage is occurring on some trails. Some trails may be closed and others scheduled for relocation, rehabilitation, or maintenance.

While a moderate number of fires, both man-caused and lightning, occur in this wilderness, 30% of the area exhibits high potential for loss. This loss can occur to the Wilderness and adjacent private developments. Planned

and unplanned ignition under a prescribed situation will reduce the threat to adjacent improvements and resources, as well as restoring the natural ecological cycle in the interior of the area

3 5 3 6

Dinkey Lakes Wilderness

This area was designated wilderness in the California Wilderness Act of 1984. It is bounded on the east by the Ershum-Dinkey-Dusy OHV route, which separates this Wilderness from the John Muir Wilderness by a 600-foot corridor.

Except for the high peaks in the vicinity of Dinkey Lakes, most of the area is covered with stands of lodgepole pine, white fir, red fir, and Jeffrey pine interspersed with mountain meadows. The area is accessible by a number of trails. With relatively easy access from all directions except east, the area receives heavy recreational use. There are excellent opportunities for semiprimitive recreational activities in an unconfined environment. Chief uses are camping, fishing, hiking, hunting, and horseback riding. Although there are ample opportunities for dispersing use, most users congregate around a few popular lakes and camping spots. Those who visited the area in the past were generally less experienced, wanted less solitude, traveled in larger parties, and sought considerably less challenge than visitors to the John Muir Wilderness. Many who visit the area are looking for a fishing or back country camping experience only. A number of groups make heavy use of the area. Boy Scouts use it to earn merit badges for 25- and 50-mile hikes. Group-use activity, as it conflicts with solitude opportunities for others, will be an important consideration in management planning.

The vehicle routes at Red and Coyote Lakes (2.5 miles), Swamp Lake (4 miles), Dinkey Lakes (17 miles), and Dusy (9 miles) provide access for motorized recreation at the perimeter of the Wilderness. Vehicles are restricted to these designated routes. Conflicts have occurred between users at the popular camping spots and areas where vehicle routes and foot trails cross or are adjacent to each other.

There are a number of fences, some corrals, cabins, and limited recreational improvements in the Dinkey Lakes Wilderness. Most of the fences, corrals, and cabins are in conjunction with cattle grazing activities and are mostly located in large lodgepole flats from Courtright Reservoir north to Kaiser Pass. Several meadows have check dams for erosion control. With Wilderness designation, a determination is to be made whether these facilities can remain and be compatible with wilderness objectives. Since cattle grazing is an important activity in this area, some conflicts between grazing and recreation users have occurred and will increase at some of the more attractive lake and streamside sites. No major problems have been noted between cattle and recreational stock grazing.

Natural and man-caused fires have been small in size and number. Excluding natural fires has affected natural processes in some parts of the Wilderness more severely than other parts. The western portion has fuel types that may need some manipulation, such as prescribed fire, to reduce fuels and the threat of fire to adjacent timber land. Planned and unplanned naturally-occurring fires under this prescription will reduce the threat to adjacent land, as well as restore the natural cycle.

3.5.3.7

Lands to be Considered for Wilderness

The Kings River Special Management Area, prior to the 1984 California Wilderness Act, was to be considered for possible inclusion in wilderness. In 1987 it was Congressionally designated as the Kings River Special Management Area and includes 48,668 acres. The 24,300 acres within Sequoia National Forest will be evaluated concurrently with the Sierra portion so the entire SMA can be planned at one time. Special Management Area designation does not preclude wilderness consideration. A detailed analysis is contained in Appendix C.

3.5.3.8

Need for Wilderness

Concerning the need for wilderness, the Forest Service Manual states: "When considering the need for additional wilderness within a given area, it is necessary to place the wilderness resource in perspective. There should be an indication of current or future public need." There are approximately 7.25 million acres of established and proposed wilderness within 150 miles of the Forest. Based on a wilderness permit analysis (Region 5 - USDA Forest Service - 1975) the National Forest Wildernesses within that same 150-mile radius contain some of the most heavily used and some of the most lightly used wildernesses in National Forests within California. Use of these wildernesses originates primarily in the San Francisco-Sacramento and the Los Angeles-San Diego areas. The highest proportion of visitors to the southern units are from Southern California and the highest proportion of visitors to the northern units are from Central California. Wilderness enthusiasts from those two areas also have access to considerably more wilderness than what is within the 150-mile radius of this Forest.

3.5.3.9

Wilderness Supply and Demand

Figure 3 01 provides a projection of wilderness demand from 1985 to 2035. Demand projections are based on population growth projections and 1982 recreational use data as a starting point.

Appendix G includes Tables G.01, G.03, and G.04, which develop capacity estimates for existing wilderness areas by People At One Time (PAOT) and Recreation Visitor Days (RVDs) for each Recreation Opportunity Spectrum

Class (ROS) now existing in wilderness areas in the Forest. Figures G2 and G3 provide a graphic display of existing wilderness use capacity and future demand by ROS class.

Tables G.03 and G.04 indicate the potential wilderness use capacity. It should be noted that potential capacity calculations assume users can be distributed evenly over useable acres during the managed use season. This assumption is not entirely valid as some users may be unwilling to move from one time period or area to another. Hence, there will continue to be controls, such as the current quota system, which establishes the number of people who may enter during certain time periods. Without these controls, the most attractive, easily accessible areas of wilderness would receive use amounts far above planned per acre capacity levels.

Figures G2 and G3 illustrate that wilderness demand will meet or exceed potential capacity of existing wilderness areas prior to the end of the planning period (year 2035). Existing wilderness areas in ROS Class of "Primitive," will reach capacity by 2025, while capacities were already exceeded in ROS class "Semiprimitive Nonmotorized" in 1985. Management methods available to avoid shortfall or to allow more users could include adding more acres to wilderness, increasing the PAOT/acre multiplier (i.e., change 05 to 10), which would double the potential capacities, and reduce the length of time a party could stay in the area.

3 5 4

Wild and Scenic Rivers

3 5 4 1

Introduction

In 1982, the Department of the Interior conducted an inventory of western rivers with potential for Wild and Scenic River status. All or portions of seven rivers within or surrounding the Forest were included. Portions of those rivers were also on land managed by Yosemite National Park, Sequoia/Kings Canyon National Park, Devils Postpile National Monument, Inyo National Forest, Stanislaus National Forest, Bureau of Land Management and State of California. Through coordination with these other agencies, the Forest's original analysis included 34 segments of those seven rivers.

In November 1987, Congress designated portions of the Merced, South Fork Merced, Kings, South Fork Kings and Middle Fork Kings River as Wild and Scenic Rivers (WSR). The discussions concerning each of the designated rivers was deleted from the current analysis. Site specific direction for the designated portion of Merced, all of the South Fork Merced and Middle Fork Kings River is contained in their individual project EISs and Plans. Discussions concerning the undesignated portion of Merced River are retained in this document to support Bureau of Land Management's (a cooperating

agency) proposed classification of a portion of Segment 9 and all of Segment 10. The BLMs current management of these two segments is to protect Wild & Scenic values until their Draft Wild & Scenic River Plan is finalized

Rivers included in this analysis are Merced River (from National Forest/BLM land to point of maximum flood control storage at Lake McClure), San Joaquin, North and Middle Forks San Joaquin River (from sources to Mammoth Pool), and South Fork San Joaquin River (above Florence Lake to source within Sequoia/Kings Canyon National Park). Details of these five remaining undesignated rivers are described in Appendix E.

The majority of these river segments are located in steep-walled canyons where little or no management activity takes place. Several areas traversed by these rivers are designated as Wilderness. In the case of Merced River, existing development precludes some segments from being classified higher than "recreation." Inclusion of these rivers in the system will have little effect on Forest or National Park management.

Hydroelectric development on river segments within National Forest or BLM land is a major issue. Most hydroelectric activities are incompatible with wild and scenic river classifications.

Following is a summary of notable resource values identified for each river segment. Detailed information is contained in Appendix E.

3 5 4 2

Merced River

Segment 9 - BLM/Sierra National Forest boundary to ownership west side of Mountain King Mining Site (9 miles)

The waters are unpolluted and free of impoundments. This segment is a potential bald eagle nesting zone and contains limestone salamander habitat. It contains outstanding historic sites. The wilderness of the canyon contains valuable chaparral and riparian habitat for this elevation. The highway runs parallel to the river to Briceburg and is visible from the river.

Segment 10 - Westside to Mountain King Mining Site to point of maximum flood control storage at Lake McClure (3 miles)

This segment is generally inaccessible, except by trail. It contains outstanding whitewater rafting and the spectacular North Fork Falls is an outstanding feature.

3.5.4 3

San Joaquin River

Segment 1 - Confluence with North Fork San Joaquin River to Hells Half Acre (12 miles)

This segment is free of impoundments and has entirely primitive shorelines and unpolluted waters. Access is limited to several river trails. This segment is within the Ansel Adams Wilderness and managed by Sierra National Forest. Spectacular 2,000 foot deep, V-shaped canyons, sheer granite domes, and waterfalls gives this segment the highest scenic quality rating possible.

Segment 2 - Hells Half Acre to Northeast Mammoth Pool Reservoir (2 miles)

This short river segment, managed by Sierra National Forest, has excellent, self-sustaining, native rainbow trout. High granite domes overlook the river. This segment will be flooded if and when Mammoth Pool Reservoir is raised.

3.5.4.4

North Fork San Joaquin River

Segment 1 - Headwaters at Twin Island Lake to Hemlock Crossing (4.0 miles)

This segment traverses the Ansel Adams Wilderness and is managed by Sierra National Forest. The river is free-flowing and there are no developments. Outstanding metavolcanic rock with deep narrow canyons are present. There are outstanding hiking, fishing, and camping opportunities. This segment has a distinctive scenic quality rating.

Segment 2 - Hemlock Crossing to Cora Creek (4 miles)

Located in the Ansel Adams Wilderness and managed by Sierra National Forest, this section has easy trail access adjacent to the river. It is free of impoundments and has a primitive shoreline. This area is a deer summer range and a potential peregrine falcon nesting area. The scenic quality rating is outstanding.

Segment 3 - Cora Creek to confluence with San Joaquin River (6 miles)

This segment is a primitive, freeflowing section of the river within the Ansel Adams Wilderness and is managed by Sierra National Forest. There is limited trail access and one bridge crossing. The historic French Trail, an old Indian Trail, is one of the outstanding features of this segment. There are outstanding granitic rock canyons with high scenic values.

3.5.4.5

Middle Fork San Joaquin River

Segment 1 - Headwaters at Thousand Island Lake to Agnew Meadows (6 miles)

Located within the Ansel Adams Wilderness and managed by Inyo National Forest, this river segment is freeflowing and has a primitive shoreline. The Pacific

Crest Trail traverses the river corridor. Several other trails provide access. This segment has outstanding glaciated gorge and granitic domes. Ancient volcanic activity is evident. The fishery, recreational, and scenic quality values are outstanding.

Segment 2 - Agnew Meadows to Soda Springs Footbridge (4.5 miles)

This segment is located within the Ansel Adams Wilderness and managed by Inyo National Forest, except for a developed strip east of the river. A segment in the Devils Postpile National Monument is managed by the National Park Service. The river segment is free-flowing. Four access points lead to facility developments along the eastern shore. Five miles of Pacific Crest Trail are within this segment. There are excellent fishing, rock climbing, and scenic opportunities.

Segment 3 - Soda Springs Footbridge to Rainbow Falls (2.5 miles)

This free-flowing river segment is within the Ansel Adams Wilderness, except for the portion east of the river. The western half of the corridor is administered by the National Park Service and the eastern half by Inyo National Forest. The John Muir Trail and the Pacific Crest Trail cross this segment. Excellent examples of columnar basalt formations are found here. The 101-foot Rainbow Falls presents an outstanding scenic quality value.

Segment 4 - Rainbow Falls to confluence with North Fork San Joaquin River (9 miles)

The northern section of the segment is administered by the National Park Service and the remainder by Inyo and Sierra National Forests. The entire segment is in wilderness. This segment is free-flowing and accessible only by foot-trails. There are outstanding geological formations and excellent fishing and recreational opportunities.

3.5.4.6

South Fork San Joaquin River

Segment 1 - Headwaters to northwest boundary of Sequoia/Kings Canyon National Park (10 miles)

This segment is in wilderness within the Sequoia/Kings Canyon National Parks. The river corridor is adjacent to classic examples of glaciated U-shaped valleys and "horn" mountain peaks. There are outstanding camping, fishing, and nature study opportunities. Distinctive scenic and historic values are present and the trans-Sierra Indian Trail system is near the river.

Segment 2 - Northwest boundary of Sierra National Forest to hot springs area (3 miles)

Within John Muir Wilderness, this segment is managed by Sierra National Forest. It has characteristics similar to segment 1, with free-flowing water and primitive shorelines. This section is accessible by a foot/4-wheel drive trail. The area has potential peregrine falcon habitat. The rugged peaks and vistas give this segment an outstanding scenic quality rating.

Segment 3 - Hot springs area to west end of Blayney Meadows (2 miles)

Within the John Muir Wilderness and managed by Sierra National Forest, this short segment flows through private land. It is free-flowing with unpolluted waters, has commercial development close to the river shoreline, and is accessible by a 4-wheel drive road. The commercial facilities are rustic in character.

Segment 4 - Blayney Meadows area to South end of Florence Lake (2 miles)

Within the John Muir Wilderness and managed by Sierra National Forest, the river is free-flowing and has no physical developments along the river except the trail system. The segment has distinctive, scenic rugged peaks and vistas and has potential peregrine falcon habitat.

3 5.4.7

Decision Process

Before recommending a particular river or river segment for inclusion in the Wild and Scenic River System, each river segment is studied to determine its eligibility for designation. This procedure has been accomplished, using criteria based on the Wild and Scenic Rivers Act. Appendix E outlines this determination process in detail. River segments described above were determined to be eligible and have been assigned "classification/eligibility" ratings, as shown in Appendix E, Table 3. Other portions of Main Fork and South Fork San Joaquin and North Fork Kings River that are administered by Sierra National Forest were not studied. The eligibility for Wild and Scenic River designation will be studied at a future time when and if the criteria for eligibility changes.

3.5.5

Fish, Wildlife, and Sensitive Plants

3 5.5.1

Fishery Resources

The Forest's aquatic environments, approximately 1,800 miles of streams and rivers and 480 inventoried lakes, offer diverse habitats, from low-elevation ponds in chaparral-covered hills to tarns near granitic alpine ridgelines, for 31 species of fish. The majority of the angling occurs in mixed coniferous zones throughout the Forest. The larger streams are favored by anglers,

although an increasing number of anglers are discovering the smaller, perennial streams, which also support moderate numbers of trout. Typically, Sierran streams flow through varied and changeable habitats, meadows, granitic outcrops, bedrock cascades/falls, open floodplains, dense coniferous stands, expanses of barren bedrock, and riparian communities.

The habitat quality of Forest waters is mostly medium to high. Stream habitat quality ratings were derived from two sources. Data from Forest Service standard stream surveys were used to obtain ratings for 400 miles of streams. These ratings were corroborated by CDFG fishery biologists. The rating criteria included abundance of fish and aquatic organisms, pool/riffle ratios, water quality and temperature, stream channel stability, type of substrate, flows, shade canopy, cover and gradient. These factors were evaluated to obtain an overall composite rating of high, medium, or low habitat quality for trout.

Most of the Forest waters were barren of fish prior to recent transplanting activities. Extensive interdrainage transplants have resulted in the widespread distribution of the rainbow trout and other trout species. Only 8 of the fish species occurring in the Forest are native. All native fish are nongame warmwater species except rainbow trout. Fish native to California, but not endemic to the Forest, are golden trout, Lahontan cutthroat trout, and Paiute cutthroat trout. Both cutthroat trout are federally designated as threatened species and the Forest is participating in recovery efforts for these fish.

Of the approximately 1,800 miles of perennial streams offering fish habitat on the Forest, 85% or 1,530 miles are estimated to contain fish, with rainbow trout the dominant harvest species. Of the stream mileage that can support fish, habitat conditions are estimated as 28% high quality, 54% medium quality, 13% low quality, and 5% unknown. Approximately 70% of the high and medium quality waters are located outside wilderness areas, the quantity of high to medium quality habitat outside wilderness areas being considerably lower.

Table 3.09 - DISTRIBUTION OF STREAM QUALITY

Quality	Miles	%
High	510	28
Medium	970	54
Low	240	13
Unknown	80	5
Total	1,800	100

Generally, forestwide fisheries habitat quality ratings for trout are medium to high. A small percentage of the total stream miles are identified as having low quality fisheries habitat. These areas are either localized problem areas associated with livestock breaking down streambanks, timber harvesting and associated road building activities, hydroelectric power development, high recreational use,

or are where certain unstable channel conditions naturally occur.

The remaining, unsurveyed 1,400 miles of stream were assigned relative ratings by Forest Service and CDFG biologists. The basis for these ratings include field studies and observations, familiarity with Forest watersheds and fishery conditions, and professional judgement.

About 50% of the Forest's waters are in areas not subject to intensive land and vegetation disturbing activities. Much of the fishery resource is located in classified wilderness areas, in steep, rugged, canyon stream courses where no activities are proposed. Two streams in the Forest have been designated by the California State Fish and Game Commission as wild trout streams. These are Kings River above Pine Flat Reservoir and South Fork Merced River in Mariposa County.

3.5.5.2

Supply and Demand - Fisheries

Many non-native fish have been introduced into Forest waters, especially by the CDFG. Introduced warmwater species include largemouth bass, smallmouth bass, bluegill, crappies, and brown bullhead. Brown trout and brook trout are introduced coldwater species that are now abundantly distributed in the Forest.

Catchable trout are planted by CDFG in 18 streams and 11 lakes in the Forest. These waters are usually situated next to developed campgrounds and main arterial roads. The CDFG's hatchery catchable trout program supplements angling opportunities in these heavily used recreational areas. Fish species occasionally stocked in Forest waters include kokanee salmon, coho salmon, channel catfish, and spotted bass. Fish stocked on a regular schedule during the recreational season include rainbow trout, brook trout, brown trout, and golden trout. Many wilderness area lakes are planted aerially with fingerling size trout. Natural reproduction is usually limited to lakes with accessible inflowing and/or outflowing streams for spawning. The remaining Forest streams support self-sustaining populations of trout.

During 1983, the total Recreational Visitor Days (RVDs) attributable to forestwide angling was 234,000, of which 215,300 (92%) and 19,600 (8%) were spent on coldwater and warmwater fishing, respectively. Demand for angling in the Forest is expected to increase 1-2% annually during the next five decades. The coldwater angling is directed mostly on the Forest's streams, although an unknown but a presumably significant angling effort occurs on reservoirs and lakes.

3.5.5.3

Opportunities

As a result of the National fisheries emphasis program "Rise to the Future", the Forest established a solid fisheries management program. The objective of this national emphasis program is to integrate fish habitat management into the overall multiple-use goals of each forest and to integrate research into the overall Forest Service fisheries program. A "Rise to the Future" Action Plan established in 1988 for this national program, and the Forest has been instrumental in helping the Pacific Southwest Region accomplish the action items. Staffing, integrated resource management, habitat management, cooperation, coordination and communication, and program leadership are five areas of concentration.

Through adequate staffing of fisheries biologists and technicians, our management objectives of protection, restoration and enhancement of fish habitat in the Forest will be accomplished. An annual program of stream assessments will enable the Forest to more clearly identify distribution of fish species and location of different fish habitat types. This information will be used in project analysis and development through the integrated resource management approach.

The protection aspect of our program includes the involvement of fisheries specialists on project interdisciplinary teams, and the continued application of our Forest standards and guidelines. Through these steps, potential management associated impacts can be avoided or mitigated. Post activity reviews and forest plan monitoring provides information on the effectiveness of our standards and guidelines. In addition, the designation of our many wilderness areas also acts indirectly as a form of protection of the fish habitat.

The restoration portions of our program includes analysis of the stream assessment data and the watershed improvement needs inventory data. Both data bases provide information of degraded fish habitat or degraded watershed conditions so the Forest can prioritize projects for restoration as they are identified. Opportunities to restore damaged habitat may be more available than opportunities to actually improve on existing quality fish habitat. Opportunities to restore moderate to low quality habitat predominately includes streambank stabilization, meadow stabilization, and riparian vegetation introduction. These projects are coordinated using a basin level (watershed level) integrated resource management approach and may include improvements up slope in the watershed as well.

The improvement segment of the fisheries program involves identifying key fish habitat types that have potential to improve through in-channel placement of fish habitat structures. As with the restoration projects, these habitats are also identified through the stream assessment process, and are coordinated using a basin level integrated resource management approach.

Opportunities to improve existing quality fish habitat include the placement of log structures, rock dams, deflectors, cover devices, and/or spawning gravels. The Forest plans to prioritize restoration opportunities over actual improvement projects until the backlog of restoration opportunities is exhausted.

Coordination and cooperation with the other Federal and State fish management agencies is also an important component in our Forest fisheries program. Opportunities exist to continue improving our relationship with these agencies through adequate staffing and increased communication and cooperation.

3.5.5.4 Wildlife

Variety in the Forest's flora and fauna reflects variation in climate and terrain. Typical Sierra Nevada species are present, including two endangered wildlife species, two threatened fish species, eight sensitive wildlife species, and nineteen sensitive plant species. The distribution of these species is dependent upon habitat, which changes through plant growth, natural processes, and management activities.

The purpose of the Forest's fish and wildlife program is: 1) maintain viable populations of all native vertebrate species, 2) provide habitat leading to recovery efforts and maintenance of viable populations of federally-listed threatened and endangered species, and 3) improve and protect habitat for selected Forest Service listed sensitive species. Direct habitat improvement includes but is not limited to, roost tree structure improvement, cliff nest structure enhancement (if needed), browse regeneration, and fishery habitat improvement. Management is performed in cooperation and coordination with the California Department of Fish and Game (DFG), whenever possible.

NFMA and the Secretary of Agriculture's implementing regulations (36 CFR 219) require selection of Management Indicator Species (MIS) and evaluation of effects of alternatives on the viability and diversity of plant and animal communities. MIS will be used to evaluate effects of management on fish and wildlife resources, and species selected shall include where appropriate:

1. Endangered and threatened plant and animal species identified on State and Federal lists,
2. Forest Service sensitive species,
3. Species with special habitat needs that may be influenced significantly by planned management programs,
4. Species commonly hunted, fished or trapped, and
5. Non-game species of special interest.

Population trends of MIS will be monitored and relationships to habitat changes determined. The monitoring will be done in cooperation with State fish and wildlife agencies to the extent practical.

In addition, the Forest will coordinate with the Sequoia and Stanislaus National Forests to conduct a Tri-Forest monitoring plan. Four habitats, 1) riparian, 2) oak - woodland, 3) meadow edges and 4) mature mixed conifer have been selected, using a risk analysis, to determine the most important habitats for monitoring. Each habitat has: 1) potential for changes under future management, 2) potential for impact on dependent wildlife in each of these habitat types and 3) considerable public interest in wildlife communities associated with these habitats.

These selected habitats will be monitored measuring trends in "avian guilds", and employing single-season sampling at selected sites where changes will be most efficiently detected. Among taxonomic classes of vertebrates, birds are probably the least costly to monitor, because they are relatively abundant and conspicuous and because relatively simple methods have been developed to estimate their numbers (Verner 1980). A "guild" is a group of species that exploit the same class of environmental resources in the same way. A "management guild" is defined as a group of species that respond in a similar way to changes in their environment (Verner, in press).

The objectives of the combined three forest monitoring program will be: 1) less cost to participating forests, 2) to obtain an adequate sample size, 3) to evaluate predictive hypotheses regarding plant and animal responses to Forest management and 4) to ensure the prevailing Forest management direction is being practiced in the field.

Viability of vertebrate species is addressed through meeting MMR requirements for diversity, meeting specific MIS needs, providing certain other structural components of habitat such as snags, down logs, seeps, caves, rock outcrops, marshes, cliffs, etc. and implementing forestwide and specific standard and guidelines. For MIS, goals and objectives are developed, standards and guidelines applied, and monitoring is conducted to access effects. It is thereby assumed that adequate habitat can be maintained to sustain viable populations of all wildlife species.

The following sixteen species or groups of species, dependent upon a specific habitat, will be monitored and considered Management Indicators for the Forest:

1. Threatened and Endangered Species
 - Bald eagle
 - Peregrine falcon
 - Lahontan cutthroat trout
 - Paute cutthroat trout

2. Species associated with early successional seral stages
Mule deer (also harvest species)
3. Species associated with riparian zones
Willow fly catcher
Resident trout
Osprey (require large water bodies)
4. Species associated with late successional forest (oldgrowth)
California Spotted owl
Goshawk
Marten
Fisher
5. Avian guilds in the following habitats
Riparian habitat
Oak woodland habitat
Meadow edge habitat
Mature mixed-conifer habitat

Some species or groups were eliminated from consideration as MIS if it met one or all of the following criteria:

1. their distribution in the Forest was very limited or unknown,
2. the use of habitat types, by an individual animal and / or reproductive pair, was so diversified that monitoring the effects of a particular forest management activity would not be statistically significant, and
3. The species habitat was predicted not to significantly change

As an example, the wolverine was considered, but eliminated as a MIS because past sightings are very limited, it is a wide ranging species, and population numbers in the Forest and the State may not be sufficiently large enough to provide for a statistically valid sample needed to measure changes in population numbers relative to forest management activities.

Portions of the Kings River and South Fork Merced are managed as Wild Trout Streams (hatchery trout are not introduced). All fisheries are protected by specific standards and guidelines, through application of "Best Management Practices", and sound professional judgement to reduce siltation, maintain aquatic diversity and retain streamside vegetation

Future management could limit vegetation manipulation or prescribe vegetation treatments which protect or create habitat diversity and therefore maintain the viability of diverse species.

3.5.5.5

Supply and Demand - Wildlife

The Forest provides suitable seasonal or year-round habitat for about 346 vertebrate species including 31 species of fish, 13 species of amphibians, 22 reptiles, 198 birds, and 82 mammals. Big game hunting and trout fishing are important activities in the Forest. Users are primarily from the local area, Los Angeles and the San Francisco Bay area. Many recreationists want to enhance their wildland experience by observing or photographing wildlife. Consumptive and non-consumptive demands for fish and wildlife will increase with human population expansion, but it is anticipated non-consumptive demand will grow faster

At least seven species of game birds inhabit the Forest. These are band-tailed pigeon, mountain quail, California valley quail, blue grouse, mourning dove, wild turkey, and waterfowl. Band-tailed pigeon, mountain quail, and California quail are the most abundant of the game birds. Mourning doves and several species of waterfowl are occasional Forest visitors but their occurrence is far too limited to provide a significant hunting resource. Although blue grouse inhabit the Forest, their numbers are also too limited to warrant substantial hunter pursuit. Recently, wild turkeys have been transplanted to several locations in the Forest. These small populations have multiplied and now provide a limited hunter resource.

Of the 82 species of mammals that occur in the Forest, 72 species are relatively common inhabitants. The remaining 10 species are uncommon or rare in occurrence. Nearly all common species are year-long residents. Some species, such as mule deer, black bear, and mountain lions change elevations seasonally, and a small number of bat species leave the Forest during winters. Mule deer, black bear, two species of cottontail rabbits, and two species of squirrels are game animals in the Forest. Hunting rabbits is presently low and squirrel hunting is moderate. Although total harvest is low, black bear provides an important Forest resource for the hunting public. The Forest has an estimated population of 200 to 250 black bears and the annual harvest of about 20 animals has been relatively stable.

The Forest provides habitat for nine furbearers which are harvestable species under State Fish and Game regulations. These are bobcat, coyote, mink, weasel, opossum, skunk, gray fox, raccoon and beaver. Seven sensitive furbearers are exempt from "take" under State Fish and Game regulations. These are wolverine and Sierra Nevada red fox, listed by the State of California as threatened, and river otter, marten, fisher, ring-tailed cat, and badger, State species protected from hunting and trapping.

Two species of gophers generate special local management concerns because of their influence on timber management. The gophers are mountain pocket gopher and Botta's pocket gopher. Pocket gophers are

generally widespread and can severely hamper regeneration of harvested areas by foraging on seedling roots. Control of gopher activity is often necessary in plantations.

3.5.5.6

Endangered Species

Bald Eagle

The bald eagle is a federally-listed endangered species that inhabits the Forest during winter. Wintering populations appear to be static at 5 to 10 individuals and are most commonly observed at Pine Flat Reservoir, Mammoth Pool and Bass Lake. Less frequent sightings occur at Wishon, Shaver, Huntington and Redinger Lakes.

It is assumed increased human disturbance, destruction of riparian vegetation in the San Joaquin Valley, reduced anadromous fish runs and introduction of pesticides into the food chain have all contributed to the relatively low numbers of bald eagles using the region and Forest. The construction of large, low elevation reservoirs for hydroelectric power generation and flood storage has altered the "riverine" habitat with its once thriving anadromous fish runs, to a "flat-water" reservoir habitat. The introduction of warm water fish populations has provided a year-round food supply that at least partially compensates for the loss of winter salmon and steelhead as a food source. All major reservoir areas in the Forest provide roost structures for these birds. Improving habitat for wintering bald eagles appears to be unnecessary because suitable roost trees are abundant near preferred lakes and reservoirs, and food supplies are currently adequate.

Current management includes monitoring bird numbers during winter, and coordinating protection of bald eagle roost sites with other resource management. Formal consultation with the U.S. Fish and Wildlife Service is undertaken when eagles or their habitat may be affected by resource management activities.

Peregrine Falcon

The peregrine falcon is a federally-listed endangered species. Endangered species status directs National Forests to protect critical habitats and participate in recovery efforts for listed species. Sightings of peregrine falcons in the Forest are occasionally reported, but successful breeding has not been documented for many years.

NFMA direction specifies measures be taken to prevent the destruction or adverse modification of habitat determined critical for peregrine falcons. This direction also specifies that identified active nests be protected from disturbance. Peregrine falcons nest on cliff ledges. Future management activities will not seriously conflict with protection of active nests. However, some

modification of current recreational and mining use may be necessary in some locations. Modifications may restrict surface blasting, trail use and other activities to protect nesting birds.

In 1980, a peregrine falcon nesting habitat survey was conducted on National Forest land along the west slope of the Sierra Nevada mountains. The study area comprised the following National Forests: Tahoe, Eldorado, Stanislaus, Sierra, Sequoia and LTBMU. One of the objectives was to survey and determine cliff nesting habitat suitability and availability by observing cliff location, cliff height and aspect, foraging habitat and disturbance potential. The study resulted in the location of six "superior cliff ledge nest locations suitable for nesting by wild birds or by successfully reintroducing falcon chicks from the Forest's peregrine falcon "hacking" program and/or from birds successfully hacked in the Sequoia and Inyo National Forests.

The Pacific Coast Recovery Plan for the American Peregrine Falcon (1982) indicates a population of 120 breeding pairs in California are necessary to remove the species from Federal listing. The National Forests of California are responsible for establishing and maintaining 60 breeding pairs before delisting can occur. A goal of 3 nesting pairs has been established for the Forest to contribute towards the recovery efforts. A reintroduction program which emphasized "hacking" was initiated in 1986 in cooperation with the Santa Cruz Predatory Bird Research Group. Peregrine falcon chicks were successfully reintroduced into the Kings River drainage in 1986, 1987, 1988 and 1989. The successfully reintroduced falcons have dispersed widely from the "hack" site and their current status is unknown. In 1989, monitoring of the six superior nest sites was conducted to determine occupancy by falcons. Peregrine falcons were observed at two sites. Monitoring will continue in 1990. Additional reintroduction efforts will be implemented in the San Joaquin and Merced River drainages. The recovery efforts will provide genetic interchange for birds being fledged from known eyries in Yosemite National Park and from successful recovery efforts conducted in the Sequoia and Inyo National Forests.

3.5.5.7

Threatened Species

Lahontan and Paiute Cutthroat Trout

Two streams in the Forest support Lahontan cutthroat trout, and two additional streams are inhabited by Paiute cutthroat trout. Both species are federally-listed as threatened. Threatened species status mandates that Federal agencies take all necessary measures to insure that the species does not reach the "endangered" status. Current Forest management direction for Paiute and Lahontan cutthroat trout is to increase population size by restoring or improving habitat conditions. Recovery efforts/objectives have been identified in the Federal "Recovery Plan for the Paiute cutthroat trout," and in the

state "Fishery Management Plan for Lahontan cutthroat trout".

The two populations of Paiute cutthroat trout are located in remote Wilderness areas. Each is currently at numerically low, but stable population levels. Low population levels are products of naturally occurring steep gradient, low quality habitat. Opportunities to conduct major habitat improvement projects are very limited because of the difficulty of transporting equipment and materials, and operational restrictions within wilderness areas. There are no habitat improvement projects planned at this time.

The two streams supporting Lahontan cutthroat trout are located in commercial Forest areas where timber has been intensively managed. The stream habitats have been degraded, consequently limiting species ability to proliferate to their potential. The Forest has been conducting habitat improvement projects in both drainages to help restore habitat. Improvement measures such as reforestation, willow planting, fences to restrict livestock, check dams, gully plugs, road closures, road stabilization and pool enhancement work has been done to improve conditions in the two drainages. Additional habitat improvement for these trout will continue as opportunities are identified. A timber sale moratorium has been adopted by the Forest on one of the drainages until the quality of the aquatic habitat improves.

Recent angler pressure is believed to be another major factor in suppressing Lahontan cutthroat trout populations. To promote conservation of the populations, angling regulations on one of the streams has been changed to "catch and release" by the California Department of Fish and Game Commission. Currently, the Lahontan cutthroat trout population is stable in one of the streams, and increasing slightly in the other. CDFG has been annually monitoring the populations in these two streams since 1980.

Opportunities exist to expand the distribution of the Lahontan cutthroat trout into other streams in the Forest. This action requires extensive consultation with State and Federal agencies. The Forest is working cooperatively with the U.S. Fish and Wildlife Service and CDFG on a proposed experiment to introduce Lahontan cutthroat trout into a stream in the Forest. This "Experimental Population" will not be managed as a Threatened and Endangered Species. Special management requirements for Lahontan cutthroat trout contained in the Threatened and Endangered Species Act will not apply. Only the standards and guidelines defined in this Plan for a Class I, perennial, resident trout stream will apply. No other restrictive procedures will be imposed.

The Federal "Recovery Plan for Paiute cutthroat trout" does not identify any efforts to introduce additional populations of Paiute cutthroat trout in the Forest.

3.5.5.8

Sensitive Species

California Spotted Owl

California spotted owls nest and forage within 1/4 mile of Forest streams in dense, multi-storied, mixed conifer, ponderosa pine, black-oak woodland, and low-elevation red fir habitats. Nesting success is dependent upon the presence of nesting groves (dense canopy closure and high densities of multi-storied trees), and adequate forage or prey base, freedom from disturbance during the nesting season, adequate nest sites, and favorable weather.

The current estimated capacity for spotted owls in the Forest is determined to be 120 to 130 pairs. They appear to prefer habitat at elevations from 4,000 to 8,000 feet during summer. There is some evidence that birds migrate downslope for the winter.

Historical abundance and distribution of spotted owls is not known. Surveys to locate spotted owls in the Forest began in 1974 and have been conducted by both Forest Service and CDFG employees. In 1987, funds and objectives were provided for inventory and verification of the owl network. Regeneration harvesting of the Forest's timber resource reduces the amount and quality of currently available spotted owl habitat. In recognition of this effect, the Regional Forester placed the spotted owl on the Region's Sensitive Species list (1978), and for planning purposes, developed requirements for establishing a network of spotted owl habitat areas (SOHA). These requirements govern the amount and characteristics of suitable and replacement habitat, distribution of SOHAs and linkage to other SOHAs in other Forests. The total network within the geographic range of the spotted owl in California, in all Forests, has been established as the Regional viability level.

On June 5, 1984, the Forest identified and received approval from the Regional Forester that 26 territories would meet Regional requirements for the owl network while minimizing the impact on other Forest goals [1].

The information used to establish this Minimum Management Requirement (MMR) was the best available in 1984. Additional information continued to be gathered. Surveys and biological evaluations indicated additional SOHAs were needed. As a result, the current network consists of 29 SOHAs and better meets owl requirements, including linkage with adjacent Forests and distance between SOHAs.

At least 107 spotted owl pairs will exist into the next decade. This is because nest sites are being protected in timber sales and numerous owls are being discovered at low elevations not capable of supporting stands of timber. Others may continue to occupy habitat of marginal quality in timber stands retained for visual quality or other reasons. The Forest coordinates spotted owl

[1] The Draft EIS mistakenly listed 24 SOHAs as the Forest network.

management with its timber management program. It may take several decades to achieve proper amount and distribution of suitable habitat for owls throughout the Forest. Full compliance with established spotted owl direction will continue to be implemented.

Current management includes maintaining an inventory of network SOHA occupancy, identifying potential alternate SOHAs, developing timber stand prescriptions and schedules to provide owl habitat over time, coordinating owl habitat requirements with other resource management, and documenting nest site characteristics. Management plans for each SOHA are currently being prepared.

Three strategies are available to manage the SOHA network in the Forest. They are: 1) no scheduled timber harvest, which includes 1,000 acres of currently suitable habitat plus 650 acres of replacement habitat, 2) an even-aged timber management, which includes 1,000 acres of currently suitable habitat plus 1,650 acres of replacement habitat; and 3) an uneven-aged timber harvest, which includes 1,000 acres of currently suitable habitat plus 1,000 acres of replacement habitat.

Future opportunities include adjusting timber harvest and other Forest activities to protect and enhance the SOHA network and controlling disturbances through contractual and administrative processes. There may also be opportunities to provide additional snags and down logs in SOHAs to increase the owl prey base.

The Region has established a California spotted owl Technical Assessment Team which is charged with reviewing existing information on the California spotted owl including existing management strategies, if appropriate. If and when a new conservation strategy is determined, the Forest Plan will be amended as needed.

Goshawks

Goshawks nest widely in coniferous forest throughout the west. They typically nest in the Forest in older, dense, stands of mixed coniferous forest on slopes less than 60%, and within 1/4 mile of water sources. Nests are also found in the true fir and lodgepole pine conifer forest. The Forest has the potential to supply suitable nesting and foraging habitat for 60 pairs, but historical populations are unknown.

Nesting success is dependent on maintaining nest groves which are characterized by substantial canopy closure and high density mature trees, an adequate forage base, minimum disturbance during the nesting season, and suitable climatic factors. Populations are limited by the amount and distribution of suitable nesting habitat.

A forestwide goshawk inventory will be completed during the planning period. An assessment of known locations and sighting information suggest the current population is about 2 pair per township of suitable habitat or about 50

pairs. Published home range data for the goshawk suggest that densities of one pair per 11 to 12 square miles may be possible (Reynolds, 1983). Density estimates for the Forest wilderness areas and elsewhere suggest that opportunities to increase the population are limited. Approximately 141,000 acres of wilderness have the potential to support goshawks which is about 25 percent of the forested acreage. Other allocated land with possible areas of 50 acres of habitat or more include riparian areas, dispersed recreation areas with no scheduled timber harvest and areas classified as Regulation Class III.

Current Region 5 planning direction for goshawks suggests managing at least one nest territory for goshawks per 18 square miles of suitable habitat within the goshawk's range. Distance between nests are not to exceed 12 miles and must provide at least 50 acres of suitable habitat for nesting. The 50 acres can be provided as one block around a known nest tree or two parcels of 25 acres each. Active nest sites are to take priority over areas of non-use. Thinning will not occur in nest territories and timber harvest activity is to be excluded from areas adjacent to territories during nesting.

Current management includes: 1) completion of goshawk inventory, 2) inventoring suitable habitat for nest sites, 3) monitoring selected nest sites for occupancy and reproductive success, and 4) coordinating nesting habitat requirements with other resource management.

Future opportunities include: 1) protection of an adequate number of nest sites to provide a viable network of goshawk territories, 2) provision of suitable nesting and foraging habitat through development and implementation of a goshawk prescription, 3) inventory and monitoring nest sites, and 4) minimizing disturbance at occupied nest site during the breeding season through contractual and administrative process.

Willow Flycatcher

The willow flycatcher is listed as a sensitive species in Region 5. This species is highly dependent on willow assemblages within mountain meadows or streamside areas. Although a complete Forest inventory for willow flycatchers is lacking, a partial survey of the Forest in 1982 located 12 males (Serina 1982). Several additional individuals have been located in the Forest since 1982.

The removal of critical willow assemblages by hydroelectric projects is reducing the habitat for this species. In addition, preliminary field work by others suggest that livestock grazing near the willow assemblages may be severely affecting willow flycatchers breeding success.

Current management is to protect identified active nest sites through the use of fencing or other techniques. The Forest supports many montane meadows with willow assemblages, however, not all are utilized. Completion of

an inventory for the flycatcher will provide data for successful protection and measures to enhance suitable habitat

Opportunities to expand the local population of willow flycatcher include: 1) completing a forestwide inventory of montane meadows which support willow assemblages and their suitability for nesting, 2) establishing willow assemblages in select meadows which currently do not support willows, and 3) excluding cattle from specific meadows with active nests, and 4) excluding cattle from specific meadows to improve habitat in the hopes of attracting willow flycatchers

Marten [1]

The marten, listed as a sensitive species in Region 5, is a resident of the higher elevation forested plant communities of the Sierra Nevada. It is assumed that current populations are less common now than in the past. Mature and late seral stage forests appear to contain the attributes of preferred habitat, although martens occasionally extend their foraging activities, during the summer, into meadows, burns, and talus slopes of the subalpine area. Mature stands of timber are considered essential for survival, especially during winter. Because of this close dependency on forested habitat, marten distribution and abundance can be adversely affected by timber harvesting, fire and other actions or events which reduce forest canopy and habitat elements related to mature and late seral stage forest conditions.

Martens are nocturnal and seldom active during the day according to available information. Optimum marten habitat is provided by red fir and lodgepole pine forests with more than 40 percent crown closure and varying amounts of shrub understory. Good habitats are large tree stands of mixed conifer and Jeffrey pine (Verner 1980).

The size of home ranges for marten incorporates habitat quality parameters plus the need for a reproductive unit which consists of one adult male and two adult females in high/moderate quality habitat areas, and one adult male and three adult females in low quality habitat areas. This grouping is based on information in the literature which shows the potential for an average of 3 young per female in high and moderate areas (Strickland et al. 1982; Wright and Coulter 1967; Leonard 1986), but also indicates that in less suitable habitat the rate was less than 2 young per female (Hamilton 1958; Coulter 1966; Strickland et al. 1982). Assuming an estimated 50% survival rate for young produced (Arthur et al. 1989) further indicates the need for two females in high and moderate habitat areas and three in low quality areas. It is also assumed from the literature there is little to no overlap in defended territories of adult males, however, female/male ranges can significantly overlap especially during breeding season (Buck et al 1983, Powell 1982, Johnson 1984,

Simon-Jackson 1989). The home range needed for a reproductive unit in low capability habitat (one male and three females) is about 2500 acres, moderate capability habitat (one male and two females) is about 2100 acres and high capability habitat is about 1400 acres (Region 5 Literature Review). The best available information at the time of the Draft Plan (1985) was that the 5 percent vegetation type and seral stage diversity standard would provide enough late seral stage suitable habitat to ensure viability of marten. Additional information continued to be gathered, through surveys and biological evaluations, which indicated additional areas were needed. The current sensitive furbearer habitat areas, including corridors and links with adjacent Forests and Parks (8 areas and 84,537 acres), better meet furbearer requirements than the 5 percent diversity standard.

Opportunities to maintain viable populations of marten include maintenance of mature and late seral stage stands. The 141,000 acres of late seral vegetation in wilderness provides many acres of such habitat. A linkage of suitable habitat outside wilderness will also be maintained in such areas as RNAs, SOHAs, retention areas, SMZs and other special areas with mature and late seral vegetation.

Fisher [1]

Our review of the available information indicates fisher occur approximately between 4000 to 8000 ft., somewhat lower elevations than marten, in the south Sierra (Orr 1948, Ingles 1965, Grinnell et al. 1937). The fisher is listed as a Forest Service sensitive species

Preferred habitat is characterized by dense (60 to 100% canopy), multi-storied, multi-species climax coniferous forests with a high number of large (30 in dbh) snags and down logs. These areas also include close proximity to dense riparian corridors and saddles between major drainages used as travelways, and an interspersed of small (ac) openings with good ground cover used for foraging. Absence of roads is also preferred.

The apparent size of home ranges for fisher incorporates habitat quality parameters plus the need for a reproductive unit which usually consists of one adult male and two adult females in high/moderate quality habitat areas, and one adult male and three females in low quality habitat areas. This grouping is based on information in the literature which shows the potential for an average of 3 young per female in high and moderate areas (Strickland et al. 1982; Wright and Coulter 1967; Leonard 1986), but also indicates in less suitable habitat the rate was less than 2 young per female (Hamilton 1958, Coulter 1966; Strickland et al. 1982). Assuming an estimated 50% survival rate for young produced (Arthur et al. 1989) further indicates the need for two females in high and moderate habitat areas and three in low quality areas. It is also assumed from the literature there is little

[1] Information displayed in this document and the Forest Plan is based on current available information.

to no overlap in defended territories of adult males, however, female/male ranges can significantly overlap especially during the breeding season (Buck et al. 1983, Powell 1982, Johnson 1984, Simon-Jackson 1989)

The best available information at the time of the Draft Plan (1985) was that the 5 percent vegetation type late seral stage diversity standard would provide enough late seral stage suitable habitat to ensure viability of fisher. Additional information continued to be gathered, through surveys and biological evaluations, which indicated additional areas were needed. Current fisher habitat areas, including corridors and links with adjacent Forests and Parks (8 areas and 84,537 acres), better meet fisher requirements than the 5 percent diversity standard.

The home range needed for a reproductive unit in low quality habitat (one male and three females) is about 11,300 acres, moderate capability is about 9,800 acres (one male and two females), and high capability is about 6,000 acres (one male and two females) (Region 5 Literature Review).

Sierra Nevada Red Fox [1]

The Sierra Nevada red fox occurs in vegetation types similar to marten and wolverine. They are found in red fir, lodgepole and sub-alpine and alpine dwarf shrub habitats which occur in the Forest above 7000 feet. The Sierra Nevada red fox prefers open areas for hunting, such as meadows and open forest stands. (See Marten for additional information)

3 5.5.9

Other Species of Concern

Osprey

Currently one pair of ospreys are year-round residents in the Forest and has traditionally nested at Bass Lake for many years. Information regarding historical osprey population levels is limited. Observations of osprey have been recorded at other areas in the Forest, however, no other breeding pairs have been documented. It is assumed that increased human disturbance, destruction of riparian vegetation in the San Joaquin Valley, the reduction of anadromous fish runs, and the introduction of pesticides into the food chain have all contributed to the relatively low numbers. The construction of large, low-elevation reservoirs for hydroelectric power generation altered "riverine" habitat, with their once thriving salmon and steelhead runs, to a "flat-water" reservoir habitat. The introduction of warm water fish populations has provided a year-round food supply that at least partially compensates for the loss of winter salmon as a food source for both ospreys and bald eagles. All major reservoirs in the Forest provide suitable trees and snags for nests. Habitat does not appear to be a limiting factor.

Opportunities to enhance and increase nesting habitat include installation of artificial nest platforms, and/or topping off select, suitable mature trees to provide a more natural looking nest platform.

Wolverine

The wolverine is listed as threatened by the State of California. The literature (Verner 1980) indicates wolverine is uncommon in the Sierra Nevada, and historically was never present in large numbers in the state. The wolverine inhabits the "high country", mostly near or above timberline and wanders over a very large home range. The optimum habitat preferred by the wolverine is large tree stands with moderate to dense canopy in red fir and lodgepole pine forest associated with sub-alpine meadows. The wolverine does not hibernate even during the coldest weather, and spends almost every waking hour in search for food. They are solitary animals, live in "dens or burrows" and pair briefly during the mating season.

3 5.5.10

Harvest Species

Mule Deer

Mule deer are the most important big game species in the Forest. The Yosemite, Huntington, Oakhurst, San Joaquin, and North Kings are the principal deer herds. Although a few animals occupy the winter range throughout the year, each herd is predominantly transitory. The Forest provides the majority of summer and winter range for the San Joaquin, Huntington, and North Kings herds. The Forest also provides most of the summer range for the Oakhurst herd and the majority of winter range for the Yosemite herd.

Like many west-slope herds, CDFG data suggests deer population in the Forest has declined from a peak of approximately 35 to 40M in the mid-1950's to a current estimated low of 6 to 7M. Although the reasons for decline are not completely understood, predation, habitat degradation and loss, poaching, and drought are thought to have influenced herd size.

The Forest and CDFG have cooperatively prepared deer management plans that set deer population goals. These plans are dynamic and flexible, and can be changed over time in response to changing conditions and trends. The Forest will be expected to provide its proportional share of habitat to meet these deer herd goals. These deer herd management plans for Forest herds establish target population levels that are less than the peak populations of the 1950's, but are higher than current levels. Target levels for the Oakhurst (3,200), San Joaquin (5,500), Huntington (1,200), Yosemite (9,000), and North Kings (7,800) herds are roughly the same as populations during the early 1960's.

[1] Information displayed in this document and the Forest Plan is based on current available information.

Present deer management includes protection of deer habitat in coordination with other resource program activities and direct habitat improvement in coordination with CDFG.

Demand for consumptive and non-consumptive uses of deer currently exceeds supply. Data from CDFG indicate the annual number of deer hunters in the Forest from 1977 to 1983 remained relatively constant at 17,000. The current carrying capacity for deer is probably at least 15,000 animals. Increases in herd numbers will probably produce moderate increases in the number of deer hunters.

Opportunities to help meet herd population goals include modifying land available for timber production, harvest unit sizes and reforestation practices in selected deer population centers and high use areas. In addition, an ongoing habitat improvement program includes meadow enhancement, forage seeding, and prescribed fire. Modification of road use in critical areas is also underway in some areas. Additional habitat enhancement includes broadening the front country prescribed fire program, regulating road use, providing more thermal and hiding cover, changing the amount and distribution of seral stages, providing more roadside screening vegetation, and prescribing timber management activities to accommodate deer habitat objectives in the summer range.

3.5.5.11

Resident Trout

Resident trout occurring in the Forest include rainbow trout, eastern brook trout and brown trout. Rainbow trout represent the habitat requirements of cold water fish species, and are most common and important recreational fish in the Forest. Currently, quantitative data are lacking to define either the numbers or total biomass within the Forest. The present distribution is the result of extensive transplanting and stocking practices. Historically, rainbow trout were probably limited to the lower reaches of the Merced, San Joaquin, and Kings River systems.

The forestwide cold water angling, expressed in Recreation Visitor Days, is used as a direct index of angler intensity and demand. During 1983, an estimated 215,300 Visitor Days were spent on cold water fishing. Although this use was directed at all trout species, rainbow trout was the target of most anglers. Estimates of demand for cold water angling is expected to increase 1 to 2% annually during the next five decades. The trout stocking program by CDFG is evidence demand is exceeding the present stream and lake capabilities outside of wilderness.

Current management includes continued cooperation and coordination with CDFG to manage the fishery resource and to complete fishery habitat improvement projects.

Erosion control structures and streamside vegetation plantings are the most common projects completed.

Opportunities to enhance the fishery habitat and increase total biomass will focus on soil stabilization measures that minimize sediment entry into stream channels, establishment of streamside vegetation for shade, and placement of in-channel fish habitat structures. Extensive coordination with other resource management activities, coupled with proper mitigation measures will achieve a moderate level of habitat improvement.

3.5.5.12

Sensitive Plants

The Forest contains about 2,000 plant species habitats ranging from low-elevation foothills to high sub-alpine Sierra Nevada crests. Of this total, 19 species are considered sensitive and are listed by the Regional Forester as requiring special management attention. Since 1978, the Forest has conducted sensitive plant inventories. As a result, 29 sensitive plant species have been removed from the Forest's original 1978 list. These delisted species were proven to be more abundant or widespread than previously thought and/or were found not to occur in the Forest, or were not threatened by management activity. The Regional Forester's list includes only those species known, reported, or suspected of occurring on National Forest land in California. It is subject to change, (both additions or deletions) as new data are obtained, taxonomic problems are clarified, or revisions to the source documents are made.

Distribution of each sensitive plant is unique, both geographically and ecologically. Management of our sensitive plants must be done on a case-by-case basis due to the specific locations, potential threats, and the ecology of each species. The harshness, remoteness, and inaccessibility of different sites provide some species a measure of protection from land disturbing activities.

The nature of the knowledge base for sensitive plants requires the list to be updated as new information becomes available. Past inventories resulted in a net reduction of sensitive plants from the Forest list. As the Forest inventory (and inventory of adjacent public lands) reaches completion, we can expect further "delisting and additions" to the Forest list. Currently, Forest inventory data enables prediction of potential habitat and occurrence on any given project.

Sensitive plants are generally not a significant constraint on outputs in the Forest because they typically occur in locations that do not conflict with commodity resource management such as rocky habitats, and chaparral ecosystems. Conflicts with other resources are predicted to be few. However, Rawson's flaming trumpet is the exception since it occurs in riparian habitats and has the potential to constrain timber outputs.

A complete list of sensitive plants occurring in the Forest is found below. The Forest will pursue status and long-term protection of all sensitive plants. Currently, in areas where they are known or suspected to occur, sensitive plant surveys and field investigations are conducted prior to any ground disturbing activity. Avoidance or mitigation measures are included in project plans and project environment analysis documents.

Generally, sensitive Forest plants fall into three broad categories. They are:

(1) Rare plants found in sufficient numbers and distributed widely enough that potential for extinction is low at this time.

Golden annual lupine*	<u>Lupinus citrinus</u>
Bolander's clover	<u>Trifolium bolanderi</u>
Unexpected larkspur	<u>Delphinium inopinum</u>

(2) Plant occurrence confined to several populations or one extended population:

High Sierra evening primrose*	<u>Camissonia sierrae</u> ssp. <u>alticola</u>
Rawson's flaming trumpet*	<u>Collomia rawsoniana</u>
Congdon's woolly sunflower**	<u>Eriophyllum congdonii</u>
Yosemite ivesia	<u>Ivesia unguiculata</u>
Tree anemone*	<u>Carpenteria californica</u>
Many-flowered fawn lily	<u>Erythronium pluriflorum</u>

(3) Plant occurrence limited to one or a few highly restricted populations, very little information is known, or present in such small numbers that it is seldom reported:

Yosemite onion**	<u>Allium yosemitense</u>
Two-lobed clarkia*	<u>Clarkia biloba</u> ssp. <u>australis</u>
Merced River clarkia* **	<u>Clarkia lingulata</u>

Tompkin's sedge	<u>Carex tompkinsii</u>
Mariposa annual pussypaws	<u>Calyptridium pulchellum</u>
Congdon's bitterroot**	<u>Lewisia congdonii</u>
Muir's raillardella	<u>Raillardella muirii</u>
Tehipite jewelflower	<u>Streptanthus fenestratus</u>
Tehipite Buckwheat	<u>Eriogonum Prattenianum</u> var. <u>avium</u>
Kings River Buckwheat*	<u>Eriogonum nudum</u> var. <u>regirivum</u>

The Endangered Species Act of 1973 requires the Forest Service to conserve threatened and endangered plant species. As a federal agency, the Forest Service must ensure that all actions authorized, funded, or carried out by the agency do not jeopardize the continued existence of threatened or endangered species or result in the destruction or modification of their critical habitat. At this time, there are no plants in the Forest which are federally-listed as threatened or endangered. Merced River clarkia is listed as endangered under the California Endangered Species Act; Yosemite onion, Congdon's woolly sunflower, Congdon's bitterroot and Tompkin's sedge are listed as rare by the State of California pursuant to Section 1904, Fish and Game Code (Native Plant Protection Act).

Current direction is to survey planned project areas and avoid or limit disturbance to identified populations, survey potential habitat, and develop species management guides that specify actions necessary to maintain species viability.

A species management guide has been prepared and approved and an Interagency Agreement has been established between the Forest Service and the USDI Fish and Wildlife Service for Rawson's flaming trumpet. A species management guide has also been prepared and approved for Merced River Clarkia. Additional species management guides for all sensitive Forest plants will be prepared as ecological and management information becomes available or is developed.

* These six sensitive plants are endemic to Sierra National Forest.

** These sensitive plant species are officially listed by the State of California